Propositional Anaphora

The case of embedded polar responses in Dutch and English

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Contents

1. Introduction[1]

Anaphors are linguistic items that are able to target phrases previously introduced in the discourse. Examples are given in (1).

(1)   John$_i$ came in. He$_i$ sat down.   (cf. Levinson 2000: 268)

(2)   A: Have you seen [the neighbor's dog]$_j$?
        B: Yes, and [that dog]$_j$ kept me awake last night.   (Gundel et al., 1993: 278)

In (1), *he* targets *John*, which was introduced in the previous sentence. In (2), *that dog* targets *the neighbor's dog*, which was introduced in speaker A's question. Both these anaphors target noun phrases and refer to individuals, or entities, like John or the neighbor's dog.

In a very similar way, we can also refer to previously introduced propositions (see, e.g., Cushing 1972; Cornish 1992; Asher 1993; Needham 2012; Krifka 2013; Snider 2017). An example is given in (3). Here, speaker A asserts that Bill smokes. The corresponding proposition can subsequently be targeted by *that* and *so* in speaker B's and C's respective responses.

(3)   A: [Bill smokes]$_p$.
        B: That$_p$'s false!
        C: I don't think so$_p$.

In the case of B, it is predicated of the proposition under reference that it is false. In the case of C, the proposition under reference forms the object of thought of speaker C. In both cases, we are thus dealing with propositions, as these can be true or false and form the object of propositional attitude verbs (cf. Stalnaker 1978; McGrath and Frank 2018 and the discussion in Chapter 2).

Unlike nominal anaphors, propositional anaphors mainly have received attention some

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[1]A prior version of this dissertation was submitted in December 2019 and defended in July 2020. The reviews by the supervisors and the discussion at the defense were incorporated into the present version of this dissertation. It was submitted for publication in February 2022. No new insights from the literature were incorporated after the original submission to the comittee in December 2019.

decades ago; see for instance Cushing (1972); Webber (1991); Cornish (1992); Asher (1993); Hegarty et al. (2002). Important exceptions to this generalization are work by Snider (2017) and Pasquereau (2018, 2022) and recent studies of response particles *yes* and *no* (Krifka, 2013; Brasoveanu et al., 2013; Roelofsen and Farkas, 2015; Claus et al., 2017; Goodhue and Wagner, 2018). The present dissertation aims to fill that gap and consider propositional anaphors different from response particles, from the perspective of embedded polar responses. These are responses that involve an agent, a propositional attitude verb and an anaphor, like (3C) (cf. Sailor 2012).

English shows multiple options for embedded polar responses, as is shown in (4); see also Cushing (1972); Cornish (1992); Needham (2012); Meijer (2018). In each of the examples below, the anaphor in the embedded polar response by B refers to the proposition introduced by A.

(4)   A: Is John coming to the party?
        B1: I think **so**.   → I think [John is coming to the party]
        B2: I think ∅.   → I think [John is coming to the party]
        B3: I hope **not**. → I hope [not [John is coming to the party]]
        B4: I doubt **it**. → I doubt [John is coming to the party]

There are thus multiple ways in which a speaker can respond affirmatively or rejectingly to a question like (4A).

Note, however, that not all anaphoric items used in (4) can co-occur with each predicate used in (4). The non-exhaustive overview in (5) shows that for instance *think* cannot form an embedded polar response with *it* whereas it can occur with *so*, the null proform and for a number of speakers with *not*. *Hope* occurs with a different set of items. It may form embedded polar responses with *so* and *not*, but not with the null proform or *it*. The other way around, *doubt* can form embedded polar responses with *it*, but not with the other items.

(5)

B1:	I	think	{	so	|	%not	|	∅	|	#it	}.
B2:	I	hope	{	so	|	not	|	#∅	|	#it	}.
B3:	I	doubt	{	#so	|	#not	|	#∅	|	it	}.

(5) raises the question why these alternative anaphors exist and why they are restricted to a certain set of predicates each. In addition, one may wonder if other languages use a similar set of items in embedded polar responses.

The Dutch examples in (6) show this is not the case.

(6)   A: Heeft Jan de kat te eten gegeven?
            has   Jan the cat to eat   given
            'Did John feed the cat?'

       B: Ik denk **het** {wel | niet}.
            I   think it   WEL   not
            'I (don't) think so.'

       C: Ik denk **van** {wel | niet}.
            I   think of   WEL   not
            'I (don't) think so.'

       D: **Dat** denk ik {niet | wel}.
            that think I not   WEL
            'I think (not).' (cf. Van Craenenbroeck 2002, Hoeksema 2006, Meijer 2019)

The embedded polar responses in (6B-C) show that Dutch can form responses with the predicate *denken* 'think' and *het* 'it', which is different from English. Moreover, Dutch embedded polar responses may involve items that are not found in their English counterparts. For instance, in response (6C), the preposition *van* 'of' is used in combination with the polar items *wel* (lit. 'well') and *niet* 'not'. Furthermore, (6D) uses *dat* 'that' in SpecCP in an embedded polar response. One may wonder how these responses differ from the English responses in (5) in terms of their meaning and use.

There are also items that can be used in English, but not in Dutch. (7) shows that the Dutch embedded response paradigm does not feature the null proform.

(7)   A: Heeft Jan de kat gevoerd?
            has   Jan the cat fed
            'Did Jan feed the cat?'

       B: *Ik denk (van) ∅.
            I   think of
            'I think so.'

The data above raise the question why these languages have different kinds of embedded polar responses at their disposal and if there are differences between the types of responses in terms of their meaning and use, and if so, how these arise. In this dissertation, I argue that there are indeed differences found in the use and meaning of the different types of embedded polar responses used in Dutch and English. The different kinds of embedded polar responses thus enable speakers to give (sometimes slightly) different types of responses and thereby communicate that they are more or less certain

about the answer to a question.

I argue that the types of responses studied in this dissertation fall into two categories: Type I responses and Type II responses. The former, Type I, include the following embedded polar responses items: Dutch *van wel/niet* and English *so*. These responses, I argue, indicate that the speaker is (relatively) uncertain or that the proposition under reference is not yet accepted as common ground. As such, these embedded polar responses are more 'subjective' than other types of responses, as they provide information about the status of the proposition in the discourse from the perspective of the speaker or agent. In Chapter 3 and Chapter 4, I consider responses with *van* and *so*, respectively, in detail and show how both responses fulfil a similar role in their respective response paradigms but also differ in crucial ways. For *van*, for instance, I argue that it is a similarity marker that is also found outside of embedded polar responses. In contrast, I argue for *so* that it signals its referent is still on the Table, that is, under discussion, (in Farkas and Bruce's 2009 framework). That makes *so* pre-eminently suitable for responding to questions, as I argue in Chapter 4.

I argue that Type II responses are different from Type I responses in that they are not subjective compared to Type I responses. I hypothesize that these responses involve a pronominal item, that is possible null. These items lack an additional presupposition or implicature that is relevant for the discourse status of the proposition under reference, which makes them different from for example *so*. Examples of Type II responses studied in this dissertation are responses involving the weak pronouns, *het* 'it' or *it*, the null proform or the demonstratives *dat* 'that' or *that*. In Chapter 5, I consider Type II responses for which I argue that they involve a null proform and *not*, such as *I think not*. In Chapter 6, I consider responses involving weak pronouns and their competition with other kinds of responses. In a nutshell, I argue that phonologically weaker proforms are preferred for more salient referents and phonologically stronger proforms for less salient referents, following, e.g., Ariel (1990); Gundel et al. (1993); Levinson (1987, 2000).

In sum, I argue there are two types of competition at play when it comes to embedded polar responses in Dutch and English. The two relevant 'scales' are shown in Figure 1.1 below for English. First, there is competition between Type I responses and Type II responses. Type I responses are chosen over Type II responses in the case that a speaker wishes to express a more 'subjective' meaning. Second, there is competition between the different Type II responses, as described above. The phonologically weaker forms are chosen over the phonologically stronger forms in case the referent is more salient (following, e.g., Ariel 1990; Gundel et al. 1993; Levinson 1987, 2000).

This dissertation consists of two parts, concerned with Type I and Type II responses

subjective				

so

not subjective					non-proximate

$\varnothing$, *it*   *it*   *that* / *this*   proximate

phonologically weaker	phonologically stronger
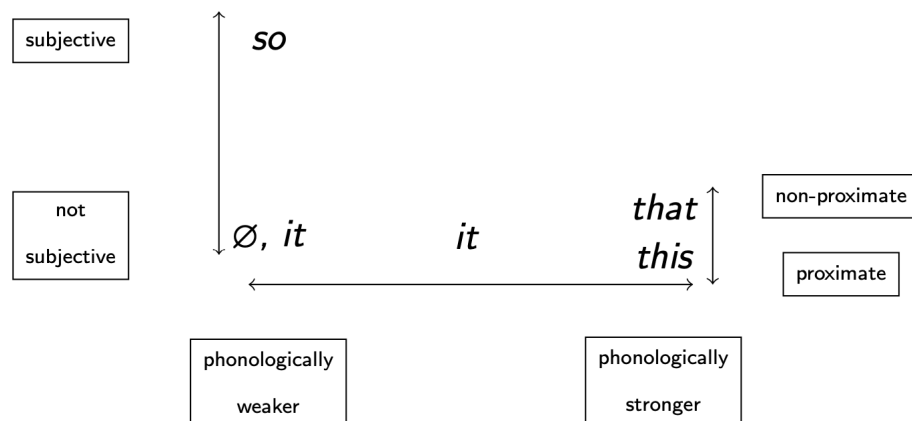
Figure 1.1.: Competition between proforms in English embedded polar responses regarding subjectivity (y-axis) and phonological strength (x-axis)

respectively, which are preceded by a theoretical background, Chapter 2. Together, these chapters contribute to our understanding of embedded polar responses in Dutch and English. In doing so, this dissertation makes an important contribution to the literature on propositional anaphora, responses and propositional attitude verbs. First, this study contributes to the empirical domain of propositional anaphora by considering the differences between propositional anaphora like *so*, *it* and *that*, which have received little attention on their own although they are often considered in the context of, for instance, response particles *yes* and *no*. I show for instance that *so* has properties that set it apart from all other propositional anaphora (see Chapter 4), making it difficult to compare uses of *so* to those of, e.g., response particles without taking its special place in the response paradigm into consideration. In addition, the well delimited empirical domain of this study, the domain of embedded polar responses, allows for a very proper examination, while different uses of different propositional anaphora were often lumped together in past studies. Second, this work provides a broader overview of responses and response paradigms as it considers embedded polar responses in both Dutch, English and to some extent German. Thereby it goes beyond responses consisting solely of response particles. Third, this study adds to the growing body of research on propositional attitude verbs like *think* and other predicates that can or cannot occur in embedded polar responses, depending on the propositional anaphor it occurs with and its restrictions.

The chapters of this dissertation form different pieces of the puzzles described above. However, each phenomenon also forms a puzzle of its own and therefore, each chapter can also be read as an independent case study.

2. Theoretical Background

2.1. Introduction

In this chapter, I consider the theoretical notions relevant for this dissertation. In Section 2.2, I discuss propositions, propositional anaphora and anaphora in general, as well as the notion of propositional content and complementation. In Section 2.3, I consider the semantics and pragmatics of propositional attitude verbs. Thereafter, in Section 2.4, I discuss the semantics of questions briefly. Finally, in Section 2.5, I lay out the assumptions I make concerning discourses and the common ground. In this, I largely follow Farkas and Bruce (2009), who assume a Stalnakerian view of discourse.

2.2. Propositions, Propositional Anaphora and Propositional Content

As mentioned above, in this section I consider the notions propositions, propositional anaphora as well as propositional content and complementation. In Section 2.2.1, I discuss the nature of propositions. In Section 2.2.2, I discuss the notion of propositional anaphora, focusing on their similarities with regular anaphora (following Snider 2017). In Section 2.2.3, I consider the pragmatics and semantics of anaphora. In Section 2.2.4, I consider the reification of propositions as well as the notion of propositional content and *that*-clauses within the framework by Kratzer (2006) and Moulton (2009). Thereafter, in Section 2.2.5, I consider different frameworks on complementation within the aforementioned framework on propositional content and *that*-clauses.

2.2.1. Propositions

I assume a Quinian/Stalnakerian view on propositions in which propositions are bearers of truth values and objects of belief (McGrath and Frank, 2018). On this account, propositions provide a way to describe the way the world is or could be, according to the speaker (Stalnaker, 1978). Propositions can be true or false. They are sets of possible

worlds. That is, each proposition describes or determines a set of possible worlds - the set of worlds in which the proposition is true. Similarly, each set of possible worlds determines a proposition. As such, propositions are functions from worlds to truth values. A proposition p may thus map a world w onto the truth values $\{0,1\}$ - to 1 in case p is true in w and to 0 if it is not. Note that propositions with a so-called presupposition failure form exceptions to this rule and are undefined instead of true or false (Lewis, 1979). An example is given in (1), which presupposes there is a uniquely salient cat in the context.

(1)   The cat sat on the mat.

If (1) is uttered in a context without a cat, it is not true or false, but undefined. Therefore, (1) can be taken to show that propositions should map worlds to 1, 0, or undefined. However, since presupposition failures are not directly relevant to the present work, I will maintain the basic view in which propositions are functions to truth values only. Therefore, I will assume that we can evaluate for each proposition whether or not it is true in the actual world. Assume for instance a logical space determined only by the propositions p, q and r, as is shown in Table 2.1.[1]

worlds	propositions		
	p	q	r
w_0	1	1	1
w_1	1	1	0
w_2	1	0	1
w_3	1	0	0
w_4	0	1	1
w_5	0	1	0
w_6	0	0	1
w_7	0	0	0

Table 2.1.: A simple logical space involving the propositions p, q and r

Assume that, following Table 2.1, p is true in w_0, w_1, w_2 and w_3, that q is true in, e.g., w_0, w_1, w_4 and w_5 and that r is true in w_0, w_2, w_4 and w_6. Now, the conjunction of the propositions p, q and r, the complex proposition $[p \wedge q] \wedge r$, is true in w_0. Therefore, the proposition $[p \wedge q] \wedge r$ determines that the singleton set containing $\{w_0\}$. Similarly, the conjunction of p and r, $p \wedge r$, determines the set $\{w_0, w_2\}$. Once we allow more worlds or

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[1] I take the logical space to consist of all possibilities, based on a set of propositions and their truth values.

propositions to enter our logical space, we can no longer say that the propositions p, q and r determine the sets of possible worlds listed above. In that case, the sets of worlds could in principle also be defined by the other propositions that I have left out of the picture here, depending on whether they are true or not in these worlds.

Let us assume, however, that Table 2.1 indeed exhaustively defines our logical space. Now, if proposition p corresponds to (2a) and q to (2b), the proposition that John is crazy and that Pete is crazy, is true in w_0 and w_1.

(2) a. λw. John is crazy in w
     b. λw. Pete is crazy in w
     c. λw. Fred is crazy in w

Similarly, if we assume that (2c) corresponds to r, it is true in w_0 and w_4 that Fred and Pete are crazy.

On a traditional Hintikkan view, propositions also form the objects of propositional attitude verbs, like *believe* (Hintikka, 1969) - see (3). Thus, in (3a), the *that*-clause *that Pete is crazy* is an argument of the predicate *believe*. The interpretation of (3a) is given in (3b). We see that the proposition *Pete is crazy* is the internal argument of *believe*.

(3) a. John believes that Pete is crazy.
     b. Believe(John)(Pete is crazy)

In Section 2.2.4 and Section 2.2.5, I will argue for a different view on the relation between predicates and *that*-clauses (following Kratzer 2006; Moulton 2009, 2015; Elliott 2017), involving the notion of propositional content.

Note that I have presented a very minimal notion of propositions here. There are arguments in favour of enriching the notion of propositions such that their meaning consists of more information than solely their truth value (see, e.g., Moschovakis 2006; McGrath and Frank 2018; King 2019). Consider for instance the propositions in (4):

(4) a. There are infinitely many odd numbers
     b. There are infinitely many prime numbers   (Moschovakis, 2006: 27)

(4a) and (4b) denote mathematical truths and therefore they are necessarily true in the same worlds. Since we defined propositions as the set of worlds in which they are true, (4a) and (4b) have the same meaning. This consequence is obviously undesirable. As a result, if the belief of (4a) is predicated of for instance John, this is equivalent to saying that he believes (4b) (King, 2019). Therefore, a more fine-grained notion of propositions

is required. One solution is to say that propositions do not denote possible worlds, and instead are structured, complex entities composed of constituents (see King 2019 for a discussion and an overview of accounts of structured propositions). Moschovakis (2006) further suggests that although the propositions in (4) may yield the same truth value, the computation rendering this truth value may be different. Therefore, they are different functions which happen to be true in the same set of worlds. For the present purposes, it is important that there are ways to work around the problems inherent to a simple account of propositions.

Note, however, that the discussion of propositional anaphora, like *it* in (5), also shows that a slightly richer notion of propositions is required (Krifka, 2013). (5) shows that if a proposition like the one scoping below negation there is referred to in subsequent discourse, as is done by *this* in (5), the discourse referents introduced in this proposition - like *a car* - are made accessible to *it* (Krifka, 2013: 6). From (5), Krifka concludes that propositional discourse referents bear more information, like the referents introduced in the proposition under reference, than just the truth value of the proposition (cf. also Geurts 1998).

(5)   Ede probably didn't buy a car. And if this were true, he would have sold it.
                                                                    (Krifka, 2013: (28))

In the following, I thus assume that there is more to propositions than their truth value and that, as a consequence, propositional anaphors can also (re)introduce discourse referents, like (5) shows.

2.2.2. Propositional Anaphora vs DP Anaphora

In this section, I consider propositional anaphora and their similarities with other anaphora. As was mentioned in Chapter 1, propositional anaphora are anaphoric devices that refer to propositions (Cushing, 1972; Webber, 1978; Krifka, 2013; Goodhue and Wagner, 2018). Propositional anaphora that have recently received a lot of attention are response particles like *yes* and *no* (see, e.g., Krifka 2013; Roelofsen and Farkas 2015; Claus, Meijer, Repp, and Krifka 2017; Goodhue and Wagner 2018):

(6)   a.   Is John coming to the party?
        b.   {Yes | No}.

The particles *yes* and *no* have been suggested to refer to a contextually salient proposition. For instance, in (6), the question is said to introduce a propositional referent that

can be targeted by *yes* and *no* (Krifka, 2013; Roelofsen and Farkas, 2015). As mentioned in Chapter 1, in most recent work on propositional anaphora, it is implicitly assumed that anaphors like *yes* and *no* behave similar to, e.g., *that*, shown in (7).

(7) a. [Ede stole a cookie]$_p$.
     b. I heard that$_p$.

Yet, the use of *that* or *it* as propositional anaphora has not received much attention, apart from, e.g., Snider (2017). The present work fills this gap.

Next, I illustrate, following Snider (2017), that propositional anaphora behave very much like 'regular' anaphora, i.e. those referring to determiner phrases. These are anaphors like *he* or *she* that refer to noun phrases like *a man* or *a woman*, as is shown in (8).

(8) a. [A man]$_i$ walked into a bar. He$_i$ ordered a drink.
     b. [A woman]$_i$ walked into a bar. She$_i$ ordered a drink.

These pronouns can be used anaphorically, as is shown above, as well as deictically. In the latter case, there is no linguistic antecedent, but the anaphor instead refers to a contextually salient entity.

(9) A man walks into a bar looking suspicious. A says to B:

     A: He looks suspicious.

In this dissertation, I treat these different types of anaphors uniformly. Below, we will see that propositional anaphora can be used deictically as well as anaphorically in the narrow sense of the word.

In his thesis, Snider (2017) shows that propositional anaphora are like regular anaphora, based on Partee's (1973, 1984) seminal work an anaphora. In the following I discuss the uses that Partee distinguishes for nominal anaphora and show how propositional anaphora behave similarly, following Snider (2017).

Non-linguistic antecedents   Partee suggests that utterances like (10) can be used to start a conversation. In this case, there is no linguistic antecedent to *she*. Yet, the utterance is interpretable in a context in which a suitable referent for *she* can be accommodated.

(10) She left me.   (Partee, 1973: (1b))

Snider's (11) shows that propositional anaphora may also be used deictically. In (11), there is no linguistic antecedent to *that* in Dewey's utterance.

(11)   [Mom walks into the living room, and sees her three children standing around the broken remains of a lamp.]

        Mom: Who broke the lamp?
        [Two of the children look at Dewey.]
        Dewey: That's not true!   (Snider, 2017: (89))

Hankamer and Sag (1976) show the same for *it* in (12).

(12)   Hankamer [observing Sag successfully ripping a phone book in half]:
        I don't believe it.   (Hankamer and Sag, 1976: (32))

Definite and indefinite antecedents   Partee shows that nominal anaphora may have definite or indefinite antecedents, see (13).

(13)   a.   Sam is married. He has three children.   (Partee, 1984: (2a))
        b.   Pedro owns a donkey. He beats it.   (Partee, 1984: (3a))

Snider suggests that propositional anaphora may also refer to definite antecedents and provides the example in (14).

(14)   Sam is married. He told me that.   (Snider, 2017: (92))

He suggests that the case of indefinite antecedents is less straightforward, as 'sentences can't be classified as definite or indefinite' (p. 44). However, he supposes that the example in (15) is 'the closest parallel'. In this case, it could be the case that *it* refers to *a rumor*, or to the proposition associated with the rumor.

(15)   Victoria told me a rumor, but it's not true.   (Snider, 2017: (94))

Considering Snider's plausible claim that sentences cannot be classified as definite or indefinite, I will not take a stance concerning the question whether there are propositional anaphors referring to definite or indefinite antecedents. However, I take (14) to show that the propositional anaphor *that* may refer to clausally introduced propositions. In Chapter 6, we will see that *it* can refer to such propositions as well, although its use is more restricted than that of *that*.

Bound variables (16) shows that nominal anaphors may be used as bound variables. In this case, *every woman* binds *she*.

(16)   Every woman believes that she is happy.   (Partee, 1984: (4a))

Snider takes (17) to show that propositional anaphors, the null complement anaphor (NCA), in this case, may also be bound.

(17)   Whatever Rosie believes, Peter believes.   (Snider, 2017: (97))

However, note that (17) may also involve a free relative construction, as is illustrated in (18). In that case, there is no NCA, such that there can also be no bound anaphor.

(18)   Peter believes whatever Rosie believes.

Nevertheless, I agree with Snider that propositional anaphora may indeed be bound. I take (19) to show this.

(19)   Rosie couldn't say a thing without Peter declaring afterwards that he believed that too.

That in (19) refers to the things Rosie has said, such that Peter believed them. In this case, *that* is bound by the existential quantifier, which is outscoped by the negation and introduced by *not a thing*.

Donkey sentences In so-called donkey sentences an anaphor appears to be bound without being c-commanded by its binder (see, e.g., Evans 1977; Heim and Kratzer 1998; Elbourne 2001). In (20), we see that *it* occurs out of the scope of *a donkey*, which occurs in a relative clause; yet, *it* seems to behave as if it were bound by *a donkey*.

(20)   Every farmer who owns a donkey beats it.   (Partee, 1984: (6b))

Snider shows the same holds in the propositional domain, see (21).

(21)   If anyone looks at the test before time starts, I will tell the principal that.
                                                              (Snider, 2017: (100))

In this section I followed Snider (2017) who showed that propositional anaphora can be used just like regular nominal anaphora. In Chapter 6, I consider the differences between the anaphors *it*, *that* and the NCA in detail.

2.2.3. The pragmatics and semantics of anaphora

In the previous subsection, I argued that propositional anaphora are just like regular noun phrase anaphora, following Snider (2017). One of the questions that arises is how an anaphoric relation is actually established. In the following, I shed light on this questions from the perspective of pragmatics and semantics. I first consider the notion of discourse referents and propositional discourse referents. Thereafter, I consider the semantic types of pronouns. Finally, I consider the concept of saliency.

2.2.3.1. Discourse Referents

Karttunen (1976) was the first to argue that an indefinite noun phrase like *a unicorn* in (22) introduces a so-called discourse referent for this entity. As a consequence, it can be referred back to later in the discourse, as is shown in (22).

(22)   Bill saw [a unicorn]$_i$. The unicorn$_i$ had a gold mane.

Karttunen (1976) suggests that some indefinite noun phrases introduce discourse referents in a 'limited domain' only. Consider for instance (23). This example shows that reference to a noun phrase like *a book*, in a conditional clause, is only possible if the proposition involving the referential device involves a modal operator (Karttunen, 1976; Roberts, 1989).

(23)   If John bought [a book]$_i$, he'll be home reading it$_i$ by now.

     a. #It$_i$'s a murder mystery.
     b. It$_i$'ll be a murder mystery.   (Roberts, 1989: 683)

For further examples and analyses of such cases, involving so-called modal subordination, I refer the reader to Roberts (1989, 1997); Van Rooij (2005).

Note that the above sketch of discourse referents remains quite vague about the nature of these entities. In her dissertation, Heim (1982) suggest that discourse entities cannot be equated with their referents, but rather are abstract entities that are in fact similar to so-called 'referential indices' (p. 183), like i in (22) and (23). To see what this means, consider the assertion in (24).

(24)   He is smiling.

(24) is true if there is a man in our model who is smiling. The so-called assignment function g helps us evaluate this claim by dictating how we should interpret *he*. Assume

a model that consists of the 'indices', or discourse referents, 1, 2 and 3. These are introduced in our model along with the noun phrases they belong to, just like we saw above (Heim, 1982). To see this, consider (25):

(25)   Pete$_1$ walked into the room.

In (25), the individual Pete is assigned index 1. If our model consists of two further individuals John and Mary these could be indexed 2 and 3 respectively. The assignment function g, belonging to our model, shown in (26), tells us for each index in our model how it should be interpreted. Thus, under g, 1 is interpreted as Pete, 2 is interpreted as John and 3 is interpreted as Mary.

(26)

$$g = \begin{bmatrix} 1 & \rightarrow & Pete \\ 2 & \rightarrow & John \\ 3 & \rightarrow & Mary \end{bmatrix}$$

As a consequence, the proposition in (27) is true iff Pete is smiling.

(27)   He$_1$ is smiling.

The assignment function thus keeps track of the individuals and referential indices in the model and tells us whether or not certain properties apply to them, i.e. whether these are true.

2.2.3.2. Propositional Discourse Referents

As I already suggested above, propositions can be targeted by pronouns (see also Webber 1978; Cushing 1972; Webber 1991; Asher 1993; Gundel et al. 2003; Krifka 2013; Snider 2017). (28) shows one of Webber's examples:

(28)   To prove that [all cats have three legs]$_p$, let's assume its$_p$ converse.

<div align="right">(Webber, 1991: (27))</div>

In line with the work on discourse referents considered above, Krifka (2013) assumes that propositions also introduce discourse referents, so-called 'propositional discourse referents'. For, e.g., (29) Krifka assumes that the first assertion introduces the propositional discourse referent p_{DR}, which is targeted by *it* (see also Webber 1978; Asher 1993).

(29)   [Ede stole a cookie]$_{p_{DR}}$. Bill knows it$_{p_{DR}}$.   (Krifka, 2013)

In addition, it is assumed that an utterance like *Ede stole a cookie* in (29) introduces two further abstract discourse referents, which can be targeted with pronouns: those associated with the stealing event and the speech act (see, e.g., Webber 1991; Asher 1993; Krifka 2013). (30) illustrates the targeting of the discourse referent of the event of Ede stealing a cookie.

(30)   Ede stole a cookie. Bill saw it.   (Krifka, 2013: 4)

(31) shows that the discourse referent associated with the speech event can also be targeted.

(31)   A: Ede stole a cookie.
         B: That's a lie!   (ibidem)

In the following, I assume that reference to propositions and speech act events are in fact two sides of the same coin. Following Hacquard (2006), I assume that speech act events are contentful events, such that they are associated with propositional content (see also Kratzer 2006). On this view, we may assume for *that* in (31) that it is in fact an event anaphor, that refers to a speech act event. Similarly, we could say that *it* in (29) refers to a contentful event. We consider the notion of content in more detail in Section 2.2.4.

For Krifka (2013), the introduction of p_{DR} in (31) is linked to the syntactic realization of the proposition, which involves a TP. The TP thus creates the p_{DR}. Krifka assumes that assertions which involve an additional syntactic layer introducing a 'propositional category' as well, like a NegP, introduce two propositional discourse referents, one being marked for negativity. (32) illustrates how both DRs can be targeted by *that*.

(32)   Two plus two isn't five.
         [$_{NegP}$ 2+2 isn't [$_{TP}$ t_{2+2} t_{is} 5]$_{p_{DR}}$]$_{\neg p_{DR}}$
         a.   Everybody knows that$_{\neg p_{DR}}$.
         b.   That$_{p_{DR}}$ would be a contradiction.   (based on Krifka's 2013 (23))

Krifka assumes that questions, which involve a TP as well, also introduce a propositional discourse referent; see (33A). These DRs can be targeted by particles like *yes* and *no*; see (33B-C).

(33)   A: [$_{ActP}$ did-QUEST [$_{TP}$ Ede t_{did}-PAST [$_{vP}$ t_{Ede} t_{steal} the cookie]]$_{P_{DR}}$] ?

B: Yes$_{p_{DR}}$.

C: No$_{p_{DR}}$.

For questions like (33A), Farkas and Bruce (2009) assume that they raise the issue of whether Ede stole a cookie (in contrast to its negative counterpart, which would raise an issue involving a negation, see Farkas and Bruce 2009:17). There is pressure to resolve this issue. I consider this in more detail in Section 2.5.2. For now it suffices to see that questions introduce a referent, i.e., an issue, and put pressure on the interlocutors to resolve this issue (see also Krifka 2017). In the following, I first turn to pronouns and their semantics types.

2.2.3.3. The semantic types of pronouns

One line of approaches to the semantics type of pronouns like *it* and *that* assumes that they are variables, like x or y, which can be bound or free (see, e.g., Kamp and Reyle 1993). On this view, pronouns are indexed just like variables and receive an interpretation based on the assignment function.

Another line of approaches to anaphora assumes that they are in fact definite descriptions (see, e.g., Evans 1977; Elbourne 2001; Roberts 2002), that share their semantics with the definite article in (34).[2] (35) shows that the definite article is of type $\langle\langle et\rangle, e\rangle$; it composes with a property of type $\langle e, t\rangle$; see (35). Such a property could be that of being a man standing in the corner.

(35) $[\![\mathbf{the}]\!] = \lambda F.\iota x[F(x)]$[3]

(36) $[\![\mathbf{the\ man\ standing\ in\ the\ corner}]\!] = [\![\mathbf{the}]\!]([\![\mathbf{man\ standing\ in\ the\ corner}]\!])$
         $= \lambda F.\iota x[F(x)](\lambda y.Man - standing - in - the - corner(y))$
         $= \iota x.[Man - standing - in - the - corner(x)]$

The ι-operator places a uniqueness condition on x, such that (36) refers to the unique man standing in the corner in the context. Like the definite article, pronouns like *he* or *it* are suggested to place a uniqueness condition on their referent as well. A subsequent utterance about the man in (36), involving for instance the pronoun *he*, such as in (37),

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[2] Such a denotation should be considered the abbreviated form of for instance the spell out in (34):

(34) $\lambda f : f \in D_{\langle e,t\rangle}$ and there is exactly one $x \in C$ such that $f(x) = 1$. the unique $y \in C$ such that $f(y) = 1$, where C is the contextually supplied subset of D.   (Heim and Kratzer, 1998: 81)

[3]Throughout this dissertation, I will leave out world variables wherever possible.

refers to the unique man in the context of the utterance.

(37)   He smiles.

Unlike the definite article, pronouns do not involve the spell out of a phrase like *man standing in the corner*: they are spelled out as pronouns. However, the underlying logical form of (37) consists of the same *ι*-operator and a property like *man standing in the corner* that restricts the uniqueness, see (38), which provides a simple denotation for (37).

(38) $Smiles(\iota x.Man-standing-in-the-corner(x))$

The property relevant for interpreting pronouns like *it* or *that* is contextually supplied, just like the property in (38) is.

In the following, I assume the latter approach to pronouns like *it* and *that*. Reasons for doing so are that it is easier for such accounts to deal with more complicated uses of pronouns. Consider for instance (39a-c):

(39)   a.   This year the president is a Republican, but one fine day, he ('the president') will be a member of the Green party.
         b.   Mary, who deposited her paycheck at the ATM, was smarter than any woman who kept it ('her paycheck') in her purse.
         c.   Every farmer who owned a donkey had Lucy vaccinate it ('the donkey').
                                                                                    (Büring, 2011: (21))

Pronouns like *he* and *it* in (39) are not referential but rather denote functions (Karttunen, 1969; Geach, 1962; Evans, 1977): from worlds to presidents (a so-called 'individual concept'), 'from women to paychecks and from farmers to the sheep they own' (Büring, 2011). Their behavior is therefore readily explained by an account that assumes that these pronouns are functions in contrast to one that assumes they are variables referring to a noun phrase.

In addition, thinking of pronouns as involving a covert property, as is shown in (40a), allows us to use the notion of propositional content when dealing with propositional anaphora. This notion enables us to think of proposition-like entities, targeted by *it* and *that* in, e.g., (29), in a simpler way. In a nutshell, propositional content is the content of contentful entities like ideas, rumors or believe events. As such, the content function takes us from such entities to propositions; that is, it takes entities like idea or beliefs as its argument and returns the propositional content corresponding to these entities.

Content is considered in more detail in Section 2.2.4. For now it suffices to say that the contextually salient property that pronouns may compose with can be *content*, shown in (40b), which indicates that the referents of these pronouns have propositional content. I assume that pronouns like *it* and *that* have the same denotation as other pronouns, shown in (40a), but can compose with, e.g., (40b) in order to form (40c). After this composition, F thus is replaced by the content property, indicating that x is an entity which uniquely corresponds to the propositional content p.

(40)   a. $\lambda F.\iota x F(x)$

       b. $\text{CONT}(x)(w) = \{w': w'$ is compatible with the intentional content deter-

           mined by x in $w\}$ (Moulton, 2015)

       c. $\lambda x.\text{CONT}(x)(w) = p^4$

       d. $\iota x.\text{CONT}(x) = p$

The assignment function then singles out the appropriate and salient referent of the propositional variable p. The factors that play a role in this matter are discussed below.

Note that with the approach in (41), the pronoun *it* and *that* only differ in one being phonologically heavier than the other - I consider this in detail in Chapter 6. In Section 2.2.4 I discuss (41) and the notion of content further.

2.2.3.4. Saliency and licensing conditions

From the perspective of pragmatics, different questions are relevant for pronouns. For instance, the theories discussed above make no predictions with respect to which referents are chosen for a variable by the assignment function and how the competition between different referents in ambiguous utterances is resolved. In addition, we do not know on the basis of what criteria speakers chose one referential form over another.

Pragmatic theories of pronominal reference are concerned with these questions. In distinguishing which entities are available for reference and which are not, the term saliency is important. Generally, salient entities are said to be important or the 'focus of attention', at certain moments in the discourse. Salient entities are often said to be

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[4]The present formula composed through λ-abstraction over both x and the set of worlds, q, in (40b); see (41a). After that, the formula is fed a propositional variable $p_{\langle s,t \rangle}$; see (41b).

(41)   a. $\lambda x.\text{CONT}(x)(w) = q$ λ-abstraction

              $\lambda q.\lambda x.\text{CONT}(x)(w) = q$ λ-abstraction

       b. $\lambda q.\lambda x.\text{CONT}(x)(w) = q \; (p) =$

              $\lambda x.\text{CONT}(x)(w) = p$

more 'accessible' or given than other entities (see, e.g., Prince 1981; Gundel et al. 1993; Ariel 1990; Chiarcos 2011). For instance after the assertion of (42), John is presumably the most salient entity.

(42)   John walked into a bar.

If the speaker continues his utterance with *he*, the listener will assume that *he* refers to John. If, in contrast, the speaker continues with a more complex phrase, such as *the man*, the listener will most likely assume another referent than John is intended (Levinson, 2000).

Theories of saliency often revolve around anaphora like *he* or *she* which refer to DPs. As a consequence, it is not quite clear how the factors influencing the saliency of the entities introduced in such contexts can be transferred to our domain of investigation: reference to propositions, or more specifically, reference to propositions introduced by simple polar questions. Beaver (2004), for example, suggests that 'only entities mentioned in the previous sentence are salient'; out of these entities, the one forming the topic is the most salient (p. 28, cf. also Grosz et al. 1995). These criteria for saliency cannot be applied easily to clausally introduced entities like propositions - these cannot be treated on a par with entities introduced in thematic roles nor do they generally form the topic of sentences. In another approach, Chiarcos (2011) mentions three factors that reflect the saliency of an entity referred to, according to the speaker. He distinguishes 'choice of referring expression' (e.g, *he* vs. *the man*), 'assignment of grammatical roles' (subjects are more salient than objects) and 'word order' (more salient entities tend to be mentioned before less salient ones) (p. 109-110). The latter two factors are - again - not directly applicable to reference to propositions. As mentioned above, they do not bear a grammatical or thematic role. Furthermore, although the TP corresponding to a proposition will display some word order, this does not influence the saliency of the proposition itself. The first mentioned factor, the choice of the referring expression, is relevant for propositions. A speaker may choose to refer to a proposition using, e.g., *it*, *that* or a null form. These reflect different degrees of saliency, see, e.g., Ariel (1990); Gundel et al. (1993); Levinson (1987); Gundel et al. (2003); Hegarty et al. (2002); Chiarcos (2011). I follow these authors in assuming that the phonologically weaker proforms refer to more salient entities. In addition, I assume that propositions can become more salient than others if they have been under discussion for a while (instead of being mentioned just once), as well as whether or not they have been mentioned recently (see, e.g., Krifka 2013). Note, however, that the immediate linguistic context is also relevant for

resolving the referent of an anaphor. Consider for instance (43):

(43)   A: [I think [we should get married]$_p$]$_q$
        B1:   I think so$_p$ too.   (Needham, 2012)
        B2:   I guess so$_q$.

In (43), A introduces two propositions: the content of the entire assertion event in (43A) and the content of the reported thinking event, the embedded clause (see also Goodhue and Wagner 2018). In B1, the embedded clause is targeted by *so*. In B2, A's entire utterance is referred to. (43) shows that factors like the choice of the propositional attitude verb (*think* vs. *guess*) as well as the presence of additive particles like *too* can influence the way the anaphors are resolved and thus the interpretation of these utterances.

In Section 6.3.1, I discuss several theories on saliency and referential devices in the light of the propositional anaphors *it*, *that*, *this* and their Dutch counterparts.

2.2.4. Reification of Propositions

To deal with propositional anaphora such as *it* or *that*, a function is needed that turns a proposition into a proposition-like entity, as discussed in Section 2.2.3.3. As mentioned above, propositions are of type $\langle s, t \rangle$, i.e. functions from worlds to truth-values, whereas, pronouns like *it* and *that* are usually taken to be of type e (after composing with a salient property), which is the entity type (see Section 2.2.3). This section discusses two approaches that deal with the reification of propositions. In Section 2.2.4.1, I focus on Potts's (2002) restoration of Chierchia's (1984) work. Roughly, Potts proposes a function that turns propositions into a mass of worlds, which is the particular entity corresponding to the proposition. Another approach for the reification of propositions is proposed by Kratzer (2006) and Moulton (2009, 2015). In this account, the content function turns a proposition into a set of entities denoting its propositional content. Section 2.2.4.2 focuses on this work.

2.2.4.1. From propositions to (mass) entities of worlds (Potts 2002)

Potts (2002) investigates the semantics of parenthetical *as* and appositive *which* clauses. His analysis of the latter is of interest for the present study, since it hinges on the nominalization of propositions. Potts assumes that *which* selects a set of nominalized propositions, see (44).

(44) $[\![\textbf{which}]\!] = \lambda f \in D_{\langle e,t \rangle} \ [\lambda x^p \in D_e: \text{f(x) is true } [x^p]]$ (idem: 58)

Potts uses the function denoted in (45), based on Chierchia (1984) and Chierchia and Turner (1988), to turn propositions into entities. Potts's function builds on Chierchia's (1988) down operator, ∩, which shifts predicates to kinds (p. 359). Potts's operator takes a proposition and returns an individual, as is illustrated in (45).

(45)   If $p \in D_{\langle s,t \rangle}$, then $^{\cap p}(p) = [\iota x^p: \forall w \in p: w \leq x^p]$ and $^{\cap p}(p) \in D_e$ (Potts 2002: 57)

In (45), the proposition p is turned into a entity, ιx^p, that uniquely corresponds to p. All the worlds that describe p are part of the entity x^p as well. Thus, our output entity is a 'plural individual' that defines the proposition p. The operator $^{\cap p}$ can only apply to full clauses (Potts, 2002).

Let us consider the workings of (45) as applied to the proposition *Ed vanished*, shown in (46a). (46) shows that this proposition is true in the worlds w_1, w_2 and w_3. The $^{\cap p}$-operator turns the proposition *Ed vanished* into the entity $[w_1 \oplus w_2 \oplus w_3]$, see (46b). '$\oplus$' sums individuals together, such that the three worlds form a new mass individual. The tree in Figure 2.1 shows how such a nominalized proposition can form the argument of a *which*-clause. It shows the structure and semantics of the proposition *Ed vanished, which Ali noted*. The complementizer C carries the nominalization operator in.

(46)   a. $\lambda w \ [\textbf{vanished}_w(\text{ed})] = \{w_1, w_2, w_3\}$
         b. $^{\cap p}(\lambda w \ [\textbf{vanished}_w(\text{ed})]) = [w_1 \oplus w_2 \oplus w_3] = [\text{ED-VANISHED}]$
                    (Based on Potts 2002: 58)
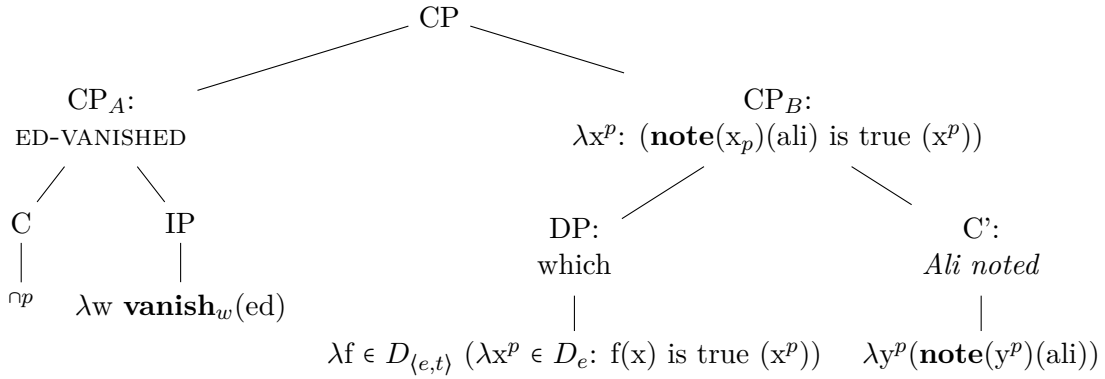
Figure 2.1.: Potts' 2002 derivation of *Ed vanished, which Ali noted.*

Potts proposal for nominalizing propositions has several consequences. First, he pre-

dicts that every proposition corresponds to an entity that we can refer to. This need not be a problem but it should be acknowledged as a consequence of (46). Second, Moulton (2009) points out that in Potts' framework propositions are equated with their nominalizations, such as a *proposal* or a *rumor*. He suggests that this is problematic because propositions can only be true or false; yet proposals or rumors can also be lame or boring and brought into our world into a certain way (Moulton, 2015).

Moreover, note that with the function above, we always single out a specific entity that corresponds to one proposition, i.e. if a rumor and a complaint in this world describe the same proposition, they must denote the same entity.[5] It seems difficult to distinguish the two from one another. Suppose that Mary spreads a rumor to Alex and Bill, that John did not go to work yesterday. Suppose that, on the same day, John in fact did not go to work and as a consequence, John's colleague's workload has risen dramatically. Now, imagine that John's colleague complains about John not going to work to his wife later that day. In this scenario, the rumor spread by Mary and the complaint of John's colleague denote the same content, but they were brought into the world in different ways. One of them spread as a rumor, the other was uttered as a complaint. Obviously, it makes sense for these two nouns to be related in terms of content, but with Potts' formula it seems difficult to distinguish between them which is important as they denote different entities. This becomes more problematic for speech events with the same content. We do not want to say that these are identical.

2.2.4.2. From propositions to propositional content (Kratzer 2006, Moulton 2009, 2015)

Another perspective to look at the reification of propositions is provided by the Kratzer (2006) and Moulton (2009, 2015) framework on content nouns and *that*-clauses. Examples of content nouns are *theory* and *claim*, in (47). These represent entities with content. As (47) shows, these nouns can take *that*-clauses as their complements.

(47)   The {theory | claim | observation} that pigs fly

Moulton (2009) follows Higgins (1972) and Stowell (1981) in arguing that such *that*-clauses are in fact modifiers of the nouns shown above - and not their arguments.[6] Thus,

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[5] I would like to thank Manfred Krifka for bringing this to my attention.

[6] Moulton (2009) shows that arguments of nouns in English are usually made available by *of*:

(i)   a.   John's repetition of his claim.
         b.   The Romans' destruction of the city.   (Moulton, 2009: 22)

in this framework *that*-clauses like the one in (47) denote the content of the content noun they modify.

Moulton (2009) follows Kratzer (2006) and argues that content nouns denote individuals with propositional content, i.e. individuals carrying information. An argument for analyzing these nouns as such is that ideas or stories can be lame, false, true, boring or exciting (see (48)), whereas propositions cannot (Moulton 2015). Propositions can be true or false, but not lame or exciting. (48) shows that content nouns can be in a predication relation with these adjectives.

(48)   The {idea | story | observation} (that pigs fly) is {lame | boring}.

The information born by the nouns is propositional content. In (49), we see Moulton's formal analysis of the content noun *story*. The noun denotes a function from entities carrying content to their intensions. The subscript in x_c indicates that we are dealing with a content variable.

(49) $[\![\text{story}]\!] = \lambda x_c \, \lambda w \, [\text{story}(x_c)(w)]$ (Moulton 2009: 27)

As was already hinted at above, the information that such a content noun bears is captured in terms of possible worlds. (50) shows that content is defined as a set of possible worlds.

(50) $\text{CONT}(x_c) = \{w': w'$ is compatible with the intentional content determined by x_c in w$\}$ (Moulton, 2015)

The content nouns *proof* and *hope* can in fact take DP arguments that are introduced by *for* or *of*:

(ii)   a.   Do you have any proof for/of that.
        b.   Do you have any hope for that. (Moulton, 2009: 23)

Moulton suggests that *that* in (ii) refers to 'DP 'versions' of their clausal complements' (p. 23). Non-derived content nouns like those in (iii) cannot occur in the same configuration.

(iii)   #The {idea | story | theory | scoop | myth | notion} of that, I don't believe. (Moulton, 2009: 23)

Yet, we know that these nouns may occur with *that*-clauses; see (iv).

(iv)   The {idea | story | theory | scoop | myth | notion} that Fred did not report his income.

Based on the data above, Moulton concludes that *that*-clauses are not arguments of content nouns, but modifiers. The *that*-clause in (47) tells us what the content of the theory, claim or observation is.

Recall from (47) that *that*-clauses may modify contentful entities like *story*. To account for this, Moulton proposes that *that*-clauses denote functions from entities with propositional content to sets of possible worlds, following Kratzer's earlier work. The complementizer, shown in (51a), forms the link between the proposition and the entities bearing such content. It takes a proposition as its argument and returns the set of entities that denote its content, see (51b).

(51)   a. $[\![C]\!] = \lambda p \; \lambda x_c \; \lambda w \; [\text{CONT}(x_c)(w) = p]$
        b. $[\![$that Bob is a fraud$]\!] = \lambda x_c \; \lambda w \; . \; \text{CONT}(x_c)(w) = \lambda w'.$ Bob is a fraud in w'
                                                                                (Moulton 2015: 9)

In (51b) we end up with a phrase of the type $\langle e, \langle s, t \rangle \rangle$, a property of contentful entities. Through predicate modification[7], this phrase can combine with a content noun such as *idea*, also of type $\langle e, \langle s, t \rangle \rangle$ (cf. (49)), to result in *idea that Bob is a fraud*.

(52) $[\![$idea that Bob is a fraud$]\!] =$
        $\lambda x_c \; \lambda w \; [\text{idea}(x_c)(w) \; \& \; [\text{CONT}(x_c)(w) = \lambda w'.$ Bob is a fraud in w']]   (ibidem)

Finally, the definite determiner can apply to this and result in *the idea that Bob is a fraud*.

With the Kratzer-Moulton conception of propositional content, we can think of contentful entities as being part of our world. Ideas are conceived of at a certain time and location and they can be perceived as exciting or boring (Moulton, 2015). I take this to be a natural way of conceptualizing propositional content. Note in addition, that in the present framework attitude verbs take arguments of type *e* (Kratzer, 2006; Moulton, 2015), making it unnecessary to assume two lexical entries for a predicate like *believe* in (53a) and (53b): in this framework, attitude verbs may take DPs like *it* as their arguments or *that*-clauses.

(53)   a.   I believe it.
        b.   I believe that pigs can fly.

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[7] This operation was originally proposed by Heim and Kratzer (1998) and defined as in (52):

(i)   **Predicate modification**:
       If α is a branching node, $\{\beta, \gamma\}$ is the set of a's daughters, and $[\![\beta]\!]$ and $[\![\gamma]\!]$ are both in $D_{\langle e,t \rangle}$
       then
       $[\![\alpha]\!] = \lambda x \in D_e.[\![\beta]\!](x) = [\![\gamma]\!](x) = 1$ (Heim and Kratzer 1998:65)

If, however, we were to assume that *that*-clauses denote propositions, we would also be forced to assume that (53a) involves a different kind of *believe* than (53b), as the two kinds of *believe* would take arguments of different types. This is undesirable. Therefore, in the next section, I consider what kind of complementation operation is required in order to compose both *that*-clauses and DPs with attitude verbs.

2.2.5. Complementation

In the last section I presented the Kratzer-Moulton framework on *that*-clauses. In this framework, *that*-clauses are properties of contentful entities. The analysis of *that*-clauses as modifiers of content nouns followed straightforwardly from this framework. However, as we saw in a previous subsection, this framework also assumes that propositional attitude verbs take arguments of type *e*. Yet, if *that*-clauses are of type $\langle e\langle s,t\rangle\rangle$, we predict a type clash if we attempt to feed the complement clause as an argument to the propositional attitude verb. To avoid such a type clash, several proposals have been made to deal with complementation in this framework. Kratzer (2006) proposed a complementation operation through Chung and Ladusaw's operation restrict. Moulton (2015) proposed a complementation operation through *that*-clause moment and predicate modification of the *that*-clause and the attitude verb (including the attitude holder). In this dissertation, I build on the work of these authors concerning the denotation of *that*-clauses and the CONTENT function. Nevertheless, I assume Elliott's event semantics and the complementation operation that is part of this semantics for reasons that will become clear below.

2.2.5.1. Complementation in event semantics with predicate modification (Elliott 2017)

Elliott's (2017) approach to complementation differs substantially from the previously mentioned approaches. Elliott uses a neo-Davidsonian event semantics, which is a rather different semantics than the one assumed by Kratzer and Moulton. In addition, he couches this semantics in distributed morphology. In Davidsonian frameworks, predicates and adverbs denote properties of events. An example of the logical form Davidson ascribes to proposition in (54a) is given in (54b).

(54)   a.   I flew my spaceship to the morning star.
       b. $\exists e[Flew(\text{I, my spaceship}, e) \wedge To(\text{the morning star}, e)]$

<div align="right">(based on Davidson 1967)</div>

In (54), there is a flying event e, involving me, my spaceship and the property of going in the direction of the morning star. The internal and external argument, as well as the event argument, are arguments of the predicate *fly*. In a *neo*-Davidsonian framework, the predicate is still a property of an event, but the internal and external argument are 'severed' from the predicate (the theme TH and agent AG respectively):

(55) $\exists e[\text{AG}(e) = Josie \wedge \text{TH}(e) = Toast \wedge buttering(e)]$ (Elliott, 2017: (27b))

In Elliott's framework, *that*-clauses denote properties of events as well. Following, e.g., Hacquard (2006) and Kratzer 2006, Elliott assumes that some events, such as speech act events or believe events, are contentful and that their content can be denoted by *that*-clauses.

Elliott further assumes a sorted type theory (following, e.g., Lasersohn 1995). In such a theory, the domain of entities does not only consist of entities like you, this table and the idea, but also of more abstract entities like events. So for Elliott the content function can describe the content of nouns phrases and of events - as long as these are contentful individuals. Depending on whether *that*-clauses occur with a contentful entity like an idea or a believe event, they describe the content of an individual variable like x or an event variable like e respectively.

There is another way in which Elliott's approach differs from the Kratzer-Moulton one. He assumes that the complementizer *that* does not bear the content function, but rather is a vacuous function from propositions to propositions. He assumes a different operator, $\mathcal{C}$ (see (56b)), for turning *that*-clauses like (56a) into properties of contentful individuals. (56c) shows the denotation of such a *that*-clause in Elliott's framework. This denotation is similar to the clauses seen in Kratzer and Moulton's frameworks.

(56)   a.   ⟦**that Shirley is upset**⟧ $= \lambda w'$. Shirly is upset in w'
         b.   ⟦$\mathcal{C}$⟧ $= \lambda w.\lambda p.\lambda x.\text{CONT}_w(x) = p$ (Elliott, 2017: 95)
         c.   ⟦$\mathcal{C}$⟧(w_0)(⟦**that Shirley is upset**⟧) $=$
               $\lambda p.\lambda x.\text{CONT}_{w_0}(x) = p$ ($\lambda w'$. Shirly is upset in w') $=$
               $\lambda x.\text{CONT}_{w_0}(x) = \lambda w'$. Shirley is upset in w' (Elliott, 2017: 65)

The reason that Elliott departs from the assumption that the complementizer bears the content function is that there are sentences like (57):

(57)   Abed said $[_{CP1}$ that Shirley is upset] and $[_{CP2}$ that Britta left].

                                                                                    (Elliott, 2017: 96)

Elliott suggests that (57) would be predicted to be infelicitous if the complementizer bore the content function. If the predicate *say* composes with the conjunction of the *that*-clause (a complex property of contentful individuals), both CPs would denote the content of the saying event. However, in that case (57) would say that there is one individual with the content *Shirley is upset* and the content *Britta left*. Yet, these propositions are distinct and therefore cannot be equated. As a result, we expect (57) to be false, but it is not.[8] For further arguments for analyzing *that*-clauses as propositions that may become predicative through $\mathcal{C}$ I refer the reader to Elliott (2017), Chapter 2.8.

Elliott further suggests that *that*-clause like (59c) compose with attitude verbs predicates like *say* (in (60a)) through predicate modification; see (60b). As mentioned before, Elliott uses a neo-Davidsonian event semantics. In his semantics, roots are predicates that only have a world and event argument - see (60a). Elliott assumes that thematic functions add 'participants' (like agents or patients) to these predicates - we turn to this below. Returning to *say* in (60a), this predicate and a predicative *that*-clause can combine through predicate modification because both are of type $\langle e, t \rangle$ (after having taken a world argument), see (60b).

(60)   a. $[\![\sqrt{say}]\!] = \lambda w.\lambda e.\text{saying}_w(e)$

            b. $[\![\textbf{say that Shirley is upset}]\!] =$

                  Predicate modification of $[\![\sqrt{say}]\!]$ and $[\![\textbf{that Shirley is upset}]\!] =$

                  $\lambda e.\ \text{saying}_{w0}(e) \wedge \text{CONT}_{w0}(e) = \lambda w'. \text{ Shirley is upset in } w'$

<div align="right">(Elliott, 2017: 65)</div>

Internal and external arguments compose with predicates differently. For these thematic roles, Elliott proposes the functions F_{int} and F_{ext} respectively:

---

[8] Elliott suggests that the counterargument that (57) in fact involves two saying events (such that the latter is not spelled out: *Abed said that p and ~~said~~ that q*) can be refuted on the basis of collective predicates like *rattled off* and *listed*, which take a sum individual composed of *that*-clauses in (58a) (shown by the infelicity of (58b)):

(58)   a.   John {rattled off | listed} that Shirley is invited and that Brita is invited.
            b.   #John {rattled off | listed} that Shirley is invited.   (Elliott, 2017: 99)

Elliott supposes that the infelicity of (58b) shows that (58a) cannot be analyzed as (59). The assumption is that the same holds for clauses that involve *say*, like (57).

(59)   John {rattled off | listed} that Shirley is invited and ~~John {rattled off | listed}~~ that Britta is invited.   (ibidem)

(61) a. $[\![F_{int}]\!] = \lambda f.\lambda x.\lambda e.\text{TH}(e) = x \wedge f(e)$

  b. $[\![F_{ext}]\!] = \lambda f.\lambda x.\lambda e.\text{AG}(e) = x \wedge f(e)$

The functions above introduce an internal argument (the theme "TH") or an external argument (the agent "AG"). Both functions take a function of type $\langle e, t \rangle$ as their argument; this must be a function from events to truth values, because only events are capable of having an internal or external argument. The workings of F_{int} and F_{ext} are sketched in Figure 2.2, which shows the composition of the proposition *Josie is buttering the toast*. As is shown in that figure, the predicate first composes with F_{int} and after that the complex composes with F_{ext}.
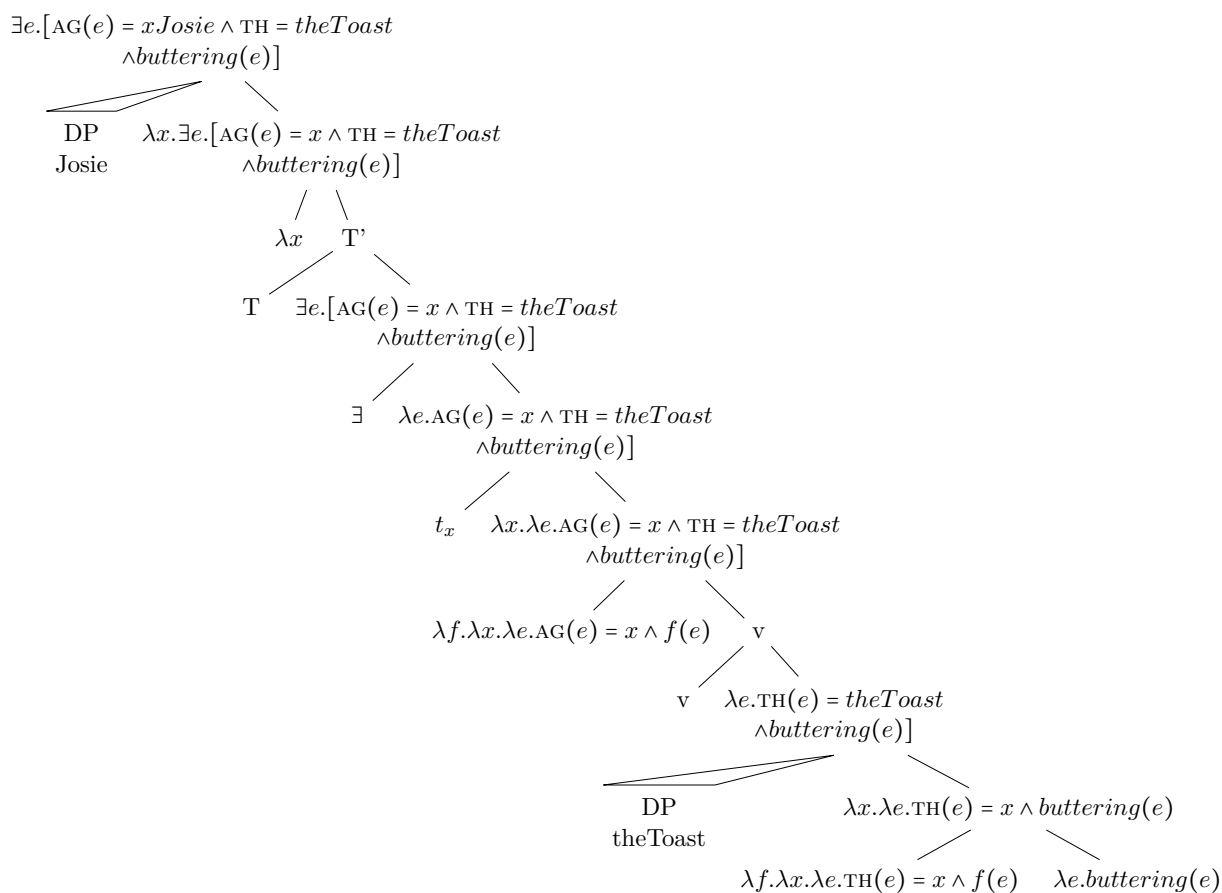
Figure 2.2.: Composition of *Josie is buttering the toast* (Elliott 2017:36)

The v in Figure 2.2 categorizes the phrase as verbal. Elliott suggests that the internal argument is merged before v and the external argument is merged after it. For a further discussion concerning the syntax of Figure 2.2, I refer to reader to Elliott (2017:36-387).

In the coming chapters, I will leave out Elliott's syntactic assumptions when discussing derivations in his framework, as these are not immediately relevant for the present work.

2.2.5.2. Complementation in event semantics vs other options

In the remainder of this dissertation, I will work with Elliott's framework on complementation. There are two reasons to do so. First, Elliott requires no additional assumptions for his complementation operation of simple sentences, like for instance the movement operations required by Moulton (2015). Second, there is a difference between the different approaches to complementation based on the Kratzer-Moulton framework and the content function, by Elliott or for instance Moulton (2015), with respect to the topic of investigation of this thesis - propositional anaphora in embedded polar responses. To see this, consider the sentence in (62):

(62)   I heard that.

In (62), *that* can be anaphoric to multiple things, depending on the context and the intention of the speaker. For one thing, *that* can refer to a recent speech act event, e.g., a recent assertion or the content of that assertion. It could however also refer to an event introduced in a previous assertion. Consider for instance (63):

(63)   A: John and Bill were talking about their holidays yesterday.
        B: I heard that.

In (63B), *that* may refer to (i) the talking event by John and Bill (such that B was actually present when the two were talking), to (ii) A's assertive speech act event, or to (iii) the proposition that John and Bill were talking about their holidays (= the content of A's assertion). The latter interpretation is perhaps more prominent if B would continue his/her utterance by *Bob informed me after overhearing them.* In that case, we know that B is not talking about the talking event (which s/he did not overhear) nor affirming that he heard A, but s/he is referring to the proposition that John and Bill talked about their holidays. I will call these the event, the speech act event and the content interpretations respectively.

On Elliott's account, due to his sorted type theory, we may say that *that* in (63B) refers to an event in each of these interpretations. We could argue that referring to a contentful event is always ambiguous between referring to the actual event and the content. In the Kratzer-Moulton line of analyses, *that* in (63) would refer to the content x in case of the content interpretation. It would refer to an event e in case of the event

interpretation. This may not seem problematic at first sight, but note that whereas it is quite natural to assume that events are part of situations and worlds, it is not clear whether we could say the same about content that is introduced clausally like the content of the speech act event by A in (63). We would need a way to retrieve this content from contentful events like speech act events or belief events. This could be stipulated of course, but on Elliott's approach such a stipulation is not necessary, due to the sorted types.

In Elliott's framework, we could simply say that *that* refers to an event in any of these possible scenarios. There is simply a hearing event to which we can attribute certain content, namely, that John and Bill were talking about their holidays. Depending on what the speaker of (63) wants to convey, we infer that s/he is talking about the event or its content.

In the remainder of this dissertation, I assume Elliott's theory in my formal explanation of the data. However, all formalisms are also compatible with Kratzer's and Moulton's approaches, as the types are the same - only the nature of complementation differs.

2.3. Propositional attitude verbs

In this section, I consider the semantics and pragmatics of propositional attitude verbs. These are of importance to the present work for the obvious reason that embedded polar responses always involve an attitude verb. In Section 2.3.1, I consider the difference between what Anand and Hacquard (2013) call representational, like *think* and *claim*, and non-representational attitude verbs, like *want* and *order*, (building on work by Bolinger 1968; Stalnaker 1984, among others). For this thesis, the former are of more interest, for reasons that will become clear soon. Therefore, in Section 2.3.2, I discuss the different subsets of representational attitude verbs: assertive and doxastic predicates. In Section 2.3.3, I consider a different property of some propositional attitude verbs that is relevant: Neg-raising.

2.3.1. Representational vs non-representational predicates (Anand and Hacquard, 2013)

Based on work by, e.g., Bolinger (1968) and Stalnaker (1984), Anand and Hacquard (2013) distinguish between representational and non-representational predicates. They argue that the former, like *think*, *claim*, *say* or *believe*, introduce information states whereas the latter, like *want*, *wish* or *command*, do not. In the following, I con-

sider the different ways in which representational predicates are different from non-representational predicates.

Mood selection   Bolinger (1968) and Farkas (1992) argue for a distinction between two sets of attitude verbs, based on the mood of their complements. Bolinger (1968) suggests that attitudes in Spanish that represent a mental state select for indicative mood, whereas predicates that are concerned with, e.g., volition select the subjunctive mood. Farkas (1992) shows the same holds for Romanian. She suggests that the predicates selecting a complement in indicative commit their subjects to the truth of the complement; whereas predicates governing the subjunctive do not. Farkas also points out that some predicates may not fall in one category or the other: depending on the mood of the complement, the meaning of some verbs may vary. *A spune* 'to say' is such a predicate in Romanian. As is illustrated in (64), Farkas (1992) shows that with an indicative complement, the predicate simply reports an assertion; with a subjunctive complement, it becomes a directive (p. 70).

(64)   Ion a   spus [că   Maria a   plecat]
        Ion has said that Maria has left

(65)   Ion a   spus [ca   Marian să   plece imediat]
        Ion has said that Maria   SUBJ leave immediately

<div align="right">(Farkas, 1992: 70)</div>

Although there are some notable exceptions (e.g., Italian *pensare* 'think' selects subjunctive, Bolinger 1968), this pattern seems to generally hold according to these authors. For more information, see Bolinger (1968); Farkas (1992); Anand and Hacquard (2013).

Concerning the selection of subjunctive mood in the complement clause, Anand and Hacquard (2013) suggest that the subjunctive generally signals preference, in contrast to the indicative (see also Bolinger 1968; Farkas 1992). Following the mentioned authors, one may say that the subjunctive signals that an utterance is not casting a judgment of truth. Therefore, the subjunctive tends to occur with non-representational attitudes.

Parentheticals and embedded V2   Anand and Hacquard (2013) point out, based on work by Hooper (1975); Rooryck (2001) and Simons (2007), that representational attitudes may also be used in parentheticals, whereas non-representational attitudes may not. This is illustrated in (66).

(66)   John is home, Mary {said | *wanted}.   (Anand and Hacquard, 2013: 18)

In addition, it has been suggested representational predicates may take verbs second (V2) clauses in German, whereas non-representational predicates cannot (see also Truckenbrodt 2006):

(67)   a.   Ich {denke | *will}, er kommt heute.
            I   think   want he comes today

        b.   Ich {denke | will}, dass er heute kommt.
            I   think   want that he today comes

                                          (based on Anand and Hacquard 2013)

Rooryck (2001) and Simons (2007) suggested that parentheticals have an evidential function. That is, they indicate a source (e.g., *John said*) or the way the information was perceived (e.g., *I heard*). Several authors have suggested that the complement of parentheticals is asserted or a weakened assertion (Hooper, 1975; Rooryck, 2001; Krifka, 2018b,a). If this is correct, it makes sense for representational predicates to occur in parentheticals, on Anand and Hacquard's assumption that these introduce an information state. According to this information state the embedded proposition is said to be true, such that it provides support for the uptake of this proposition into the CG.

Embedding epistemic modals   Anand and Hacquard (2008) show that representational predicates can embed epistemic modals, whereas non-representational predicates cannot:

(68)   a.   John {believes, argues, assumed} that the Earth might be flat.
        b.   *John {hopes, wishes, commanded} that the Earth might be flat.

                                          (Anand and Hacquard, 2008: (1))

Anand and Hacquard (2013) show that languages like French, Italian and Spanish behave similarly.

Anand and Hacquard (2013) further point out that some predicates may embed epistemic possibility modals, but no epistemic necessity modals. The emotive doxastics *fear* and *hope*, as well as the dubative *doubt* are such:

(69)   a.   John {fears | doubts} that Mary may have known her killer.
        b. #John {fears | doubts} that Mary must have known her killer.

                                      (based on Anand and Hacquard 2013)

Despite (69b), Anand and Hacquard (2013) still argue that these predicates have a

representational component, which enables them to embed epistemic *may* - see (69a). One test for this, based on (70), which is attributed to Hubert Truckenbrodt, is whether or not the attitude verb can be used in a response:

(70)   A: Kommt Peter heute?
              comes   Peter today
              'Is Peter coming today?'
         B: Ich {hoffe | *will}, dass er heute kommt.
              I   hope   want   that he today comes
              'I hope/*want that he is coming today.'

                                        (Scheffler 2008, apud Anand and Hacquard 2013)

The felicity of *hoffen* 'hope' in (70) is taken to show that the predicate indeed involves a doxastic component, in contrast to *willen* 'want' (Scheffler 2008, apud Anand and Hacquard 2013). Both *fear* and *doubt* may be used in embedded polar responses as well:

(71)   A: Is Peter coming today?
         B: I doubt it.
         C: I fear so.

Since these predicates have properties of both representational and non-representational predicates, Anand and Hacquard (2013) suggest they are 'hybrids'. For a full discussion of these predicates, I refer the reader to Anand and Hacquard (2013). For the present purposes, it suffices that such predicates do have a representational component and can thus introduce an information state. In Chapters 4 and 5, we will see that *doubt* is an outlier in other respects as well. Therefore, this predicate is discussed in more detail in these chapters.

To account for the embeddability of epistemic modals, Anand and Hacquard (2013) suggest that these modals quantify over an information state (following Hacquard 2006; Yalcin 2007). Such an information state is provided by representational predicates, but not by non-representational predicates. Therefore, the former can embed epistemics whereas the latter cannot. As such, doxastic predicates suggest that their complements are compatible with the information state of the attitude holder, i.e. with what s/he considers true or false. Non-representational predicates, in contrast, are concerned with preferences of the attitude holder and not with his/her information state.

The concrete difference between the semantics of a representational attitude verb like *believe* and that of a non-representational attitude verb like *want* is that the former introduces a domain of quantification: the doxastic state of the subject referent of the

attitude verb. The truth of the complement is evaluated with respect to this information state and not with respect to the information state of the speaker of the utterance. The predicate *want* does not introduce an information state of the subject referent relative to which its complement is interpreted; as a consequence, there is no domain of quantification for the epistemic modals (Anand and Hacquard, 2013: 21).

As was shown in (70), only representational predicates can be used in response to questions. Therefore, this set of predicates is relevant for the present work.

2.3.2. Doxastic vs assertive predicates (Anand and Hacquard, 2014)

Within the set of representational predicates, we can further distinguish between different types of predicates. For instance, there are verbs of thought, 'doxastics', as well as verbs of speech, 'assertives' (Anand and Hacquard, 2008, 2014; Anand et al., 2019). Doxastic predicates are predicates like *think* or *believe*, shown in (72), which give insight into the subjects thoughts or beliefs.

(72)   John {thinks | believes} that the cat has gone crazy.

Assertive predicates, like *claim* or *argue*, report a communicative act, see (73):

(73)   John {claims | argues} that the cat has gone crazy.

(73) reports a discourse commitment that John made previously. We can infer from (73) that John intended for *the cat has gone crazy* to become CG in the reported common ground. I follow Anand et al. (2019) in distinguishing between doxastic and assertive (or 'communicative') predicates, but do not consider Anand et al.'s inferentials, such as *demonstrate*, *suggest*, *imply*, a separate group. Like Anand and Hacquard (2014), I group these with the communicative predicates for reasons discussed in Section 2.3.2.1.

In the following I discuss the properties that Anand and Hacquard (2008, 2014) provide to set these predicates apart. In Section 2.3.2.1, focus on requirements these attitudes put on their agents. In Section 2.3.2.2, I discuss the notions of subjective and objective stances in relation to these attitudes. Finally, in Section 2.3.2.3, I discuss the default foregrounding and backgrounding patterns related to doxastics and assertives.

2.3.2.1. Non-sentient vs sentient agents

Anand and Hacquard (2008) point out that doxastics cannot have a non-sentient attitude holder, whereas assertives can - see (74).

(74)   a. #The book {believes | thinks | knows} that the Earth might be flat.
         b.   The book {argues | claims | implies} that the Earth might be flat.

                                                    (Anand and Hacquard, 2008: 46)

If assertive predicates are associated with discourse commitments indeed, one may won-
der why *the book* can make such a commitment. Anand and Hacquard (2008) suggest
that 'repositories of information' subjects like *the book* can be discourse participants
in 'generic conversations'. To see this point, consider (75), which shows that *the book*
cannot be a subject in 'episodic contexts' (p. 46).

(75)   #The book claimed one hour ago that the Earth was flat.

                                                    (Anand and Hacquard, 2008: 46)

There is, however, a subset of assertive predicates that seems to allow for non-sentient
subjects that are not repositories of information (Anand and Hacquard, 2008, 2014).
This is illustrated in (76).

(76)   The time of death {demonstrates | implies | suggests} that the butler is the
         murderer.   (Anand and Hacquard, 2008: 47)

This difference from other assertives leads Anand et al. (2019) to assume a separate
category for these predicates. To account for (76), Anand and Hacquard (2008) suggest
that such utterances involve an implicit experiencer and a causative doxastic use of the
predicates in question, like is shown in (77).

(77)   The time of death causes x to believe that the butler is the murderer.

                                            (based on Anand and Hacquard's (2008) (26))

There is thus still an experiencer involved in (76), whose information state is relevant.
For the present purposes, I group these predicates with assertives, following Anand and
Hacquard (2008, 2014), based on the explanation above and the fact that these predicates
do not seem to behave different from assertives in other respects relevant for the present
purposes.

2.3.2.2. Subjective vs objective stances

Above we saw that representational attitudes can embed epistemic modals. However,
Anand and Hacquard (2008) suggest that doxastic and assertive predicates behave dif-
ferently with respect to the embedding of epistemic modals such as *might*. They suggest

that with doxastics, the reading that arises is one of 'subjective' modality, whereas this is 'objective' in case of assertives. To see this, consider (78).

(78)   a.   Holmes believed that the butler might be the murderer.
       b.   Holmes claimed that the butler might be the murderer.

<div align="right">(Anand and Hacquard, 2008: 45)</div>

The utterance in (78a) is about what is possible according to Holmes' private mental state, whereas the utterance in (78b) is about what he believes should be general consensus. Anand and Hacquard (2008) suggest this difference becomes more pronounced in case of embedded predicates of personal taste, such as in (79).

(79)   a.   John believed that this wine tastes oakey.
       b.   John claimed that this wine tastes oakey. (Anand and Hacquard, 2008: 45)

Again, for (79a), with a doxastic, Anand and Hacquard (2008) suggest that is about John's private believes, whereas (79b) is about 'what "objectively" the wine tastes like' according to John (Anand and Hacquard, 2008: 45).

Further arguments for these predicates behaving differently when it comes to embedding objective and subjective modality arise from the data concerning scope of epistemic modals and universal quantifiers. Von Fintel and Iatridou (2003) point out that universal quantifiers cannot outscope epistemic modals, see (80).

(80)   #Every guest might be the murderer.

     a. #Its possible that all guests are the murderer. $\diamond > \forall$

     b. *For each guest x, it is possible that x is the murderer. $*\forall > \diamond$

<div align="right">(Anand and Hacquard, 2008: 39)</div>

However, Tancredi (2007) shows that in the scope of *objectively speaking*, (80) becomes grammatical, see (81).

(81)   Objectively speaking, every guest might be the murderer.

     a. #Its possible that all guests are the murderer. $\diamond > \forall$

     b.   For each guest x, it is possible that x is the murderer. $*\forall > \diamond$

<div align="right">(sic, ibidem)</div>

Anand and Hacquard (2008) show that embedding (80) below an assertive predicate improves it as well, see (82a); the same does not hold for doxastic predicates, see (82b).

(82)   a.   Holmes {assumed | implied} that every guest might be the murderer.

          b. #Holmes believed that every guest might be the murderer.

              Intended: H. believed each had the possibility to be the murderer.

<div align="right">(Anand and Hacquard, 2008: 44)</div>

According to Anand and Hacquard (2008), the data in (82) show that assertive predicates signal an objective stance, in contrast to doxastic predicates. For the present purposes, it is important to see that the different sets of representational predicates behave differently. The use of assertive predicates leads to a more objective claim, whereas doxastic predicates, being concerned with a private mental state, provide a subjective stance.

2.3.2.3. Foregrounding/backgrounding properties

As mentioned above, according to Anand and Hacquard (2008, 2014), doxastics are concerned with a private mental state, whereas assertives signal that the subject made a certain discourse commitment. Anand and Hacquard (2014) argue that, as a consequence, the two types of predicates also differ in terms of their default main points. Let us briefly consider this notion first. Simons (2007) suggests that the main point of an utterance U is the proposition, communicated by U, that makes U relevant to the discourse it occurs in (p. 1035). According to Simons et al. (2010), relevant propositions are those that address the present discourse topic, or the question under discussion (QUD) (p. 316; based on Roberts 1996/2012). To see this, consider (83). In this example, A asks 'where was Harriet yesterday?' This question forms the QUD. In order for B to give a relevant answer, s/he must say something about where Harriet was yesterday.

(83)   A: Where was Harriet yesterday?

         B: Henry discovered that she had a job interview at Princeton.

<div align="right">(Simons, 2007: 1035)</div>

In (83), the embedded clause of B's utterance forms the answer to the QUD, which makes it at-issue or the main point according to Simons (2007).

Anand and Hacquard (2014) assume that the preceding discourse may indeed affect but need not define the main point of utterances. The authors follow Abrusán (2011) who assumes that the main point is calculated by certain principles by default, if there is no effect from the discourse. Anand and Hacquard (2014) propose these default main

points of, e.g., doxastics vs. assertions, are due to the lexical entailments of the different sets of predicates. Let us consider some examples of doxastic predicates in order to see what this means.

Anand and Hacquard (2014) suggest that the default main point of doxastic predicates is the private mental state of the speaker. That is, (84)'s main point is the proposition that John's information state is compatible with the cat having gone crazy and not the proposition that the cat has gone crazy.

(84)   John thinks that the cat has gone crazy.

John having a certain belief is thus what is at-issue. Anand and Hacquard (2014) propose that this is the case because information about John's thoughts or beliefs is private. This information is 'not independently observable or verifiable' (Anand and Hacquard, 2014: 84). Therefore, this information is more valuable than information that can be independently observed or is verifiable.[9]

Let us now turn to assertives, Anand and Hacquard (2014) suggest that the default main point of those predicates is the attempted common ground update they report. To see this, consider (87).

(87)   John said that the cat has gone crazy.

The main point of (87) is that John has said something in the reported common ground (Anand and Hacquard, 2014). That is, John has attempted to make *the cat has gone crazy* common ground in the reported common ground. From this report, we can infer that John apparently thinks that the cat has gone crazy (through Gricean reasoning, i.e. on the assumption that John is not making false claims).

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[9]Note that factive predicates like *know* or *realize* are also doxastic (Anand and Hacquard, 2014). Yet, these presuppose their complement, in contrast to, e.g., *think* or *believe*. Factive predicates are generally infelicitous in embedded polar responses (cf. Simons 2007), see (85)-(86).

(85)   A: Where was Louise yesterday?
         B: ?I know/Henry knows that she was in Princeton.   (Simons, 2007: 1048)

(86)   A: Where did Louise go yesterday?
         B: #Henry forgot that she went to Princeton.
         C: #Henry remembered that she went to Princeton.
         D: #It's odd that she went to Princeton.   (Simons, 2007: 1050)

I return to the question why doxastic factive predicates like *know* or *forget* cannot be used in embedded polar responses, whereas non-factive doxastic predicates can, in Section 2.5.2.3.

An example of how the preceding discourse may influence the main point of an utterance is shown in (88) and (89). In (88B), the main point is that Mary has been saying something. In (89B), the main point is that Mary is moving to Australia; not that she has said this.

(88) A: What kind of crazy claim is Mary making these days?
      B: She told her parents she's moving to Australia. (Anand et al., 2019: (34))

(89) A: Is Mary going to be here next month? I'd like to invite her to my party.
      B: She told her parents she's moving to Australia. (Anand et al., 2019: (35))

As is pointed out by Anand and Hacquard (2014), their doxastic and assertive predicates are very similar to what Hooper (1975) calls 'weak' and 'strong' assertive predicates. Hooper suggests that these can all assert their complement clause. In case of strong assertives, like *say*, Hooper argues there are in fact two assertions, as is illustrated for the utterance (90) in (90ab).

(90) He says he wants to hire a woman.

      a. He says x.
      b. He wants to hire a woman.   (Hooper, 1975: 96)

Hooper argues that the utterance in (90) leads to both the assertions in (90ab). The complement clause is thus asserted, as well as the proposition that something has been said by the agent. Hooper further suggests that strong assertives 'represent a rather strong commitment to the truth of the complement' (Hooper, 1975: 101).

In case of weak assertives, like *think*, Hooper says that there is no 'assertion independent of the complement clause' (Hooper, 1975: 101). Therefore, the two utterances in (91) are 'almost synonymous' (ibidem). However, the two are not completely synonymous, as the parenthetical in (91b) suspends 'the implication that the speaker *knows* the proposition to be true' (ibidem). Therefore, (91b) contains additional information concerning the speaker's attitude towards the proposition that he wants to hire a woman.

(91) a. He wants to hire a woman.
      b. I think he wants to hire a woman.   (ibidem)

Note that there is no one on one correspondence between Hooper's weak and strong assertives on the one hand and Anand and Hacquard's doxastic and assertive predicates

on the other hand. Hooper's set of strong assertives for instance contains predicates that describe a communicative act (like *predict*, *say* or *suggest*), as well as predicates that describe mental acts or emotional states (like *decide* or *hope*) (Hooper, 1975: 95). For Anand et al. (2019), *hope* and *decide* are a emotive doxastic and a doxastic predicate respectively. As mentioned above, I follow Anand and Hacquard (2008, 2014) and Anand et al. (2019) in distinguishing doxastic from assertive predicates (including the inferentials, as in Anand and Hacquard 2014).

2.3.2.4. Interim Summary

In this section, I showed that, based on work by, e.g., Bolinger (1968); Stalnaker (1984); Farkas (1992); Anand and Hacquard (2008, 2013, 2014), there are different sets of propositional attitude verbs. For the investigation of the use of propositional anaphors in embedded polar responses, representational attitudes are relevant. These introduce information states and can therefore be used in embedded polar responses, as was shown in (70).

Representational predicates can be further divided into doxastic and assertive predicates. Anand and Hacquard (2008, 2014) show that these predicates differ with respect to the requirements for their subjects, the ability to form an objective stance and their foregrounding properties. In the coming chapters, we will see how these properties influence the use of these predicates in embedded polar responses. Especially for the use of English *so* and Dutch *het* 'it' , discussed in Chapter 4 and Chapter 6 respectively, the different categories of attitude verbs discussed above are relevant.

2.3.3. Neg-Raising attitudes and non-Neg-raising attitudes

There is a different level on which attitudes may differ from one another, apart from being representational or not. Attitudes are either so-called Neg-raising predicates or non-Neg-raising predicates. In Section 2.3.3.1, I consider the difference between these two sets of predicates. Thereafter, in Section 2.3.3.2, I briefly consider some accounts of Neg-raising.

2.3.3.1. Neg-raising vs non-Neg-raising predicates

Neg-raising predicates are predicates that, if they occur with matrix negation, allow for a reading on which the negation is in fact part of the embedded clause (Bartsch, 1973; Gajewski, 2005, 2007; Collins and Postal, 2014, 2017; Zeijlstra, 2017). Thus, (92a) can be interpreted as (92b).

(92)   a.   I don't believe that John did his homework.
        b.   I believe that John didn't do his homework.

For Neg-raising predicate, the relation in (93) therefore holds:

(93)   ⟦I don't believe that John did his homework.⟧ ≈
        ⟦I believe that John didn't do his homework.⟧

For non-Neg-raising predicates, this equivalence does not exist. Consider for instance the non-Neg-raiser *claim* in (94a). We see that *claim* occurs with matrix negation. Unlike in (92), there is no reading of (94a) that is similar to (94b).

(94)   a.   I don't claim that John did his homework.
        b.   I claim that John didn't do his homework.

According to Collins and Postal (2014, 2017) only few English predicates are Neg-raisers. They suggest that those in (95) all allow for Neg-raising.

(95)   appear, advisable, advise, believe, choose, expect, feel, feel like, figure, guess (dialectal), imagine, intend, likely, look like, mean, plan, reckon (dialectal), recommend, seem, sound like, suggest, suppose, supposed, tend, think, turn out, want, used to   (Collins and Postal, 2017: (13))

The data in (95) shows that there is no correlation between being a Neg-raising and a representational predicate. For instance *want* is not representational but it is a Neg-raising predicate. In addition, predicates like *say* or *hope* are representational but not Neg-raisers when occurring with *that*-clauses (in case of *hope*).[10] In the coming chapters, most prominently Chapter 6 and Chapter 5, we will see that the property of being a Neg-raising predicate or not may influence the use of predicates in rejecting embedded polar responses.

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[10] Fischer (1999) points out that *hope* in fact is a Neg-raising predicate in case it occurs with non-finite clauses, see (96).

(96)   a.   I never hope to see you again.
              ≈ 'I hope that I will never see you again.'
        b.   I don't hope that I will ever see you again.
              ≉ 'I hope that I will never see you again.'   (Fischer, 1999: 59)

2.3.3.2. Accounting for Neg-raising

There are two kind of approaches to Neg-raising. First, there are pragma-semantic approaches (see, e.g., Bartsch 1973; Gajewski 2005, 2007; Zeijlstra 2017). Second, there are syntactic approaches (see, e.g., Ross 1973; Collins and Postal 2014, 2017).

Pragma-semantic approaches to Neg-raising   The pragma-semantic approaches build on Bartsch (1973), who suggests that Neg-raising predicates bear an 'excluded middle presupposition'. That is, applied to for instance *believe*, the presupposition says that the subject believes either the complement of *believe*, *p*, or its negation ¬*p* - there is no "in between" position. So if *believe* occurs in an utterance with matrix clause negation, like (97a), the presupposition looks like (97b).

(97)   a.   John doesn't believe that the Earth is round.
        b.   John believes that the earth is round ∨ John believes that the earth is not round

(97a) entails that the first disjunct does not hold. Therefore, we infer that John believes that the earth is not round (Bartsch, 1973; Gajewski, 2005, 2007; Zeijlstra, 2017).

An important argument for the pragma-semantic line of reasoning is that the Neg-raising inference need not arise, as is shown by example (98). In (98), Bill obviously has simply no thoughts on the matter of Brutus killing Caesar. Therefore, the inference from (98b) to (99) is not licensed.

(98)   a.   Bill doesn't know who killed Caesar. Furthermore, Bill isn't sure whether or not Brutus and Caesar lived at the same time. So, naturally,
        b.   Bill doesn't think Brutus killed Caesar.

<div align="right">(Bartsch 1973, apud Gajewski 2007)</div>

(99)   Bill thinks Brutus didn't kill Caesar.   (Gajewski, 2007)

On the assumption that Neg-raising is due to a presupposition on the predicate, that may be cancelled, the lack of a Neg-raised raising in (98b) is readily explained.

Syntactic approaches to Neg-raising   Syntactic approaches to Neg-raising argue that in utterances with Neg-raising predicates and clausal negation, the negation was 'raised' from the embedded to the main clause. A rough sketch is given in (100):

(100)   I do NEG think [that Helen <NEG> owns a new smartphone]

(Collins and Postal, 2017: 3)

The negative marker between the angled brackets in the embedded clause is not pronounced, but it is this embedded negation that is interpreted (Collins and Postal, 2017).

In the following chapters, I will follow the pragma-semantic approaches to Neg-raising. One of the reasons for doing so, is that it is difficult for syntactic approaches to account for the lack of a Neg-raising interpretation in (99). In addition, there are further problems with syntactic approaches to Neg-raising. For instance, they make wrong predictions with respect to the behavior of negative indefinites (Horn, 1989), such as (101):

(101)   Nobody supposes that nuclear war is winnable.   (Horn, 1989)

If the syntactic approaches are right, the underlying structure of (101) would be as in (102):

(102)   NEG ∃-body supposes that nuclear war is <NEG> winnable   (Zeijlstra, 2017)

As a result, the reading that arises from (102) is (103a). However, the actual reading of (101) is (103b) (Horn, 1989).

(103)   a.   Somebody supposes nuclear war is not winnable
         b.   Everybody supposes that nuclear war is not winnable

To account for (101), Collins and Postal (2014) have to assume multiple covert negations in order to get the reading in (103b). This approach seems effective, but would attribute a more complicated logical form to (101) than necessary. In contrast, the pragma-semantic approach has no problem dealing with (101). It simply assumes that there is a presupposition that 'it is supposed that nuclear war is either winnable or not' (Zeijlstra, 2017: 3). If nobody supposes the former, everybody supposes the latter - on the assumption that everyone supposes either p or $\neg p$ (Horn, 1989; Zeijlstra, 2017).

For further arguments against a syntactic approach to Neg-raising, I refer the reader to Horn (1989); Gajewski (2007); Homer (2011); Zeijlstra (2017).

2.4. Questions

As for the questions, I will assume a Hamblian semantics (Hamblin, 1973).[11] In such a semantics, a question denotes the set of its possible answers. Thus, in case of a simple polar question p?, the denotation of p is $\{p, \neg p\}$. For a natural language example, see (104). The question in (104a) can be answered affirmatively or rejectingly with the propositions in (104b-c)

(104) a. Is Sam home?
       b. Sam is home. $\equiv home(Sam)$
       c. Sam isn't home. $\equiv \neg home(Sam)$

Therefore, in a Hamblian semantics, the denotation of (104a) is (105):

(105) {home(Sam), ¬home(Sam)}

Wh-questions, such as (106a), can be treated the same way. The denotation of (106a) is simply the set of possible answers, i.e., the set of individuals that could be going to school in the context - see (106b-c).

(106) a. Who is going to school?
       b. {John is going to school, Mary is going to school, ...}
       c. $\lambda x.\ x$ is going to school

The present dissertation is only concerned with polar questions such as (105a), as these can be responded to with an embedded polar response.

2.5. Discourse and the Common Ground

In this section, I introduce the frameworks on the discourse and common ground assumed in this dissertation. In Section 2.5.1, I consider Grice's (1975) view on discourse. In Section 2.5.2, I discuss the framework by Farkas and Bruce (2009), which is based on Stalnaker (1978).

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[11] Of course there are many other accounts of questions, such as Karttunen (1977); Groenendijk and Stokhof (1984). However, as I am not directly concerned with the semantics of questions in the present work, the simple and intuitive framework of Hamblin (1973) suffices for the purposes.

2.5.1. Gricean assumptions on discourse

Following Grice (1975) and many others, I assume that interlocutors generally adhere to Grice's cooperative principle when engaging in conversation. This principle is shown in (107).

(107)   Cooperative principle:
        Make your conversational contribution such as is required, at the stage at which it occurs, by the accepted purpose or direction of the talk exchange in which you are engaged. (Grice, 1975: 45)

Grice (1975) further specifies the cooperative principle by several 'supermaxims' and 'submaxims' that are divided into the categories of 'Quantity', 'Quality', 'Relation' and 'Manner' (p. 45). Relation is often redefined as Relevance (see, e.g., Levinson 2000). The categories and their maxims are shown in (108)-(111). The supermaxims falling within each of these categories are indicated with letters, whereas the submaxims are indicated with roman numbering.

(108)   Quantity:

    a.   Make your contribution as informative as is required (for the current purposes of the exchange).

    b.   Do not make your contribution more informative than is required.

(Grice, 1975: 45)

(109)   Quality:

    a.   Try to make your contribution one that is true.

    (i)   Do not say what you believe to be false.

    (ii) Do not say that for which you lack adequate evidence.   (Grice, 1975: 46)

(110)   Relation/Relevance:

    a.   Be relevant. (ibidem)

(111)   Manner:

    a.   Be perspicuous.

    (i)   Avoid obscurity of expression.

    (ii) Avoid ambiguity.

    (iii) Be brief (avoid unnecessary prolixity).

    (iv) Be orderly. (ibidem)

Of the Gricean maxims, those adhering to Quantity and Relevance are most relevant for embedded polar responses. To see this, consider the dialogue in (112).

(112)   A: Did John feed the pigs?
        B: Well, Pete certainly thinks he did.

If we assume that B will make his/her contributions as informative as required (and not more) and relevant to the present discourse, it becomes clear in (112B) that the most informative and relevant answer that B can give to A's question, is that Pete thinks that John fed the pigs. Responses like *yes* or *I think he did* would provide a more informative response to A's question, as this would commit B to a more direct answer to A's question. The fact that B, however, chose to reply (112B) shows that he may not have enough evidence at the present time to settle A's question more directly.

In addition, we will see that the Gricean maxims are relevant for the competition between pronouns (cf. Levinson 1987, 2000), to be discussed in Chapter 6.

2.5.2. Farkas and Bruce's (2009) discourse model

In Section 2.5.2.1, I start out the discussion of Farkas and Bruce's framework by first considering the notion of the common ground and their notion of the Table. After that, I discuss their treatment of assertions and questions in Section 2.5.2.2 and Section 2.5.2.3 respectively.

2.5.2.1. The Common Ground and the Table

The Common Ground   Farkas and Bruce (2009) follow Stalnaker (1978) in assuming that each discourse is accompanied by a common ground. The common ground contains the propositions that the interlocutors agree to be true. This set is kept distinct from the propositions individual interlocutors publicly committed themselves to. These propositions can but need not become common ground as well. However, as long as such propositions are not common ground, they are part of the discourse commitment set DC_x for a speaker x.

For instance, in (113), A asserts that Sam is home. Thereby, A expresses commitment to the truth of this proposition (see also Gunlogson 2001; Krifka 2017). As a consequence, this proposition is added to A's discourse commitment set DC_A. If B responds affirmingly, like in (113B), this proposition becomes common ground. In case B doesn't, like in (113B'), this proposition does not become common ground.

(113)   A: Sam is home.

         B: Yes/Yeah, he's home.

         B':   No, he isn't home.   (Farkas and Bruce, 2009: 3)

If B agrees with A, as is sketched in (113B), the proposition that Sam is home is added to the common ground and removed from A's discourse commitments. In the case of disagreement, like in (113B'), the issue of Sam being at home remains unsettled. However, the proposition that Sam is home remains part of A's discourse commitments and its complement is added to B's commitments. In this case, we end up with a conversational crisis and the speakers may agree to disagree.

The picture of discourse sketched above shows that in Farkas and Bruce's framework, the common ground and the individual discourse commitments are kept separately, in contrast to, e.g., Gunlogson's (2001) framework in which the common ground is simply a union of the interlocutors' commitment sets (apud Farkas and Bruce). Farkas and Bruce keep the common ground distinct from the individual discourse commitment sets, such that a Stalnakerian approach to assertions can be maintained. In this approach, the main property of assertives like (113A) is that they attempt to add their sentence radical to the common ground. Farkas and Bruce (2009) suggest that one of the forces driving conversation is to increase the common ground. If the common ground is simply the union of the discourse commitments, there is no 'joint effort' in increasing the common ground. In this case the common ground would just the set of shared commitments, instead of a separate component of our discourse model. The proposing nature of assertions also leads to the default nature of affirmative responses to assertions, according to Farkas and Bruce. If an assertion is affirmed, the common ground is increased. Considering the pressure to increase the common ground, this becomes a desirable move. We consider this in more detail in Section 2.5.2.2.

The Table Farkas and Bruce (2009) suggest that another force driving the discourse is the need to settle current issues. These issues form a separate component of the discourse: the Table. The Table is a 'rechristening' of the discourse component that 'records the Question under Discussion' (QUD) (Farkas and Bruce 2009:6, based on Roberts 1996/2012, cf. Section 2.3.2.3). The elements on the Table form a stack. They are syntactic objects and their denotations. The overarching goal of the conversation is thus to clear the table and increase the common ground (Farkas and Bruce 2009).

Questions and assertions raise issues on the Table. A difference between the two is that the speaker of an assertive speech act commits him/herself to the proposition, i.e.

the proposition is added to his/her discourse commitments. Askers of questions do not commit themselves to anything. They only steer the conversation towards the raised issue being resolved. In addition, the sets of 'future common grounds' projected by the item on the Table, the *projected sets*, differs for questions and assertions. For the simple polar questions, the two projected sets each consist of the common ground and the rejecting/affirmative answer to the question (e.g., $CG \cap p$ and $CG \cap \neg p$ for the question p?). For the simple assertions, the only projected set is one of the common ground and the assertion (e.g., $CG \cap p$ for an assertion p), i.e. the affirmative response is projected. For both speech acts, the discourse moves are thus clearly associated with certain goals: the settling of the issue raised by a question or the acceptance of an assertion into the common ground. Therefore, these moves steer the discourse into a certain direction (see also Krifka 2017).

In the following, I discuss assertions in more detail in Section 2.5.2.2. In Section 2.5.2.3, I turn to questions.

2.5.2.2. 'Default' assertions and the Table

Farkas and Bruce (2009) focus only on default assertions. These are defined as declarative sentences uttered with a falling intonation. The authors suggest that declarative sentences S bear the feature $[D]$. The denotation of $S[D]$ is the singleton set of the proposition that $S[D]$ denotes. This denotation enters the Table, accompanied by the syntactic structure of the sentence. An example is given in (114b) for the assertion in (114a).

(114)   a.   Sam is home.
        b. $\langle$ 'Sam is home'[D]; $\{p\}\rangle$

After the assertion of (114a), (114b) enters the Table and the denotation of (114a) is added to the discourse commitments of the speaker (cf. Gunlogson 2001). In addition, the confirmation of (114a) is 'projected'; that is, the projected set of the discourse after the assertion of (114a) is the union of the common ground and $\{p\}$. This is schematically shown for a discourse involving the speakers A and B in Table 2.2. The middle row shows the discourse commitments sets of A and B, as well as the Table. In the bottom row, we see the common ground, as well as the projected sets. In this scheme, s_1 forms the common ground before A asserted p and s_2 the common ground after A's assertion. Note that the common ground in Table 2.2 lacks the additional information that the declarative p was uttered by A. Stalnaker suggests that this proposition is added to the

A	Table	B
p	$\langle$'Sam is home'[D];$\{p\}\rangle$	
Common ground $s_2 = s_1$	Projected Set $ps_2 = \{s_1 \cup \{p\}\}$	

Table 2.2.: Schematic overview of a discourse K after A asserted p (after Farkas and Bruce's (2009) (8)

common ground. Farkas and Bruce do assume this information to go into the common ground as well, but leave it out of their schematic overviews (Farkas and Bruce, 2009: 13).

The Table in Table 2.2 must be emptied in order for the conversation to reach a stable state again. As shown, the projected common ground update involves the addition of p into the common ground. If speaker B agrees that p, this proposition is indeed added to the common ground, as both interlocutors have publicly committed to it. In this scenario, the Table is cleared. As the affirmative move was projected already, Farkas and Bruce (2009) assume this move is the least marked (cf. the discussion on the common ground above). Assertions may also be accepted by default. That is, if a speaker simply nods in response to some proposition or perhaps does not even respond, the other interlocutors may assume s/he agrees with the addition of the proposition in question to the common ground (see Farkas and Bruce's Footnote 14 for a discussion of unsignaled affirmative discourse moves).

2.5.2.3. 'Default' questions and the Table

Default polar questions[12] have commonalities with default assertions, but also differ from them. Let us consider the interrogative counterpart of (114a), see (115a).

(115)   a.   Is Sam home?
        b. $\langle$'Sam is home'[I];$\{p, \neg p\}\rangle$

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[12] Non-default questions are for instances questions that involve a bias to one answer or the other. An example is the question in (i), which involves high negation (Ladd, 1981):

(i)   Isn't there a vegetarian restaurant around here?

Ladd (1981) suggests that the speaker of (114) asks 'for confirmation of something she believes to be true' (p. 164). This is different for its counterpart not involving high negation:

(ii)   Is there a vegetarian restaurant around here?

Similar to what we saw for assertions, the sentence radical of the question above is put on the Table. In the case of questions, however, their denotation is the set of their answers (following Hamblin 1973, see Section 2.4). In addition, interrogatives bear the feature [I]. Furthermore, the utterance of an interrogative is not accompanied by a commitment by the speaker nor by a 'privileged' future common ground. After the question p? has

A	Table	B
	$\langle$'Sam is home'[I];$\{p, \neg p\}\rangle$	
Common ground s_1	Projected Set $ps_1 = \{s_1 \cup \{p\}, s_1 \cup \{\neg p\}\}$	

Table 2.3.: Schematic overview of a discourse K after A asked *Is Sam home?* (after Farkas and Bruce's (2009) (11))

been asked, two future common grounds are projected: the one including p and the one including $\neg p$. By responding that the one or the other proposition holds, speakers may settle the question raised. If a speaker responds rejectingly, there is no conversational crisis, in contrast to rejecting responses to assertions.

A further difference between assertions and questions is the time path of the common ground-acceptance/-rejection of the proposition under consideration. Farkas and Bruce (2009: 24) argue that answers to polar questions only become part of the common ground after the asker of the question indicates that s/he agrees with the answer. This might be considered strange, since one may assume that questions are asked when the speaker does not have any knowledge regarding the answer to the question. However, consider the following example:

(116)   A: Is John at home?
           B: Well, he is usually working late on Wednesdays, so he is probably still at the office.
           A: No, he told me he might leave the office early.

Here, A does not accept B's response, although s/he does not know the answer to the question s/he asked herself. The acceptance of an answer to a question can happen implicitly or explicitly, but - crucially - it can only happen after an answer has been given.

I take this to be the reason that factives cannot be used in embedded polar responses (cf. Simons 2007), as mentioned in Footnote 8; the examples are repeated in (117)-(118).

(117)   A: Where was Louise yesterday?

    B: ?I know/Henry knows that she was in Princeton.   (Simons, 2007: 1048)

(118)   A: Where did Louise go yesterday?

    B: #Henry forgot that she went to Princeton.

    C: #Henry remembered that she went to Princeton.

    D: #It's odd that she went to Princeton.   (Simons, 2007: 1050)

If a speaker asks a question, s/he is inquiring information from the addressee. However, as mentioned above, according to Farkas and Bruce, the answer first enters the Table and can only become common ground after the asker of the question agrees to it. Therefore, presupposing the answer is infelicitous. It violates both the assumption that askers of questions are not aware of the answer and the control they have over the acceptance of the answer. If, however, the predicate may lose its factivity, i.e. if it is a semi-factive, it can be used in embedded polar responses. Consider for instance the Dutch example in (119):

(119)   A: Komt Jan echt   naar het feestje?
        comes Jan really to   the party
        'Is Jan really coming to the party?'

    B: Ik weet zeker van wel.
        I   know sure of   WEL
        'I know he is for sure!'

As is shown by Hoeksema (2006), *zeker weten* 'know for sure' is not factive, see (120):

(120)   Piet wist niet zeker dat het regende, maar hij vermoedde het wel.
        Piet knew not sure that it   rained   but he suspected it   WEL
        'Piet didn't know for sure that it was raining, but he suspected it did.'

(Hoeksema, 2006)

We consider these uses in more detail in Chapter 3 and Chapter 4.

Note that more complex assertions and questions can have a different effect on the Table. As such utterances are only relevant for Chapter 4, I discuss these in that chapter, specifically in Section 4.4.1.1.

2.5.3. Brief comparison to other frameworks

There are obviously other discourse models, like for instance those presented by Gunlogson (2001); Asher and Lascarides (2003); Cohen and Krifka (2010); Krifka (2017). One

of the advantages of the framework by Farkas and Bruce over other frameworks is that Farkas and Bruce work with a joined set of commitments (the common ground) as well as individual commitment sets (in contrast to for instance Gunlogson 2001, apud Farkas and Bruce 2009). Propositions that become part of the common ground are no longer part of the individual commitment sets. This part of their theory enforces the intuition that one of the forces behind the discourse is the need to add propositions to the common ground (see Farkas and Bruce for a discussion). Therefore, we can easily derive the need for interlocutors to resolve questions. This aspect of discourse is important for the present work.

Parts of this dissertation could have also been modeled in different frameworks, although perhaps with additional assumptions. However, the analysis of *so* in Chapter 4 requires a flexible view of discourse and the issues raised by utterances. The flexibility provided by the Farkas and Bruce framework, in which propositions can remain under discussion, or on the Table, depending on whether the interlocutors agree, is crucial for Chapter 4. Therefore, the present framework is the most suitable one for this dissertation.

2.6. Summary

In this chapter, I presented the frameworks assumed in this dissertation. As considered in Section 2.2, I assume that propositional anaphors like *it* and *that* are anaphoric to the content corresponding to some proposition. In the next chapters, we will see that other assumptions must be made for, e.g., embedded polar responses involving *not* and *so*, or the Dutch construction *van wel/niet* 'of WEL/not'.

In Section 2.3, I showed the distinction between representational and non-representational attitude verbs, based on Bolinger (1968); Farkas (1992); Anand and Hacquard (2008, 2013, 2014); Anand et al. (2019). The former introduce information states and are therefore felicitous in embedded polar responses. Within this set of predicates, the difference between doxastic and assertive predicates is relevant, as these behave differently in embedded polar responses.

In Section 2.4, I presented the Hamblian framework on questions and assumed that the denotation of a simple polar question is the set of possible answers to that question (e.g., $\{p, \neg p\}$ for p?).

Finally, in Section 2.5, I presented Grice's assumptions on discourse: his cooperative principle and the maxims constituting it. In addition, I considered Farkas and Bruce's (2009) framework on discourse, which involves two important components: the common

ground (propositions agreed upon) and the Table (propositions under discussion). Using this framework, we can model assertions and questions, as well as answers to questions.

Part I.

Type I responses

3. The similative marker *van* in Dutch embedded polar responses

3.1. Introduction

This chapter is concerned with the use of *van wel/niet* (literally 'of' followed by a polarity particle) in Dutch embedded polar responses. This construction involves the preposition *van* 'of'. I will refer to this particular use of the preposition *van* - in combination with the polarity particles *wel* and *niet* - as polar *van*. In Chapter 1, we saw that polar *van* can be used in embedded polar responses, such as in (1B-C).

(1)　　A:　Heeft Jan de was　　gedaan?
　　　　　　has　　Jan the laundry done
　　　　　　'Did Jan do the laundry?'

　　　　B:　Ik denk　van wel.
　　　　　　I　think of　　WEL
　　　　　　'I think he did.'

　　　　C:　Ik denk　van niet.
　　　　　　I　think of　　not
　　　　　　'I don't think he did.'

(1B) forms an affirming response. Beside *van*, it consists of the particle *wel*, which is usually assumed to signal positive polarity (see, e.g., Zeijlstra 2004; Hogeweg 2009; Sudhoff 2016a). The response in (1C) forms a rejecting response. It involves the negative operator *niet* 'not'. We saw in Chapter 1 that *wel* and *niet* are also used in responses involving *het* 'it'. However, responses with polar *van* differ from those involving *het* 'het'. They are licensed in different kinds of dialogues and express a slightly different meaning. In this chapter, I argue that this effect is due to the uncertainty of the speaker that polar *van* may signal, due to its hedge. This chapter provides more data about polar *van*, with particular focus on the question how the meaning of polar *van* enriches the embedded polar response paradigm in Dutch. The two goals of this chapter are (i) to shed light on the use and meaning of polar *van*; (ii) to gain understanding concerning

its role in the Dutch embedded polar response paradigm. I suggest that this is due to the 'specialized' use of polar *van* in embedded responses, Dutch requires an alternative that is more neutral. In Chapter 6, I argue that this alternative is provided by *het* 'it'.

In a nutshell, in the present chapter, I argue that polar *van* involves Umbach and Gust's (2014) similarity function. Due to this function, embedded polar responses consisting of for instance *denken* 'think' and polar *van* signal that the speaker thinks that some proposition is true or false, which is *similar* to a salient proposition in the discourse. There are thus two propositions under comparison: the object of thought and the complement of polar *van*. The implicature of polar *van* is that the content of these two propositions is not identical. Responses with polar *van* in response to a question thus signal that a speaker is entertaining a proposition that is similar to the affirmative or rejecting answer. As a result, responses with polar *van* implies uncertainty or non-settledness of the proposition under reference. Therefore, these responses may also form a hedge. As such, I argue that polar *van* forms a Type I response: a 'subjective' kind of response, as mentioned in Chapter 1.

In the first section of this chapter, Section 3.2, I sketch the use of polar *van* and its restrictions. I discuss the contexts in which polar *van* can(not) occur and the predicates with which it can(not) occur. In Section 3.3, I show that polar *van* is related to another use of the preposition *van*, which has been called "quotative *van*". Throughout this chapter, I will refer to this *van* as non-polar *van*. In Section 3.4, I consider previous accounts of polar and non-polar *van*. In Section 3.5, I provide a unified analysis of both polar and non-polar *van*. I show how a similative approach to polar and non-polar *van* can explain the data and the role of polar *van* in the Dutch embedded polar response paradigm. Finally, in Section 3.6, I conclude that the hedgy responses with polar *van* enrich the embedded response paradigm by providing a less certain response than responses with *het* in certain contexts.

3.2. The distribution of polar *van*

Polar *van* can occur in different kinds of embedded polar responses. However, polar *van* cannot be used in all contexts nor with all predicates. In the following subsection, I consider the contextual restrictions that apply to polar *van*. In the subsequent subsection, I focus on the predicates with which it can occur, in contrast to *het* 'it'.

3.2.1. Contextual restrictions on polar *van*

As mentioned above, responses with polar *van* convey less certainty than those with *het* in certain contexts.[1] This property affects the contexts in which polar *van* felicitously can occur. In neutral contexts, like (1), with a neutral intonation, a response like (1B) is most naturally interpreted as indicating either that B is sure enough to respond affirmingly, but less sure than s/he would be if s/he had chosen to respond with *het*; or that B's opinion is not generally shared by others. In case the speaker places an accent on *ik* 'I', the latter effect is strengthened, which I assume is due to the focus on the speaker. This effect can also be established with embedded responses with *het*. Yet, intuitively, the effect seems to be stronger with polar *van*. I take this relatively uncertain or subjective reading to be due to the similative meaning of *van*, which makes it a potential hedge.

There are two kinds of discourses that highlight this property of uncertainty or subjectivity of polar *van*. The first kind are dialogues that involve a 'subjective' question. To see this, consider the dialogue in (2). In this dialogue, A asks a question that only concerns B - whether or not s/he wants more coffee. In such a situation, affirmative responses with *het* instead of polar *van* seem more felicitous - even if both are uttered with neutral intonation - in contrast to responses to a less subjective question like (3A).[2] I take this to be the case because for answering A's question in (2) other people's stance is not relevant and whether or not one wants more coffee is presumably not something to be unsure about.

(2)   A: Wil   je   nog koffie?
            want you   still coffee

       B: ?Ik denk van wel.
            I   think of   WEL

---

[1] This is not only affirmed by native speakers, but also a topic of discussion on forums for second language learners of Dutch, see, e.g., `http://www.dutchgrammar.com/forum/viewtopic.php?t=3506`. Some speaker seem unsure as to whether *van* encodes uncertainty. I take this into account in my analysis, see Section 3.5.

[2] Out of eight speakers asked, seven preferred *het* in (2). Half of them suggested that they prefer responses with *van* to answer a question like in (3). The other half preferred the response with *het* in that scenario, like in (2). I take this to mean that in response to a less 'subjective' question than (2A), speakers might have a slight inclination toward responses with either polar *van* or *het*. This is in line with suggestions by, e.g., Foolen et al. (2006) who suggest that the use or avoidance of non-polar *van* - a related construction discussed in Section 3.3 - differs from speaker to speaker. In case of rejecting responses, judgments were similar. Except that in this case five (instead of four) of the eight informants favored the response with *het* in the case of a question concerning the rain, in comparison to the affirmative responses. Another speaker did not agree with the judgments in (2) (who was consulted on a separate occasion). This was also one of the speakers who did not agree with the judgment reported in (8), see Footnote 5.

      C: Ik denk het wel.
           I   think it   WEL

(3)   A: Gaat het morgen   regenen?
           goes it   tomorrow rain

      B: Ik denk van wel.
           I   think of   WEL

      C: Ik denk het wel.
           I   think it   WEL

I take the judgments in (2) to show that polar *van* indicates a more subjective stance of the speaker. Such a stance is not appropriate for a response to A's question above, for which only the speaker's personal preference is relevant anyway.

    A second kind of dialogue that highlights the subjective nature of polar *van* is shown in (4). The utterances by B indicate disagreement between Jan and the speaker as to the whether Piet is coming to the party. All four responses are strictly speaking grammatical. However, the response involving *het* twice, (4B1), and the response with *het* in the first conjunct, (4B3), seem to be the least preferred ones.[3] The response that involves polar *van* in both conjuncts, (4B2), and the one involving *van* in the first conjunct, (4B4), are preferred over the others.[4]

(4)   A: Komt Piet naar het feestje?
           comes Jan to   the party
           'Is Jan coming?'

    B1:(?)Jan denkt **het** niet, maar ik denk **het** wel.
           Jan thinks it   not but I think it   WEL

    B2:   Jan denkt **van** niet, maar ik denk **van** wel.
           Jan thinks of   not but I think of   WEL

    B3:(?)Jan denkt **het** niet, maar ik denk **van** wel.
           Jan thinks it   not, but I think of   WEL

    B4:   Jan denkt **van** niet, maar ik denk **het** wel.
           Jan thinks of   not, but I think it   WEL
           'Jan doesn't think so, but I do think so.'

Note that both (4B3) and (4B4) contain polar *van* once, beside *het*. Yet, the latter is

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[3] Out of nine native speakers asked, eight considered (4B1) and (4B3) worse than the other two responses (but some rated (4B1) better than (4B3) and the other way around). One native speaker thought that (4B4) was the least preferred option.

[4] Out of nine native speakers asked, four judged (4B4) the best and five (4B2).

preferred over the former. I suppose this is so because in (4B4), polar *van* occurs in the first conjunct, such that unestablishedness of the answer is signaled early on. Beside that, in (4B4), polar *van* is associated with Jan's thoughts and not with the speaker's. Presumably, this makes (4B4) rhetorically a bit stronger - assuming that polar *van* indicates uncertainty - and therefore, it is preferred over (4B3).

I take these judgments to show that polar *van* indicates that its complement is unsettled or uncertain. As such, polar *van* provides a means for speakers to create distance from an utterance that could be perceived as negative by the listener, e.g., an utterance that signals disagreement like (4B). The suggestion that a proposition is not settled yet makes utterances that could be interpreted as disagreeing or impolite, more polite (cf. Foolen et al. 2006 on non-polar *van*). Therefore, polar *van* is suitable for situations of disagreement, such as in (4). This is different for responses with *het*, which do not signal additional uncertainty, apart from being an embedded polar response. In Section 3.3 we will see that distancing by the speaker, and thereby hedging, is a property of other uses of *van* as well. In Section 3.5, I argue that this property must be ascribed to the similarity function (Umbach and Gust 2014) that I consider to be part of the lexical semantics of polar *van*.

To conclude this section, we saw that in terms of certainty and disagreement, responses with polar *van* differ from those with *het*. There are further differences, as certain predicates cannot be combined with *het* to form an embedded response, whereas they can with polar *van* (cf. Chapter 6). I turn to this in the next subsection.

3.2.2. Predicates and polar *van*

In this section, I consider the predicates that polar *van* can and cannot occur with. I start out with the predicates that polar *van* can occur with, in contrast to *het* 'it' (cf. Chapter 2). After that, I consider predicates polar *van* cannot occur with.

Predicates polar *van* can occur with   In the previous subsection, I only considered examples with polar *van* together with the clause embedding predicate *denken* 'think'. However, polar *van* can occur with many predicates. In this respect, responses with polar *van* differ from those with *het* 'it'.

Hoeksema (2006) already illustrated the wide range of clause-embedding predicates polar *van* may occur with; see (5). In (5B), Jan does not think that Jan is coming to the party. (5C) means that Jan shouted something that is interpreted as affirming that Jan is coming to the party. In (5D), Klaas hopes that that Jan is not coming to the

party.

(5) A: Komt Piet naar het feestje?
        comes Jan to   the party
        'Is Jan coming?'

    A: Jan meende van niet.
        Jan meant   of   not
        'Jan thinks not.'

    B: Piet riep   van wel.
        Piet shouted of   WEL
        'Piet shouted so.'

    C: Klaas hoopte van niet.
        Klaas hoped of   not
        'Klaas hoped not.'   (Hoeksema 2006:(39))

Polar *van* can thus occur with different kinds of representational predicates: doxastic and
assertive ones. Note that *het* cannot form embedded responses with assertive predicates
like *zeggen* 'say' and *beweren* 'claim'; the relevant data is shown in (6B). In (6C), we
see that polar *van* can form a felicitous embedded response with *beweren* 'claim'.

(6) A: Heeft Jan de hond uitgelaten?
        has   Jan de dog   let.out
        'Did Jan take out the dog?'

    B: #Piet {beweert | zei} het {niet | wel}.
        Piet claims   said it   not   WEL
        'Piet did not claim it.'/'Piet claims it.'

    C: Piet {beweert | zei} van {niet | wel}.
        Piet claims   said of   not   WEL
        'Piet claims he {didn't | did}.'

In Section 6.4.1.1, I will argue that one of the reasons for the infelicity of the rejecting
responses in (6B) is the fact that the assertive predicates also are non-Neg-raising pred-
icates. Therefore, the rejecting responses in (6B) state that Piet did not say or claim
something. This is an uninformative response. However, the affirmative counterparts
are also out. The non-Neg-raising status of these predicates thus cannot be the only
reason for the infelicity of these sentences. Therefore, in a nutshell, in Section 6.4.1, I
first suggest that responses like those in (6) are evidentials (cf. Simons 2007). That
is, they provide 'evidence' for the embedded proposition and indicate the source of the
information. Second, I suggest that polar *van*, with its similative semantics, is very suit-
able for such uses. As a consequence, I hypothesize that polar *van* wins the competition

with *het* in these kinds of responses, i.e. polar *van* blocks the use of *het* in these cases (cf. blocking mechanisms by Beaver 2004; Krifka 2017).

I refer the reader to Section 6.4.1.1 for the full discussion.

Predicates polar *van* cannot occur with   Based on the data above, one might think that polar *van* can occur with all clause embedding predicates. However, there are restrictions to the predicates polar *van* can occur with. Verkuyl (1976) and Hoeksema (2006), for instance, points out that polar *van* cannot occur with factive predicates;[5] see (7) for an example containing the factive predicate *betreuren* 'to regret'.

(8)   #Ik betreur van {wel | niet}.
       it regret   of   WEL   not
       Intended: 'I regret so.'

Hoeksema also shows that polar *van* can occur with *zeker weten* 'know for sure', see (9a). The same holds for *menen te weten* 'think to know', as is shown in (9b).

(9)   a.   Jan wist zeker van wel.
           Jan knew sure of   WEL
           'Jan was sure about it.'
      b.   Piet meende te weten van niet.
           Piet thought to know of   not
           'Piet was under the impression that not.'   (Hoeksema 2006:8)

However, as Hoeksema illustrates, these constructions with *weten* 'know' are not factive, despite appearances (see also Hooper and Thompson 1973, who analyze *know* as a semifactive). The examples in (10) and (11) show that in combination with a negation the complex predicates from (9) do not presuppose their complements.

(10)   Piet wist niet zeker dat het regende, maar hij vermoedde het wel.
          Piet knew not sure that it   rained   but   he suspected it WEL
          'Piet didn't know for sure that it was raining, but he suspected it was.'

                                                                (Hoeksema 2006:8)

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[5] Out of nine native speakers asked, seven disliked (8). The remaining two suggested that for them (8) is fine. I assume that those speakers who accept (8) get an 'embedded announcement' reading of this sentences, which can occur with factives like *regret*; see (7):

(7)   We regret to inform you that your insurance policy is hereby cancelled.   (Simons, 2007: (41))

I refer the reader to Simons (2007) for a discussion of such cases.

(11)   Piet meende te weten dat het regende, maar iedereen wist dat hij ongelijk
       Piet thought to know that it   rained   but   everyone knew that he un.right
       had.
       had
       'Piet thought he knew that it was raining, but everyone one know he wasn't
       right about that.'

In Chapter 4, we will see that similar effects can be found for English *so* in combination
with *know* (cf. Meijer 2018).

  Hoeksema (2006) also notes that polar *van* can occur with non-factive adjectives, see
(12B), but not with factive ones, see (12C).

(12)   A: Gaat het regenen?
            goes it   rain
            'Will it rain?'

       B: Ik ben bang van wel.
            I   am afraid of   WEL
            'I am afraid so.'

       C: #Het is gek   van niet.
            it   is crazy of   not
            Intended: 'Oddly not.'

Factive predicates are not the only group of predicates that polar *van* cannot occur with.
Hoeksema also shows that polar *van* cannot occur with predicates that do not select
finite clauses, e.g., *aarzelen* 'hesitate' or *vragen* 'ask'. The infelicity of these predicates
in combination with finite clauses is illustrated in (13). Their incompatibility with polar
van is shown in (14).

(13)   a.   *Jan aarzelde dat hij de beslissing zou   nemen.
             Jan hesitated that he the decision   would take

       b.   *Piet vroeg dat het niet regende.
             Piet asked that it   not rained

                                                        (based on Hoeksema 2006:7)

       c.   *Piet probeerde dat hij de beslissing zou   nemen.
             Piet tried   that he the decision   would take

(14)   a.   *Jan aarzelde van niet.
             Jan hesitated of   not

       b.   *Piet vroeg van wel.
             Piet asked of   WEL

c.   *Klaas probeerde van niet.
       Klaas tried   of not

<div align="right">(Hoeksema 2006:7)</div>

Recall from Chapter 2 that predicates like *proberen* 'try' are non-representational in terms of Anand and Hacquard (2013). Such predicates do not introduce an information state. As discussed in Chapter 2, *aarzelen* 'hesitate' shares properties with non-representational predicates as well, just like *vragen* 'ask'. Therefore, as seen in Chapter 2, we expect these predicates to be infelicitous in embedded polar responses anyway. One can only answer a question based on a certain information state. The judgments concerning (14) are thus not surprising.

Based on the data above, Hoeksema suggests that polar *van* can occur with non-factive predicates that usually select for finite clauses (Hoeksema 2006:9). To test this hypothesis, he carried out a corpus study investigating which predicates are found with polar *van*. He included uses of polar *van* in combination with the response particles *ja* 'yes' and *nee* 'no', although in standard Dutch embedding *ja* and *nee* is generally not felicitous - with or without *van*.[6] The results of his corpus investigation, using a self-made corpus based on newspapers, books and websites, are shown in (16). The corpus consists of 950 occurrences of polar *van* in combination with *wel/niet/ja/nee* ranging from the 16th to 20th century.[7] In (16), I only consider those uses of predicates occurring with polar *van* that resulted in more than ten hits.[8] The numbers behind the predicates proportionally show how many occurrence were found with *wel* and *niet* in proportion to the total number of occurrences of polar *van* with the respective predicate.

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[6] Hoeksema suggests that polar *van* however did occur with *ja* and *nee* in an earlier stage of Dutch, before it started occurring with *wel* and *niet*. Further, he suggests that certain predicates, such as *knikken* 'nod' or *schudden* 'shake', still can occur with *ja* or *nee*, see (15). Hoeksema also reports that these predicates cannot embed polar *van* in combination *wel/niet* respectively; cf. (15). Yet, not all native speakers I consulted agree with his judgment. Out of eight native speakers I consulted, four preferred *knikken van ja* 'nod yes' over *knikken van wel* 'nod yes'. Two preferred *schudden van nee* 'shake no' over *schudden van niet* 'shake no'.

(15)   a.   Ze knikte van {ja | *wel}.
               she nodded of   yes   WEL
               'She nodded so.'
        b.   Ze schudde van {nee | *niet}.
               she shook   of no   not
               'She shook (her head) no.'   (Hoeksema 2006:2)

[7] The corpus can be downloaded from `http://www.let.rug.nl/hoeksema/datasets.htm`.

[8] For a list of predicates that occur with polar *van* less then ten times, I refer the reader to Hoeksema (2006).

(16)   *antwoorden* 'answer' (0/38), *bang* 'afraid' (32/32), *beter* 'beter' (15/16), *beweren*
'claim' (14/15), *denken* 'think' (181/196), *dunken* 'consider' (3/12), *geloven* 'be-
lieve' (77/95), *hopen* 'hope' (37/53), *knikken* 'nod' (2/35), *menen* 'think/mean'
(28/54), *schudden* 'shake' (0/57), *vermoeden* 'suspect' (14/15), *vinden* 'find' (52/53),
vrezen 'fear' (27/31), *zeggen* 'say' (52/101), *zeker weten* 'know for sure' (12/12)

We see that indeed polar *van* only occurs with predicates that are non-factive and
associated with an information state, i.e. representational predicates.

3.2.3. Interim Summary

In this section, I showed that responses with polar *van* are contextually more restricted
than those with *het* 'it'. Responses with polar *van* seem to indicate that their referent
is not settled and are therefore suitable for marking disagreement or subjectivity. As a
result, they can introduce a hedge. I also showed that polar *van* can occur with more
predicates in embedded response than *het* 'it'. I suggested that this is partially related
to Neg-raising and to the evidential use of polar *van*. I consider this case in more detail
in Chapter 6. Further, we saw that polar *van* cannot occur with non-representational
or factive predicates. Considering that polar *van* is used in embedded responses and
signals unsettledness, these limitations are not surprising. In the next section, I show
that polar *van* is very similar to another use of the preposition *van* that I call non-polar
van.

3.3. The distribution of non-polar *van*

In the last section, I discussed the distribution of polar *van*. In this section, I shed light
on another use of the preposition *van*, which I will call "non-polar *van*". It is generally
assumed that non-polar *van* is related to or the same as polar *van* (see, e.g., Verkuyl
1976, Van Craenenbroeck 2002, Hoeksema 2006, Coppen and Foolen 2012). The use of
non-polar *van* is illustrated in (17).

(17)   Dan denk ik zoiets   van: hoe komt dat nou?
than think I something.like.that of   how comes that NOU
'Than I think like how did that happen?'

As we see in (17), non-polar *van* seems to behave like a quotative marker (see, e.g.,
Verkuyl 1976, Foolen et al. 2006, Hoeksema 2006, Coppen and Foolen 2012). With
regard to the semantics of constructions involving non-polar *van*, Van Craenenbroeck

(2002) suggested that for instance in (17), the speaker is 'trying to represent the *content of what*' was thought, and that the speaker 'does not want to represent the form' of the reported statement (Van Craenenbroek 2002:57). Foolen et al. (2006) suggested that with non-polar *van* speakers can characterize what the subject of the clause-embedding predicate is thinking or feeling. The feeling or thought may be a hypothetical one, corresponding to some specific situation that is being characterized (see Foolen et al. 2006; Van Alphen 2006 and references therein). Non-polar *van* seems to provide a way to indicate some distances between the attitude holder and the complement clause (Van Craenenbroeck, 2002). In the previous subsection, we saw that polar *van* is used similarly. Both polar *van* and non-polar *van* occur mostly with predicates of thought or speech.

The use of non-polar *van* has received quite some attention from a sociolinguistic perspective in the last decade (see, e.g., Foolen et al. 2006, Coppen 2010, Coppen and Foolen 2012 and references therein). It seems that non-polar *van* was initially used mostly by higher educated males (Van Alphen 2006, citing Vecht 2003); nowadays, there seems to be no difference between social classes with respect to the use of non-polar *van*. Beside being the topic of sociolinguistic investigation, non-polar *van* is also regularly commented on in non-academic linguistic environments, as native speakers seem to be somewhat annoyed by its use. Constructions involving non-polar *van* were for instance chosen to be the most annoying word in the yearly poll of 2016 held by the *Instituut voor de Nederlandse taal* (the Institute for Dutch language) in the Netherlands and in 2017 in Flanders.[9] Supposedly, this annoyance is caused by the hedging that non-polar *van* introduces (Coppen and Foolen 2012).

As mentioned above, polar and non-polar *van* are often taken to be the same item. Although most work on non-polar *van* briefly mentions uses of polar *van*, and the other way around, few authors seem to have been concerned with the question whether there are arguments to assume that these two items are in fact the same. However, considering their distribution and hedging function, it seems very likely that the two are one and the same item. In the following, I assume that these items are indeed similar. In Section 3.3.1, I consider the kind of complements non-polar *van* can take and these data are compatible with the complements with which polar *van* occurs. In Section 3.3.2, I discuss the kind of predicates non-polar *van* can(not) occur with. We will see that there is indeed considerable overlap between polar *van* and non-polar *van* in this respect as well.

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[9] See `http://www.inl.nl/onderzoek-a-onderwijs/webrubrieken/woordenverkiezing` for more information.

3.3.1. The complements of polar *van* and non-polar *van*

As I mentioned above, polar *van* takes a polarity particle as its complement, whereas non-polar *van* takes clausal complements. On the assumption that these two items are actually the same, we should explain why we see this difference. To do so, I will first elaborate on the complements that non-polar *van* can take. Thereafter, I illustrate how we can hold on to the assumption that the two *van*'s are in fact similar.

In (18), we see that non-polar *van* can take a complement that displays verb second word order. The complement seems to represent the thought or speech of the subject directly.

(18)   Op zo'n   moment zegt hij van [$_{SpecCP}$ ik [$_C$ heb] het goed gedaan].
           on such.a moment says he of   I   have   it   good done
           'At times like those he says like: I did a good job.'

Note that the fact that the complement in (18) displays verb second need not indicate that we are dealing with a main clause. Recent studies have argued that verb second is not one of the phenomenon that belongs to the set of main clause phenomena exclusively (see, e.g., Heycock 2006; Haegeman 2009). In addition, the deictic pronoun *ik* 'I' in the embedded clause in (18) refers to the attitude holder and not to the speaker of (18), as would be expected in a main clause. This suggests that the complement of non-polar *van* in (18) is a quote-like clause and not a main clause (see Wade and Clark 1993). In the following, I will refer to complements of non-polar *van*, which display verb second, as quotes (following Foolen et al, Coppen and Foolen 2012, Van Craenenbroeck 2002, amongst others).

The second type of complement non-polar *van* can occur with are *that*-clauses (see, e.g., Foolen et al. 2006, Coppen and Foolen 2012, Van Craenenbroeck 2002).[10] An

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[10] The grammaticality of embedding *that*-clauses under non-polar *van* is not uncontroversial in the literature; see for instance Verkuyl (1976), who is unsure about the status of such constructions in Dutch, but reckons he has heard them. To me, sentences like (18) are felicitous. Other native speakers I have consulted agree. In addition, Coppen and Foolen (2012) show that examples of non-polar *van* with *that*-clauses are found in the Corpus of Spoken Dutch, see for instance (19):

(19)   ... deze theorie van dat de populaire cultuur eigenlijk in dit opzicht ook een soort
           this theory of   that the popular   culture actually in this respect also a   sort
        voedingsbodem is geweest voor de vrouwenbeweging   die in de jaren zeventig echt
        nurture-soil   is been   for   the women's-movement that in the years seventy really
        heel sterk   is opgekomen.
        very strongly is arisen
        '... this theory like that popular culture has actually been in this respect a kind of fertile soil for the women's liberation movement which strongly developed in the seventies.'

example is given in (20). Here, we see that the complementizer *that* follows non-polar *van*. The word order of the complement differs from (19) in that this is a verb-final clause. In this case, the deictic pronoun *ik* 'I' in the embedded clause does not refer to the subject of the attitude verb, but to the speaker. These properties show that complement of non-polar *van* in (20) is a *that*-clause.

(20) Op zo'n   moment zegt hij van [[$_C$ dat] ik het goed heb gedaan].
      on such.a moment says he of   that   I it   good have done
      'At times like those he says like that I did a good job.'

At first sight, it thus seems that in terms of their complements, non-polar/polar *van* are rather different. However, it is very plausible that polar *van* actually involves an ellipsis clause. Under such an assumption, the complements of polar/non-polar *van* are in fact similar. An independent argument in favor of an elliptical analysis of polar *van* is that it allows us to assume that the polarity particles occurring with polar *van*, affirmative *wel* and rejecting *niet*, are the same particles as those occurring in non-elliptical sentences, such as (21B1-2):

(21) A: Je   hebt het boek vast   niet gelezen.
           you have the book probably not read
           'You probably didn't read the book.'

      B1: Ik heb het boek wel gelezen.
           I have the boek WEL read
           'I did read the book.'   (Sudhoff, 2016b: 107)

      B2: Ik heb het boek inderdaad niet gelezen.
           I have the boek indeed   not read
           'I didn't read the book.'

On a non-elliptical account of polar *van*, one would have to assume that, e.g., *wel* and *niet* in embedded polar responses are anaphoric to propositions in the discourse. As a consequence, we would have to stipulate the existence of two anaphoric items, *wel* and *niet*, a part from the particles occurring in (21). Such a stipulation is less parsimonious

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(Coppen and Foolen, 2012: (30))

The differences found in the literature might indicate that the grammaticalization process of non-polar *van* is or was still ongoing around the time Verkuyl published his squib. For Verkuyl (1976), for instance, there must also be a prosodic break between non-polar *van* and its complement. However, Van Alphen (2009) reports a decrease in the use of hesitation marker *eh* following *van* between 1975 and 2009 (apud Coppen and Foolen 2012). In the following, I assume that non-polar *van* in combination with *that*-clauses is grammatical.

than assuming the presence of an ellipsis site, as there is no independent evidence for two types of *wel* and *not*. The ellipsis site in polar *van* explains why responses with polar *van* are anaphoric, despite not involving a proform. Note that I am assuming a deletion (and not a null anaphora) approach to ellipsis here, following Merchant (2001, 2016) and references therein. That is, I assume that ellipsis sites syntactically do not differ from non-elided phrases, except that the latter are spelled out and the former are not. For a detailed discussion of these phenomena, I refer the reader to Merchant (2016).

An ellipsis account of polar *van* reduces it to an elliptical version of non-polar *van*. I consider the proposed ellipsis account in more detail in Section 3.5.2.2.

3.3.2. Predicates non-polar *van* occurs with

In this subsection, I illustrate the differences and similarities between non-polar and polar *van* in terms of the predicates they may combine with. The overlap of predicates that the items may and may not occur with forms an argument in favor of the assumption that non-polar *van* and polar *van* are in fact the same item. Just like polar *van*, non-polar *van* is often found with verbs of speech or thought, such as *denken* 'think' or *zeggen* 'say' (Coppen and Foolen 2012), as we see in (22).

(22)   Dan zegt hij van: hoe komt dat nou?
       than says he of   how comes that NOU
       'Than he says like how did that happen?'

In the following, I first focus on verbs that non-polar *van* occurs with. Second, I discuss nouns that non-polar *van* occurs with.

Verbs   As mentioned, non-polar *van* often occurs with predicates that express speech or thought, such as (22) or (23a). Besides, it can occur with the light verb *hebben* 'to have' (Van Craenenbroeck 2002, Coppen and Foolen 2012). An example of the light verb construction is given in (23b). Importantly, in this case, non-polar *van must* co-occur with *(zo)iets* 'something (like this/that)' (Van Craenenbroeck 2002).

(23)   a.   Op zo'n   moment denk je (zoiets)   van was ik maar daar.
            on such.a moment think you something.like.that of   was I MAAR there
            'At times like those you're like: I wish I was there.'
       b.   Dan heb ik *((zo)iets)   van laat me met rust.
            then have I something.like.that of   leave me with rest
            'Then I'm like: leave me alone.'   (Van Craenenbroeck 2002:29)

With predicates like *denken* 'think' or *zeggen* 'say', non-polar *van* might also be accompanied by *zo* 'like this/that' and/or *iets* 'something'. However, in those instances the proform need not be present (see (23a)).

Van Craenenbroeck (2002) points out that non-polar *van* cannot occur with factive predicates; see (24).

(24)   *Hij verklapte (zo)   (iets)   van: ik kom ook naar dat feest.
       he   gave.away like.that something of   I   come too to   the party
       'He gave away that he would be coming to the party too.'

                                                    (cf. Van Craenenbroeck 2002:31)

On the assumption that polar and non-polar *van* are similar, the data in (24) are not surprising.

Recall from Section 3.2.2 that Hoeksema (2006) suggested that polar *van* is incompatible with predicates that do not select for a finite clause, like *vragen* 'ask', *proberen* 'try' and *aarzelen* 'hesitate'. However, I found an occurrence of non-polar *van* with *vragen* 'ask', see (25). I have not been able to find or construct examples of non-polar *van* with *proberen* 'proberen' or *aarzelen* 'hesitate'. On the assumption that polar and non-polar *van* are one and the same item, the felicity of the occurrence in (25) is surprising.

(25)   Maar toen ik vroeg van of ze   eens wat   meer over   haarzelf wilde
       but   then I asked of if she once what more about herself wanted
       vertellen en   ...
       tell   and
       'But then I asked like if she wanted to tell something more about herself and
       ...'[11]

In this respect, polar *van* and non-polar *van* thus differ. However, it seems very likely that the judgments for polar *van* in combination with, e.g., *vragen* 'ask' are due to the semantics of *vragen* 'ask'. As I repeated in Section 3.2.2 (from Chapter 2), the latter is a non-representational predicate, such that it does not introduce an information state, which is relevant for answering questions. As a consequence, such a predicate is incompatible with polar *van*, which provides an answer to a polar question. Nevertheless, it may still be used with non-polar *van*.

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[11]Found at `https://www.versiercoach.nl/13-tips-om-een-gesprek-gaande-te-houden-zonder-dat-het-gesprek-stil-valt/`, visited on 29 January 2018

Nouns   Non-polar *van* may also occur with nouns (Coppen and Foolen 2012). These nouns usually describe contentful entities, e.g., *mailtje* 'email' or *gevoel* 'feeling', as is shown in (26) and (27) respectively.

(26)   Nu   kreeg   ik een mailtje *(van): "je   was een succes".
         Now received I   an email   of   "you were a   success"
         'Now I received an email like "you were a success."'

(Coppen and Foolen 2012:265)

(27)   Ik deed het met een gevoel *(van) "had dit zo gemoeten?"
         I   did   it   with a   feeling of   had   this so must?
         'I did it with a feeling like "was this right?"'   (Coppen and Foolen 2012:265)

Again, note that in (26), deictic *je* 'you' refers to the speaker. As we saw above, this diagnostic shows that the complements of non-polar *van* like in (26) and (27) are quotes (Wade and Clark 1993). Coppen and Foolen (2012) show that in combination with nouns the presence non-polar *van* is obligatory if its complement is a quote - see (26)-(27).

   Non-polar *van* is not obligatory if its complement is a *that*-clause instead, see (28).

(28)   Nu   kreeg   ik een mailtje (van) dat je   een succes was.
         Now received I   an email   of   that you a   success was
         'Now I received an email that it had been succesful.'

The observation that *van* is not obligatory in (28) is not surprising considering that *that*-clauses are known to be able to modify nouns (cf. the discussion on complementation in Chapter 2).

   In some cases, the nouns that non-polar *van* occurs with are less clearly associated with propositional content. Consider the example below in which non-polar *van* occurs with *smile* 'smile'; this noun is less clearly associated with propositional content than for instance *mailt* 'email' or *gevoel* 'feeling'.

(29)   En   dan zit je   met 'n smile *(van) "ik heb je   geholpen".
         And then sit you with a smile of   I   have you helped
         'And then you are sitting there with a smile like "I helped you."'

(Coppen and Foolen 2012:265)

Coppen and Foolen note that nouns like *smile* are 'only vaguely reminiscent of feelings'. On the assumption that feelings have content, smiles would thus be vaguely reminiscent of such content as well. For cases like (29), we could assume that coercion plays a role, such that the feeling or thinking event related to (or causing) the *smile* can be inferred

from the smile, e.g., (29). As discussed in Chapter 2, such events are contentful.

Polar *van* can also occur with nouns, like *gevoel* 'feeling' or *indruk* 'impression', see (30B). Yet, it seems ungrammatical to combine polar *van* with *smile* in a response, as is illustrated in (30C).

(30) A: Komt Jan naar het feestje?
          comes Jan to   the party

      B: Ik kreeg {de indruk | het gevoel} van {wel | niet}.
          I got   the response the feeling of WEL   niet

      C: ?Ik kreeg een smile van {wel | niet}.
          I got   a   smile of WEL   niet

The difference between (30B) and (30C) seems to lie in the polar nature of polar *van*. I assume that the indication of polarity it gives is restricting it pragmatically. It makes sense that one could get the feeling or impression that either Jan is coming to the part or he is *not* coming to the party. It is likely that an one can have a feeling or impression that is leaning toward one of these polar options, introduced by the question. However, it seems difficult for a smile to convey that Jan *is* or is *not* coming in a simple context like (30).

Note, however, that the responses in (30B) differ from (30C) not only in respect to the nouns used, but also in terms of the determiner: (30B) involves a definite determiner and (30C) does not. Nevertheless, the use of *smile* in combination with polar *van* would not improve with a definite instead of an indefinite determiner:

(31) A: Komt Jan naar het feestje?
          comes Jan to   the party

      C: *Ik kreeg de smile van {wel | niet}.
          I got   the smile of WEL   niet

On the basis of the infelicity of (31C), we can attribute the infelicity of (30C) to the use of *smile* also and not the use of the indefinite determiner alone.

The use of an indefinite determiner in (30B) deteriorates the responses; see (32B):

(32) A: Komt Jan naar het feestje?
          comes Jan to   the party

      B: #Ik kreeg een {indruk | gevoel} van {wel | niet}.
          I got   an impression feeling of WEL   niet

I assume that the use of polar *van* is infelicitous in combination with indefinite noun

phrases, due to its pragmatics. Polar *van* always singles out a proposition that was introduced in prior discourse. This proposition is thus given and has either negative or positive polarity; marked by *niet* or *wel* respectively. Responses with polar *van* thus always refer to propositional content that is given. Therefore, I argue, they are more felicitous in combination with definite noun phrases; these also signal that the entity has been introduced already and is salient (as discussed in Chapter 2). The indefinite noun phrases rather signal that a new entity is introduced (see for instance Heim (1982)).

In fact, it turns out that polar *van* can also occur with the propositional proform *het* 'it'; see (33B). Even though this construction seems to be hardly used, native speakers consider it grammatical. The counterpart with *(zo)iets* 'something like this/that' is ungrammatical; see (33C).

(33)   A: Zou   dat mijn bruidsjapon   zijn?
             would that my   wedding.dress be
             'Could that be my wedding dress?'

       B: Ik denk het van wel.
             I think it   of   WEL
             'I think it is.'

                         (*De boeken der kleine Zielen*, part I, page 116, Louis Couperus)

       C: *Ik denk (zo)iets   van wel.
             I think so.something of   WEL
             'I think it is.'

Note that non-polar *van* can also occur with definite noun phrases, see (34) (repeated from (19)).

(34)   ... deze theorie van dat de populaire cultuur eigenlijk in dit opzicht ook een
             this theory of   that the popular   culture actually in this respect also a
       soort voedingsbodem is geweest voor de vrouwenbeweging   die in de jaren
       sort nurture-soil   is been   for the women's-movement that in the years
       zeventig echt   heel sterk   is opgekomen.
       seventy really very strongly is arisen
       '... this theory like that popular culture has actually been in this respect a kind
       of fertile soil for the women's liberation movement which strongly developed in
       the seventies.'   (Coppen and Foolen, 2012: (30))

In case of non-polar *van* the complement is usually fully spelled out and therefore need not be given already (cf. the discussion on correlates in Chapter 6). Therefore, it can occur with both definite and non-definite noun phrases.

Note that in this subsection, I only considered uses of *van* with quotes. However, each of these uses would also be felicitous with *that*-clauses, as is shown by Coppen and Foolen. I refer the reader to Coppen and Foolen (2012:267-270) for a discussion and further examples of non-polar *van.*

3.3.3. Interim Summary

In this section, I showed that non-polar *van* shows great similarities with polar *van.* However, different from polar *van*, non-polar *van* takes an overt clause as its complement. Beside that, non-polar *van* can be found with many more nouns than polar *van* could. In addition, non-polar *van* can occur with *vragen* 'ask', whereas polar *van* cannot. I take the property of indicating polarity, which defines polar *van*, to be restricting it pragmatically, such that it can only be used felicitously in case the polarity of propositions is relevant, e.g., in response to questions. Apart from that, I assume that the data above provide important support for the assumption that non-polar and polar *van* are in fact identical.

Despite assuming that non-polar and polar *van* are in fact the same, I will continue to distinguish between the two for clarity's sake.

3.4. Previous accounts of polar/non-polar *van*

The present section is concerned with previous accounts of polar/non-polar *van.* In the following I first consider two accounts of polar/non-polar *van* that consider these items quotative constructions. In Section 3.4.1, I discuss Coppen and Foolen's (2012) suggestion that non-polar *van* is a quotative marker. In Section 3.4.2, I consider Hoeksema's (2008) account of polar *van* as a marker of quotation. After that, in Section 3.4.3, I consider Van Craenenbroeck's account of non-polar *van.* He suggests that non-polar *van* is a preposition that functions as a complementizer. Finally, in Section 3.5, I evaluate these accounts and give a brief preview of the proposal presented.

3.4.1. Non-polar *van* as a quotative marker

Coppen and Foolen (2012), as well as Foolen et al. (2006) and Van Alphen (2006), suggest that non-polar *van* is a quotative marker. In the following, I briefly demonstrate, based on Van Craenenbroeck (2002), that there are several differences between non-polar *van* and constructions involving quotes.

First, Van Craenenbroeck suggests that *van*-complements are regularly preceded by the deictic demonstrative *zo* 'so/like this/that', the indefinite *iets* 'something', or a

combination of the two: *zoiets* 'such a thing' (cf. (23b)). Van Craenenbroeck suggests that this is different for constructions involving quotes. According to his judgments, these cannot occur with *zo* 'so', *zoiets* 'something like this/that' or *iets* 'something'. Yet, according to my judgments, the use of *zo* 'so' with a quote is felicitous, see (35b).

(35) a. Hij zei (zo) (iets)   van: laat me met rust!
          He said so   something from let me with rest
          'He said something like: leave me alone!'

      b. He zei (zo) (*iets):   Laat me met rust!
          He said so   something let   me with rest
          'He said: leave me alone!'

                              (based on Van Craenenbroeck 2002:55, my judgment)

According to Van Craenenbroeck, the incompatibility of *zo* 'so' and *iets* 'something' with quotes and the fact that non-polar *van* is often occurring with the items, shows that non-polar *van* is not quotative. However, note that (35b) with *zo* 'so' is fine according to my judgments and that (35b)'s acceptability is not surprising on account of work on the quote-introducing demonstrative *zo* 'so' (Coppen and Foolen 2012 and references therein), see (36).

(36) a. Dus hij zo "ja jij   hebt uh die" (...)
          So   he so yes you have uh that
          'So he goes like: "yes you have eh him"'

                              (Coppen and Foolen 2012:262, my translation)

This data sheds some doubt on Van Craenenbroecks argument that non-polar *van* occurring with *zo* 'so' makes it different from quotative constructions. However, his argumentation concerning the co-occurrence of non-polar *van* and *iets* 'something' still set *van* apart from quotes and thus holds.

Second, Van Craenenbroeck argues that 'true' quotes allow for slifting parenthetials, a construction which is illustrated in (37a). In these cases, the attitude verb does not precede the quote like in the examples shown above. Van Craenenbroeck suggests that constructions with *van* cannot be used similarly; see (37b).

(37) a. "Ik ben", zei   hij, "de allerbeste."
          I   am   said he the very.best

      b. *Ik ben, zei   hij (zoiets)   van, de allerbeste.
          I   am   said he something.like.that from the very.best
          'I am, he said, the very best.'   (Van Craenenbroeck 2002:55)

Finally, Van Craenenbroeck suggests that the fact that *van* can take a *that*-clause as its complement - recall (20) and see also (38) - is problematic for its supposed status as a quotative marker. These examples show that *van* is not just a marker for quotes or direct speech, but also for indirect speech.

(38)   Hij dacht   van dat hij daar al   eerder was geweest.
         he   thought of   that he there already before was been
         'He thought like he had been there before.'

                                                (adjusted from Van Craenenbroeck 2002:55)

Example (38) seems to provide a strong argument against a purely quotative analysis of non-polar *van*. As mentioned in Section 3.3.1, the acceptability of *that*-clauses in combination with *van* is not agreed upon by all authors. Yet, as discussed above, I assume, with, e.g., Foolen et al. (2006), Van Craenenbroeck (2002) and Coppen and Foolen (2012), that embedding *that*-clauses with non-polar *van* is grammatical.

3.4.2. Polar *van* as a marker of quotes (Hoeksema 2008)

Hoeksema (2008) investigates the syntax of polar *van*. He observes that polar *van* and its complement can only appear in the sentence-final position, as is shown in (39). Polar *van* cannot occur in the prefield. This is the position before the finite verb - *neem* 'take' in case of (39) - see (39b). Neither can polar *van* occur in the middle field. This is the position between the finite and non-finite verbs; in (39), this is the position between *neem* 'take' and the particle *aan* 'on'; see (39c).

(39)   a.   Ik neem aan van niet.
              I take on of not
              'I assume not.'

        b.   *Van niet neem ik aan.
              of   not take I   on
              'I assume not.'

        c.   *Ik neem van niet aan.
              I take of not on
              'I assume not.'   (Hoeksema 2008)

This restriction does not exist for run-of-the-mill prepositional phrases with *van* 'of', like *van pindakaas* 'of peanut butter'; see (40).

(40)   a.   Van pindakaas   zullen ze   wel niet houden.
              of   peanut.cheese shall they WEL not hold

'Peanut butter they probably won't love.'

b.   Ze   zullen wel   niet van pindakaas   houden.
       they shall   WEL not of   peanut.cheese hold
       'They probably won't love peanut butter.'

c.   Ze zullen wel   niet houden van pindakaas.
       she shall   WEL not hold   of   peanut.cheese
       'They probably won't love peanut butter.'   (Hoeksema 2008)

On the assumption that polar *van* still has prepositional properties, this difference is unexpected. To account for the data, Hoeksema proposes that *van* heads a so-called ColonPhrase ':P' (see Kaan 1992, apud Hoeksema 2008, Koster 1999, De Vries 2006b). The ColonPhrase is like a coordination. It was proposed to account for the extrapostion of CPs. De Vries (2006b) and Hoeksema (2008) suggest that :P may also be used to account for direct speech reports, such as the one in (41). In (41), the : head is null.

(41)   Piet heeft [e] gezegd: "Ik verlaat je   nooit."
         Piet has   said   I   leave   you never
         'Piet has said: "I will never leave you."   (Hoeksema 2008)

On the :P analysis, the verb phrase *heeft gezegd* 'has said' and the quote in (41) are conjoined by :P. The quote 'specifies' the empty object *e* of the verb phrase. This means that the verb phrase 'adds information' to the object *e* (see De Vries 2006a for more information on so-called 'specification coordination'). Applying this analysis to polar *van* gives us the result in Figure 3.1. Here, we see that *van* heads :P, which coordinates *wel/niet* and the verb phrase. The polarity adverb *niet* thus specifies the object *e*.

In order to rule out (42), Hoeksema suggests that only non-empty phrases can be coordinated. Therefore, *e* and *van niet* cannot be conjoined in (42). However, *van niet* and the verb phrase, including *e*, *can* be coordinated, as is shown in Figure 3.1.

(42)   *Ik mag [[e] : [van niet]] hopen.
         I   may   of   not   hope
         'I may hope not.'

By suggesting that polar *van* is similar to quotative constructions with :P, Hoeksema's main prediction is that polar *van* behaves like quotative constructions. Therefore, he predicts that polar *van* occurs with those predicates that also allow for complements that are quotes. However, we observed in Section 3.2.2 that polar *van* can occur with e.g., *beweren* 'claim'. Yet, this predicate cannot embed quotes (Krifka, p.c.), see (43):

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[12]In this notation, I follow Hoeksema (2008).

```
                          CP
                        /    \
                    DP_j      C'
                     |       /   \
                     D     C      IP
                     |     |     /   \
                     ik    V_i  DP    I'
                          /    |     /  \
                        hoop  t_j   I   :VP
                                   / \    \
                                  VP   :'^12
                                 / \    /    \
                               t_j  V"  :     AdvP
                                   /  \  |      |
                                  NP   V van   Adv
                                  |    |        |
                                  e    t_i     niet
```
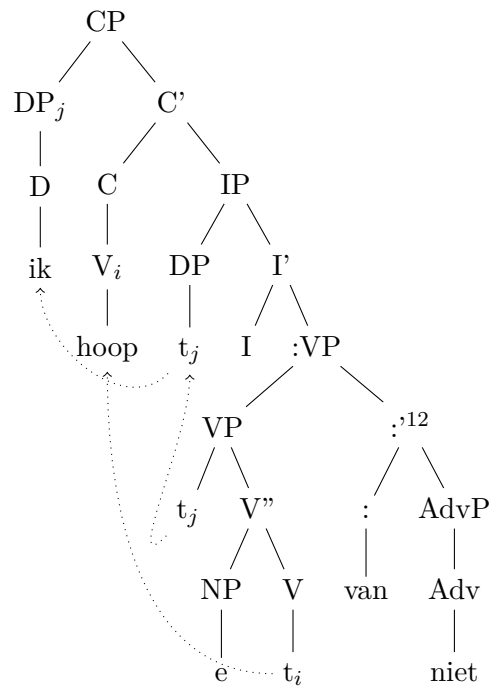
Figure 3.1.: Hoeksema's analysis of polar *van* (Hoeksema 2008:5)

(43)   ?Jan beweert: 'Ik ben gek.'
       Jan claims   I   am crazy
       Intended: 'Jan claims: "I am crazy."'

The same holds for *geloven* 'believe', which can occur with polar *van*, but cannot embed quotes as easily as other predicates, see (44) (see also Maier 2017).

(44)   ?Jan gelooft: 'Ik ben gek.'
       Jan claims   I   am crazy
       Intended: 'Jan claims: "I am crazy."'

This property of these verbs, that they may occur polar *van* but not with quotes, does not follow from Hoeksema's account.

3.4.3. Non-polar *van* as a prepositional complementizer (Van Craenenbroeck 2002)

In the previous section, we established that polar/non-polar *van* cannot be analyzed as resembling quotative constructions. In the present section, I explore Van Craenen-

broeck's analysis of non-polar *van* as a prepositional complementizer. I first consider his arguments for analyzing non-polar *van* as such an item. Second, I consider the details of Van Craenenbroeck's syntactic analysis.

Non-polar *van* as a complementizer   As mentioned above, Van Craenenbroeck (2002) argues that non-polar *van* is a preposition that functions as a complementizer. The idea that non-polar *van* is like a complementizer stems from utterances like (45a). Here, we see that *van* must occur adjacent to the embedded clause. The same holds for the complementizer *dat* 'that' in (45b). However, this does not apply to *dit* 'this', which introduces a quote in (45c).

(45)   a.   Hij zei <*van> voor   hij wegging <van>: 'ik kom niet meer terug'.
            he said of   before he left   of   I   come not more back
            'Before he left, he said something like: "I will not come back."'

       b.   Hij zei <*dat> voor   hij wegging <dat> hij niet meer terug zou
            he said that   before he left   that he not more back would
            komen.
            return
            'Before he left, he said that he would not come back.'

       c.   Hij zei   <dit> voor   hij wegging <dit>: 'Ik kom nooit meer terug.'
            he said this before he left   this   I   come never more back
            'Before he left, he said this: "I will never return."'

                                                           (Van Craenenbroeck 2002:56)

The data in (45) make it tempting to assume that non-polar *van* indeed is a complementizer. However, Verkuyl (1976) suggests that the use of *van* in combination with *wel/niet* is problematic for analyses of non-polar *van* as a complementizer. I assume that the problem Verkuyl sees is that polar *van* does not seem to take a propositional argument. However, with our elliptical analysis of polar *van*, briefly sketched in Section 3.3.1, this is no longer a problem. Yet, what I do consider to be a problem for the complementizer analysis is that non-polar *van* can embed *that*-clauses, as was shown in (20). One would expect the complementizers to be in complementary distribution, which is clearly not the case. However, one could also assume a split CP, which could involve multiple complementizers (cf. Hoekstra 1993a,b; Van Craenenbroeck 2002), as Van Craenenbroeck indeed does. I return to this issue in more detail below.

Van Craenenbroeck's syntactic proposal   Van Craenenbroeck assumes that non-polar *van* is base-generated as a preposition, but moves to the C position. This is shown

in Figure 3.2. The complement of non-polar *van* is either a null proform, or an overt proform involving *zo*, *iets*, or *zoiets*. In SpecPP, we find the embedded clause or quote. The CP proform is restricted by the specifier of *van* in terms of its meaning (in making
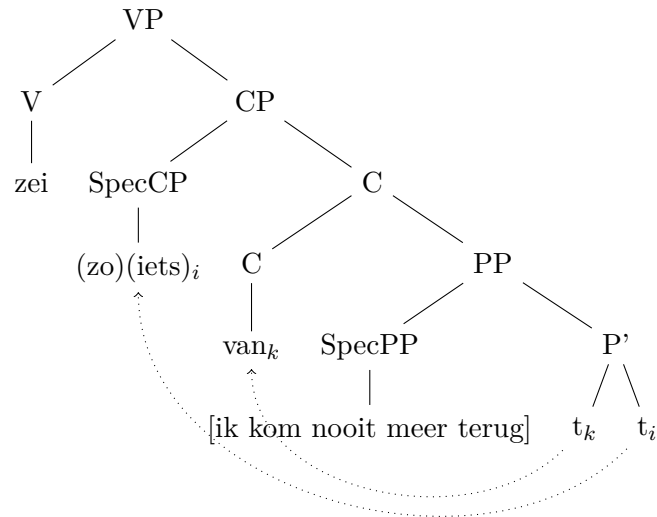
Figure 3.2.: Van Craenenbroeck's proposal for non-polar *van* (Van Craenenbroeck 2002:59)

this assumption of restriction, Van Craenenbroeck follows Zwart 2000). As a result, the meaning of the clause in (46) is: Jan said something like I will never return.

Van Craenenbroeck suggests that non-polar *van* creates a 'distance' between its subject and its complement, due to the comparison established by non-polar *van* in the CP. He also suggests that the different uses of the preposition *van* all involve some kind of dissociation. In the case of non-polar *van* this is dissociation between the null proform, the object of thought or speech, and the clause that forms the specifier of *van*. This dissociation, according to Van Craenenbroeck, 'concerns the *formal* properties of the embedded clause' (2002:59-60) I take this to mean that non-polar *van*, as Van Craenenbroeck points out earlier, seems to convey that its complement clause represents the *content* but not the *form* of the quote in SpecPP.

In other uses of *van*, for instance the spatial use of the preposition, which is shown in (46), the dissociation concerns physical distance: Jan is away from Brussels.

(46)   Jan komt van Brussel.
        jan comes of   Brussels

'Jan comes from Brussels.'   (Van Craenenbroeck 2002:47)

Turning to polar *van*, Van Craenenbroeck suggests that this use of *van* does involve the same dissociation mechanism as non-polar *van* and *van* in (46). Van Craenenbroeck can thus explain the weakened commitment of polar *van* and thereby the hedgy reading that arises. However, there are also possessive, partitive and similative uses of *van*, that do not seem to involve dissociation, see (47)-(49) respectively:

(47)   Dat   boek is van mij.
       That book is van me
       'That book is mine.'   (Coppen and Foolen 2012:262)

(48)   Een van mijn tantes woont in die   straat.
       One of   my   aunts   lives   in that street
       'One of my aunts lives on that street.'   (Coppen and Foolen 2012:263)

(49)   Hij heeft iets   van zijn vader.
       he has   something of   his   dad
       'He resembles his dad.'   (Coppen and Foolen 2012)

These examples thus show that the notion of dissociation cannot explain all uses of *van*. One could argue that *van* in (46) is related to polar/non-polar *van*, whereas the *van*'s in (47)-(49) are not.

A property of Van Craenenbroeck's proposal that could be problematic is his comparative CP layer, which I mentioned above. The idea that the CP-layer involves comparison stems from Hoekstra (1993a,b). On the basis of sentences like (50), which are acceptable in dialectal varieties of Dutch, Hoekstra suggests that the CP is split into multiple CP-layers. One of these is comparative.

(50)   Dat is niet zo gek   als of dat hij gedacht had
       that is not as crazy like if that I   thought had
       'That's not as crazy as I had thought.'   (Hoekstra, 1993b: (1b))

As mentioned above, (50) is only acceptable in dialectal varieties of Dutch. In standard Dutch (51) is the grammatical counterpart of (50). Here, only *als* 'like' is licensed.

(51)   Dat is niet zo gek   {als | *of | *dat} ik gedacht had
       That is not as crazy like   if   that I thought had
       'That is not as crazy as I had thought.'

Hoekstra takes (51) to show that 'comparative contexts' license the use of the comple-

mentizer *als* 'like'. Van Craenenbroeck suggests that this comparative CP-layer is the layer non-polar *van* is hosted in as well. Whether multiple CP-layers are indeed available in standard Dutch as well is unclear to me, considering that (50) is ungrammatical in standard Dutch. There is thus little evidence for this assumption. However, in order to account for uses of non-polar *van* in combination with a *that*-clause, we would need such a layer on Van Craenenbroeck's account. In Section 3.5, we will see that assuming a comparative CP-layer is not necessary for analyzing *van*.

The present proposal builds on Van Craenenbroeck's work in the sense that the analysis presented in Section 3.5 also proposes that *van* involves a comparison of propositions. The present proposal aims to spell out the semantics of this comparison.

3.4.4. Interim Summary

In this section, I discussed three approaches to polar/non-polar *van*. In Section 3.4.1, I discussed Coppen and Foolen's suggestion that non-polar *van* is a quotative marker. Based on Van Craenenbroeck's work, we saw that this hypothesis cannot be maintained. In Section 3.4.2, I considered Hoeksema's (2008) account of polar *van* as the head of a :P, a coordinating and quotative construction. I showed that this approach is not tenable. In Section 3.4.3, I considered Van Craenenbroeck's (2002) approach to non-polar *van*. Van Craenenbroeck suggested that non-polar *van* is a complementizer in a comparative CP. I consider this account unattractive, as it is unclear whether such a CP is available in Dutch. In addition, Van Craenenbroeck's proposal remains vague concerning the semantics of the comparison that *van* makes.

Note that there are commonalities between Hoeksema's (2008) analysis and Van Craenenbroeck's analysis. Both argue that *van* links a propositional proform to a propositional complement. In Hoeksema's analysis, polar *van* connects the argument of the verb phrase to the polarity particle. In Van Craenenbroeck's analysis, non-polar *van* forms the link between the propositional proform and its 'restrictor': a quote or *that*-clause. This aspect is also present in the proposal sketched in Section 3.5.

In the following, I assume that non-polar/polar *van* involves a similative component. Therefore, it is similar to the similative preposition *van* shown in (52) (repeated from (49)).

(52)   Hij heeft iets   van zijn vader.
       he has   something of   his dad
       'He resembles his dad.'   (Coppen and Foolen 2012)

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(52), which literally means that subject referent possesses something of his dad, conveys that the subject referent resembles his dad. Coppen and Foolen (2012) suggest that non-polar *van* grammaticalized out of this similative use of the preposition *van*.

In case of non-polar/polar *van*, the two nominal phrases linked can be a propositional proform like *het* (as shown in (33B)), *zoiets* or a null proform, on the one hand, in combination with a nominal phrase denoted by a *that*-clause or a quote, on the other. In the next section, Section 3.5, I sketch an analysis along these lines.

3.5. Proposal: A unified account of polar/non-polar *van*

In this section, I propose an analysis of non-polar *van* that can be extended to polar *van*. This analysis is based on the similative use of the preposition *van*, mentioned in (52). In Section 3.5.1, I first consider the different kinds of complements non-polar *van* can take and their semantic types. In Section 3.5.2, I explore the notion of similarity based on Umbach and Gust (2014). I consider how the notion of similarity can be applied to the different uses of non-polar *van*. Then, I extend this analysis to polar *van*. Finally, in Section 3.5.3, I explain the main properties of polar and non-polar *van* and answer the main questions of this chapter.

3.5.1. The complements of non-polar *van*

We saw in Section 3.2.2 that non-polar *van* can embed quotes and *that*-clauses. (53) (repeated from (26)) shows an example of the former. In this example, the complement of *van* displays verb second and the second person singular pronoun *je* 'you' in the complement refers to the speaker. Thus, the speaker was sent an email that said that the speaker was a success. In Section 3.3.2, I argued that this shows that the complement of *van* is a quote.

(53)   Nu   kreeg   ik een mailtje *(van): "je   was een succes".
        Now received I an email   of: "you were a   success"
        'Now I received an email like "you were a success."'

<div align="right">(Coppen and Foolen 2012:265)</div>

In the case of embedded *that*-clauses, deictic elements are interpreted as they would be in the matrix clause. (54) (repeated from (28)) illustrates this. As mentioned earlier, the pronoun *je* 'you' refers to the addressee and not to the speaker of (54).

(54) Nu   kreeg   ik een mailtje (van) dat je   een succes was.
Now received I an email   of   that you a   success was
'Now I received an email that you had been succesful.'

So, non-polar *van* may embed quotes and *that*-clauses. The question is what these two have in common. In the following, I argue that both denote properties of contentful entities.

That-clauses   In Chapter 2, I presented the Kratzer-Moulton framework on *that*-clauses. In this framework, *that*-clauses are considered properties of contentful entities, see (55).

(55)   ⟦**that Bob is a fraud**⟧^{c,w} = $\lambda x.\lambda w.[$CONT$(x)(w)= \lambda w'.$ Bob is a fraud in $w']$

(55) thus denotes a set of entities with the content that Bob is a fraud. In a sorted type theory, these entities could be, for instance, speech events or ideas.

Quotes   As for quotes, Maier (2017) suggest that embedded quotes denote the form of utterance events.[13] According to this line of reasoning, the sentence in (56a), which involves a quote, should be analyzed as in (56b). (56b) says there is a saying event and attributes a form to this event. The form is the quote. Following, Maier (2017), I use Quine corners to refer to the form, see (56b).

(56)   a.   Mary said: 'No, I'll never forgive you.'
        b. $\exists e[say(e) \wedge agent(e) = mary \wedge time(e) < now \wedge form(e) =$
              ⌜No, I'll never fogive you⌝   (Maier, 2017: (8))

In (56b), we see that *form* is a property of the saying event. Maier (2018) introduces *form* as part of the operator QUOT, see (57a). This operator takes an argument of type u, the type of linguistic form (Potts, 2007),[14] and returns a function from entities to truth values, which yields true if the entity indeed has the specified form.[15] (57b) shows that QUOT can combine with any phrase α. However, QUOT will compose with the linguistic form of α (indicated by ⌜ and ⌝) and *not* its denotation (Maier, 2018).

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[13] Concerning quotes in combination with the predicate *think*, Maier (2017) suggests that those represent inner speech reports. For a discussion, I refer the reader to Maier 2017, pages 264-265.

[14] Maier (2018) writes: 'D_u is the set of finite strings of letters in some (phonetic) alphabet, e.g. `abs1f` $\in D_u$ and `I am an idiot` $\in D_u$.' (p. 3)

[15] Maier (2017) notes that the equality sign in (56) 'may be an oversimplification' (Footnote 6, page 263), because we hardly expect quotes to literally represent the speech events they are anaphoric to. I refer the reader to Maier's Footnote 6 for a discussion and further references.

(57)   a. $[\![\text{QUOT}]\!] = \lambda f_u.\lambda x_e[form(x, f)]$ (Maier, 2018: (5))

         b. $[\![\text{QUOT } \alpha]\!] = [\![\text{QUOT}]\!](\ulcorner\alpha\urcorner)$ (Maier, 2018: (6))

In the following, I simply present quotes as functions from entities to truth values, as is shown in (58). In line with our denotation of content, I will use small caps.

(58) $\lambda x.$ FORM$(x) = \ulcorner$I'm crazy$\urcorner$

Following these suggestions, the difference between *that*-clauses and quotes is that *that*-clauses specify content whereas quotes specify form of contentful entities. It is important that both thus are properties of contentful entities.

In this section, I showed that the two complements non-polar *van* can take - *that*-clauses and quotes - are both properties of contentful entities and thus of type $\langle e, t \rangle$. In the following sections, I put forth an analysis of non-polar *van* as a similarity marker.

3.5.2. Similarity

In my analysis of non-polar *van*, I follow Coppen and Foolen (2012), who assume that non-polar *van* evolved out of the similative use of the preposition *van*, shown in (59) (repeated from (49)).

(59)   Hij heeft iets   van zijn vader.

       he   has   something of   his   dad

       'He resembles his dad.'   (Coppen and Foolen 2012:263)

In (59), similative *van* links *zijn vader* 'his dad' to *iets* 'something'. The whole prepositional phrase conveys the literal meaning 'something of his dad'.

As mentioned in Section 3.4.3, Van Craenenbroeck already suggested that non-polar *van* involves a comparison between the content of two propositions. I take this to be due to the similative meaning of non-polar *van* (and not the comparative CP-layer, like Van Craenenbroeck suggested). In the following section, Section 3.5.2.1, I introduce Umbach and Gust's (2014) framework on similarity. In Section 3.5.2.2 I explore how this account can be applied to similative *van* in (59), as well as non-polar *van* and polar *van*.

3.5.2.1. Similative demonstratives (Umbach and Gust 2014)

Umbach and Gust (2014) analyze the German similarity demonstrative *so* 'such', which may occur with nouns and gradable adjectives. *So* may be used anaphorically and deictically. Where possible, I restrict the discussion to the anaphoric uses, as these are

more similar to the use of *van*. The use of *so* is illustrated in (60) In (60a), *so* modifies the adjective *groß* 'tall'; in (60b), *so* is taken to modify the determiner *ein* 'a' or the noun *Auto* 'car'.[16] The latter use is coined adnominal by the authors.

(60) a. Berta ist 180 groß. Anna ist auch so groß.
          'Berta is 1,80. Anna is that tall, too.'
      b. Bertas Auto hat eine Ladeklappe. Anna hat auch so ein Auto.
          'Berta's car has a hatch. Anna has a car like that, too.'

                                                    (Umbach and Gust 2014:76)

In both sentences above, *so* indicates there is similarity between two entities in terms of size or the property of having a hatch, respectively.

Umbach and Gust argue that *so* in (60) does not refer to a(n adhoc) kind (as has been suggested by, e.g., Carlson 1980), but to an individual. One of the arguments for this position lies in the observation that *so* seems to be rather insensitive to whether or not a kind counts as established. This is different for generic statements. Carlson (1977) pointed out that these statements can only be formed with definites in combination with a well-established kind; compare *the Coke bottle* and *the green bottle* (see Krifka et al. 1995: 11, who base this comparison on Carlson 1977, who attributes *the green bottle* to Barbara Partee). Umbach and Gust point out that if we compare generic statements and *so*, we see that they behave differently. (61) and (62) illustrate this. Only in the first context, in which cars are considered, a generic reading is available for *dieses/diesen* 'this'. In the second context, in which tables are discussed, it is not. Presumably, this is due to the tables in the bar not being a well-established kind. Umbach and Gust point out that *so* can have a generic reading in both contexts. They also suggest that a generic reading for (62a) would become available in a shop with tables.

(61) Context: speaker points to a car in the street.

      a. Dieses Auto will Anna haben.   generic reading available
          'Anna wants to have this car.'
      b. So ein Auto wil Anna haben.   generic reading available
          'Anna wants to have such a car.'   (Umbach and Gust 2014:77)

(62) Context: speaker points to a table in a bar:

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[16] Umbach and Gust show that 'the semantic effect is the same regardless of whether *so* is taken to modify the determiner or the noun' (p. 76); see their Section 2.4. for a discussion of these issues and the equivalence of *so ein Auto* 'such a car' and *ein solches Auto* 'such a car'.

a.   Diesen Tisch will Anna haben.   generic reading *not* available
     'Anna wants to have this table.'

b.   So einen Tisch will Anna haben.   generic reading available
     'Anna wants to have such a table.'   (Umbach and Gust 2014:77)

The framework by Umbach and Gust fits the present purposes well. In the similative use of *van* we see two nominal items involved in a similarity relation. I argue that for polar and non-polar *van* there is a comparison between contentful entities. In other approaches to similarity and equality, it has been suggested that the similatives refer to kinds (such as in Carlson 1977) or equate manners (see, e.g., Rett 2013). I do not see a straightforward way of applying these analyses to non-polar/polar *van*. Concerning the former, we would have to construct kinds of propositional content. As for the latter, the application of manner to contentful entities seems counter intuitive to me. Therefore, I focus solely on the work by Umbach and Gust (2014) here, leaving the exploration of non-polar/polar *van* in other frameworks on similarity for future research. For further arguments for their position in comparison to other theories, I refer the reader to Umbach and Gust (2014).

Adnominal and adjectival *so* The analyses provided by Umbach and Gust for the adnominal and adjectival use of *so* are given in (63)-(64) respectively. These are both deictic uses. The unbound variable x_{target} represents the entity that the *so*-phrase refers to; it is the target of the demonstration. The variable x represents the entity to which the target is compared. The remaining argument - f in (63a) and F in (64a) - denotes the 'features of comparison'. Thus, F and f are the relevant properties for the comparison of x and x_{target} (Umbach and Gust 2014:81). In case of adjectival *so*, the modifier composes with the adjective and as a result, f is replaced by the proper scale; *height* in case of *groß* 'tall', see (64b). Thus, *height* is the relevant dimension of comparison. F in (63a) is contextually resolved (this is discussed in more detail the next subsection). Note that in (63), D has a quantifier type, i.e. $\langle\langle e, t\rangle, t\rangle$, because adnominal *so* must combine with an indefinite noun phrase.

(63)   Adjectival *so*:

a. $[\![\textbf{so}]\!] = \lambda f.\lambda x.\ \text{SIM}(x,\ x_{target},\ f)$
b. $[\![\textbf{so groß}]\!] = \lambda x.\ \text{SIM}(x,\ x_{target},\ \text{height})$ (Umbach und Gust 2014:82)

(64)   Adnominal *so*:

a. $[\![\textbf{so}]\!] = \lambda D.\lambda P.D(\lambda x.\text{SIM}(x,\ x_{target},\ F) \wedge P(x))$

b. ⟦**so ein Auto**⟧ = $\lambda Q.\exists x.\text{SIM}(x, x_{target}, F) \wedge \text{car}(x) \wedge Q(x)$

(Umbach und Gust 2014:81)

The predicate SIM holds if x and x_{target} have the same value for F or f (I return to the details of the dimensions of comparison shortly). Umbach and Gust note that non-identity of x and x_{target} is implied. However, they suggest that this implicature can be canceled:

(65) So ein Auto hat Anna, vielleicht ist das sogar Anna's Auto.

(Umbach and Gust 2014:10, footnote 14)

Umbach and Gust argue that SIM is not a semantic primitive. In the following, I consider the nature of SIM and the dimensions of comparison.

SIM and features of comparison Umbach and Gust suggest that nouns like *car* generate multiple dimensions of comparison (in contrast to, e.g., an adjective like *tall*). We can compare cars in terms of *drive type*, *horse power*, *number of doors*, etc. (Umbach and Gust 2014:87). Cars might thus be similar in one or more respects. The dimensions of comparison must be 'essential' for SIM, according to the authors. This is illustrated in the following dialogue. It shows that cars can be compared in terms of their engine and having a hatch, or being dented - compare (66A1) and (66A2), respectively. However, whether or not a car has a CD-player is not a relevant dimension.

(66) A: So ein Auto ist Anna's Auto auch.
          'Anna's car is one like this.'
      B: In welcher Hinsicht?
          'In which respect?'
      A1: Anna's Auto hat auch einen Gasantrieb und eine Ladeklappe.
          'Anna's car also has a gas drive and a hatch.'
      A2: Anna's Auto ist auch vollkommen verbeult.
          'Anna's car is also heavily dented.'
      A3: ??Anna's Auto hat auch einen CD-Spieler.
          'Anna's car also has a CD player.'   (Umbach and Gust 2014:84)

For a discussion concerning what defines a dimension or property as essential, I refer the reader to Umbach and Gust (2014). Of course, we come back to the idea of essential properties when discussing the implementation of non-polar and polar *van* in Section 3.5.2.2.

SIM and multi-dimensional attribute spaces Above, I mentioned that SIM is not a semantic primitive. Umbach and Gust provide the apparatus to dissect the meaning of similarity and its relevant dimension further. The authors suggest that entities and their properties in our world give rise to measure functions, such as μ_{tall} or μ_{car}. These functions might contain a scale, e.g., *height*, or multiple functions, e.g., *drive type*, *horse power*, *number of doors*, *having a hatch*, etc., respectively. The latter are the dimensions relevant for comparing cars, already listed above. That means we can compare cars in terms of multiple dimensions.

The relevant dimensions, for a specific comparison, span the attribute space F. So for (66A1), the relevant dimension is *drive type* and *having a hatch*. We can map each car into a point on this multi-dimensional space. The attribute space F comes with classification functions, p^*, defined by the dimensions. The set of classification functions corresponding to F is $C(F)$. These functions provide the link between attribute spaces F and truth values. The dimension *height*, for instance, generates the classification functions in (67a). Applied to individuals, these functions return truth values. Dimensions like *drive type* supply us with the set of functions in (67b). Each of these functions returns the truth value `true` if it is the drive type of the car under discussion, and `false` if it is not.

(67)   a.   {*short*, medium*, tall**}
        b.   {*diesel*, gasoline*, natural gas*, electric**}

Yet, the explanation of dimensions above has not given us any clue as to when similarity holds. Umbach and Gust propose a strong notion of similarity, which holds if two entities - x and y - return the same value for each classification function $p*$ in $C(F)$, see (68).

(68)   SIM(x, y, F) iff $\forall p* \in C(F) : p^*(\mu_f(x)) = p^*(\mu_f(y))$

(Umbach and Gust 2014:93)

If we compare cars in terms of *drive type*, we compare the output of all classification functions of the dimension *drive type*, after we fed these functions the two entities we are comparing. Each function returns `true` or `false` depending on whether the car has the specific drive type. So if we compare two diesel cars, all classification functions for *drive type*, except for *diesel**, return `false`. Therefore, SIM holds.

In the following, I apply the notion of similarity to similative, non-polar and polar *van*. We will see the notion of attribute spaces is difficult to implement in the domain of the latter two.

3.5.2.2. Applying similarity to *van* and contentful entities

In this subsection, I propose an analysis for non-polar/polar *van*, by applying Umbach and Gust's notion of similarity to the different uses of this preposition. First, I consider the most basic cases of similative *van*, e.g., uses like (69) (repeated from (49)).

(69) Hij heeft iets   van zijn vader.
      he has something of his dad
      'He resembles his dad.'   (Coppen and Foolen 2012)

Following Coppen and Foolen (2012), I assume that polar/non-polar *van* is related to similative *van* in (69). Second, I consider how the proposed meaning of *van* in (69) can be extended to non-polar *van*. Third, I turn to polar *van*. Finally, I consider the elliptical nature of polar *van* in more detail.

Similative *van*   The analysis I propose for the similative use of *van* is shown in (70). I propose that *van* hosts the similarity function. As we have seen above, the similarity function has three arguments: x, y and a dimension F. It says that the relation SIM holds between the entities x and y, in terms of the dimension F.

(70) $[\![\mathbf{van}]\!]^{c,w} = \lambda Q.\lambda x.\exists y, \exists F[\text{SIM}(x,y,F)] \wedge Q(y)$

Van takes as its arguments a property Q, that applies to y, and an entity x. In contrast to Umbach and Gust's proposal, F is bound in (70). In proposing this, I deviate from Umbach and Gust's proposal for *so*. The reason for doing so is that similative *van* is not a deictic item. On the basis of the examples seen, it was clear that the meaning of similative *van* does not depend on the non-linguistic context. Therefore, F is not resolved deictically.

   As mentioned above, I first demonstrate the application of (70) in very basic uses of similative *van*. Let us take a closer look at the use of similative *van* in (71):

(71)   Ik zag iets   van blauw in dat schilderij.
        I saw something of   blue   in that painting
        'I saw something blue in that painting.'

In (71) *van* connects *iets* 'something' and *blauw* 'blue'. I assume that *blauw* is a property of type $\langle e,t \rangle$ and that *iets* is a quantifier of type $\langle e,t\langle t \rangle \rangle$. *Van* must first take *blauw* as its argument, see (72).

(72) $[\![$**van blauw**$]\!]^{c,w} = [\![$**van**$]\!]([\![$**blauw**$]\!]) =$
$\lambda Q.\lambda x.\exists y, \exists F[\text{SIM}(x,y,F)] \wedge Q(y)(\lambda x.blue(x)) =$
$\lambda x.\exists y, \exists F[\text{SIM}(x,y,F)] \wedge (\lambda x.blue(x))(y) =$
$\lambda x.\exists y, \exists F[\text{SIM}(x,y,F)] \wedge blue(y)$

As a result, we have a function that takes entities as its argument and returns those which are similar to blue things in terms of a dimension F, i.e. a function of type $\langle e, t\rangle$. Now, if this phrase combines with *iets* 'something', a quantifier of type $\langle\langle e, t\rangle t\rangle$, the result is a phrase of type t, a truth value. This is undesirable, because we want the phrase to be able to further combine with predicates. The problem lies in the restriction of the quantifier *iets* 'something', by *van blauw* 'of blue'. Due to this restriction, we cannot use its regular quantifier type without modifications. However, this phenomenon is not restricted to *van*. As is shown in (73), there are other uses of quantifiers in which they seem restricted by adjectives.

(73) a. Ik zag iets   blauws.
          I   saw something blue.GEN
      b. Something blue

(73) shows that Dutch *iets* can also be restricted by an adjective, if the adjective is marked with an *s*, which Coppen and Foolen (2012) take to be a remnant of the genitive (see Pijpops and Van de Velde 2018 for a discussion). In addition, in English, the quantifier *something* can be restricted by *blue* without further marking. These data show that the need to modify a quantifier prior to its entering the derivation is not only required for the construction involving *van* in (71).

In order to be able to modify an existential quantifier by, e.g., *blue* or *van blauw*, before it enters the derivation, we have to use the type shifter in (74), that I have called *Q restrictor*:[17]

(74) $[\![$**Q restrictor**[18]$]\!] = \lambda Q_{\langle e,t\rangle}.\lambda \mathcal{R}_{\langle\langle e,t\rangle t\rangle}.\lambda P.[\mathcal{R}(\lambda x.P(x) \wedge Q(x))]$

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[17]I thank Manfred Krifka for a helpful discussion concerning the restrictor in (74) and pointing out the examples in (73) to me.

[18] Note that the restrictor in (74) is tailored to existential quantifiers. I consider this unproblematic, because it seems that universal quantifiers cannot be restricted in the same way as seen in (73):

(75) a. ?Ik zag alles   blauws.
          I   saw everything blue
      b. ?Ik zag alles   van blauw.
          I   saw everything of   blue

Let us consider the use of Q restrictor for the English phrase *something blue*, considered in (75b). (76) shows that Q restrictor first takes a predicate of type $\langle e, t \rangle$ as its argument. After that, it composes with a quantifier of type $\langle \langle e, t \rangle t \rangle$. Consider (77):

(77) a. $[\![\mathbf{Q\ restrictor}]\!] ([\![\mathbf{blue}]\!]) =$
$\lambda Q.\lambda \mathcal{R}.\lambda P.[\mathcal{R}(\lambda x.P(x) \wedge Q(x))] \ (\lambda z.blue(z)) =$
$\lambda \mathcal{R}.\lambda P.[\mathcal{R}(\lambda x.P(x) \wedge blue(x))]$

   b. $[\![\mathbf{something\ blue}]\!] = [\![[\![\mathbf{Q\ restrictor}]\!]([\![\mathbf{blue}]\!])]\!] ([\![\mathbf{something}]\!]) =$
$\lambda \mathcal{R}.\lambda P.[\mathcal{R}(\lambda x.P(x) \wedge blue(x))] \ (\lambda F.\exists x[F(x)]) =$
$\lambda P.[\lambda F.\exists x[F(x)](\lambda x.P(x) \wedge blue(x))] =$
$\lambda P.[\exists x[P(x) \wedge blue(x)]]$

However, to account for *iets van blauw* 'something of blue', we need to let *iets* 'something like this/that' combine with the complex *Q-restrictor van blauw* instead of just with *blauw* 'blue' as in the English example in (77a). The derivation is shown in (78).

(78) $[\![\mathbf{Q\ restrictor}]\!]([\![\mathbf{van\ blauw}]\!]) =$
$\lambda Q.\lambda \mathcal{R}.\lambda P.[\mathcal{R}(\lambda x.P(x) \wedge Q(x))] \ (\lambda z.\exists y, \exists F[\text{SIM}(z, y, F)] \wedge blue(y) \ ) =$
$\lambda \mathcal{R}.\lambda P.[\mathcal{R}(\lambda x.P(x) \wedge \lambda z.\exists y, \exists F[\text{SIM}(z, y, F)] \wedge blue(y)(x))] =$
$\lambda \mathcal{R}.\lambda P.[\mathcal{R}(\lambda x.P(x) \wedge \exists y, \exists F[\text{SIM}(x, y, F)] \wedge blue(y))]$

Now, that we have derived the meaning of *van blauw* we can combine the complex in (78) with *iets*:

(79) $[\![\mathbf{Q\ van\ blauw}]\!]([\![\mathbf{iets}]\!]) =$
$\lambda \mathcal{R}.\lambda P.[\mathcal{R}(\lambda x.P(x) \wedge \exists y, \exists F[\text{SIM}(x, y, F)] \wedge blue(y))] \ (\lambda F.\exists F(x)) =$
$\lambda P.[\lambda F.\exists F(x)(\lambda x.P(x) \wedge \exists y, \exists F[\text{SIM}(x, y, F)] \wedge blue(y))] =$
$\lambda P.[\exists x(P(x) \wedge \exists y, \exists F[\text{SIM}(x, y, F)] \wedge blue(y))]$

Sophie Repp pointed out to me that the use of *alles* 'everything' seems to have been felicitous with an adjective followed by an *s* in an earlier stage of Dutch; see (76):

(76) 'k Zel jou alles moois gaen kopen
      I will you everything pretty go buy
      'I will buy you everything pretty'   (Anonymous 1757)

The felicity of (76) in older stages of Dutch is unsurprising on the assumption that the *s* is a remnant from the genitive. In present-day Dutch this construction is outdated. However, the use of *van alles* 'all sorts/kinds of' in (76) would be fine. The *van* in this case is not similative *van*, as there is no comparison made. It sounds rather like the partitive use of *van*, discussed in (48).

The result is a function of type $\langle\langle e, t\rangle, t\rangle$, yielding true if there is an entity x with property P, which is similar to y, in the dimension F. Further, y has the property of being blue. Therefore, in (79), it seems likely that F is the dimension of color.[19]

The phrase in (81) can now combine with, e.g., a predicate like *zien* 'see', as in (71), as its internal argument. In Figure 3.3, I show how this can be done in Elliott's (2017) framework. As discussed in Chapter 2, in this framework the predicate - *zien* 'see' in this case - first composes with F_{int}, which introduces the internal argument, the theme TH (Elliott, 2017: 35). Thereafter, it composes with F_{ext}, which introduces the external argument, the agent AG (ibidem). The denotation of these functions is repeated in (82).

(82)   a. $\llbracket \mathbf{F}_{int} \rrbracket = \lambda f.\lambda x.\lambda e.\text{TH}(e) = x \wedge f(e)$

           b. $\llbracket \mathbf{F}_{ext} \rrbracket = \lambda f.\lambda x.\lambda e.\text{AG}(e) = x \wedge f(e)$

Recall that Elliott assumes a sorted type theory in which both events and concrete entities are of type e. To avoid a type clash, the quantifier phrase must move, leaving a trace 1, bound by λ_1. Similarly, I stipulate movement of the aspect phrase (Asp) (see Hacquard (2006) and Moulton (2015) for movements of Asp). This movement leaves the trace 2, bound by λ_2. In this, my derivation differs somewhat from Elliott's. For simplicity's sake, I left out tense in the tree below.

Similarity and non-polar *van*   I argue that what I have called similative *van* and non-polar/polar *van* up until now are in fact the same preposition. Both convey that two entities are similar in a certain dimension. The sole difference between the two is that

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[19] Sophie Repp points out to me that in case of German sentences with *so* 'like this/that' information structure may influence the dimension of comparison; consider for instance (80):

(80)   a.   Er hat SO   ein blaues Auto.
                 he has such a   blue   car

           b.   Er hat so   ein BLAUES Auto.
                 he has such a   blue   car

(80a) is felicitous in a context in which blue cars are discussed and the hatch of the car under discussion is the relevant dimension of comparison. (80b) rather suits a context in which the blueness of cars is compared. Dutch *van*, however, cannot be stressed in the same way:

(81)   ?Ik zag iets   VAN blauw.
        I   saw something of   blue

Therefore, the same effect does not arise.

$$\exists e, x[\text{AG}(e) = I \wedge \text{TH}(e) = x \wedge see(e)] \wedge \exists F, \exists y[\text{SIM}(x, y, F) \wedge blue(y)]$$

Asp $\quad \lambda 2.\exists x[\text{AG}(2) = I \wedge \text{TH}(2) = x \wedge see(2)] \wedge \exists F, \exists y[\text{SIM}(x, y, F) \wedge blue(y)]$

$\lambda_2 \quad \exists x[\text{AG}(2) = I \wedge \text{TH}(2) = x \wedge see(2) \wedge \exists F, \exists y[\text{SIM}(x, y, F) \wedge blue(y)]$

$\lambda P[\exists x[P(x) \wedge \exists F, \exists y[\text{SIM}(x, y, F) \wedge blue(y)]$

$\lambda 1.\text{AG}(2) = I \wedge \text{TH}(2) = 1 \wedge see(2)$

$\lambda_1 \quad \text{AG}(2) = I \wedge \text{TH}(2) = 1 \wedge see(2)$

$2 \quad \lambda e.\text{AG}(e) = I \wedge \text{TH}(e) = 1 \wedge see(e)$

DP $\quad \lambda x.\lambda e.\text{AG}(e) = x \wedge \text{TH}(e) = 1 \wedge see(e)$

I

F_{ext}
$\lambda f.\lambda x.\lambda e.\text{AG}(e) = x \wedge f(e)$

$\lambda e.\text{TH}(e) = 1 \wedge see(e)$

$1 \quad \lambda x.\lambda e.\text{TH}(e) = x \wedge see(e)$

F_{int}
$\lambda f.\lambda x.\lambda e.\text{TH}(e) = x \wedge f(e)$

$\lambda e.see(e)$
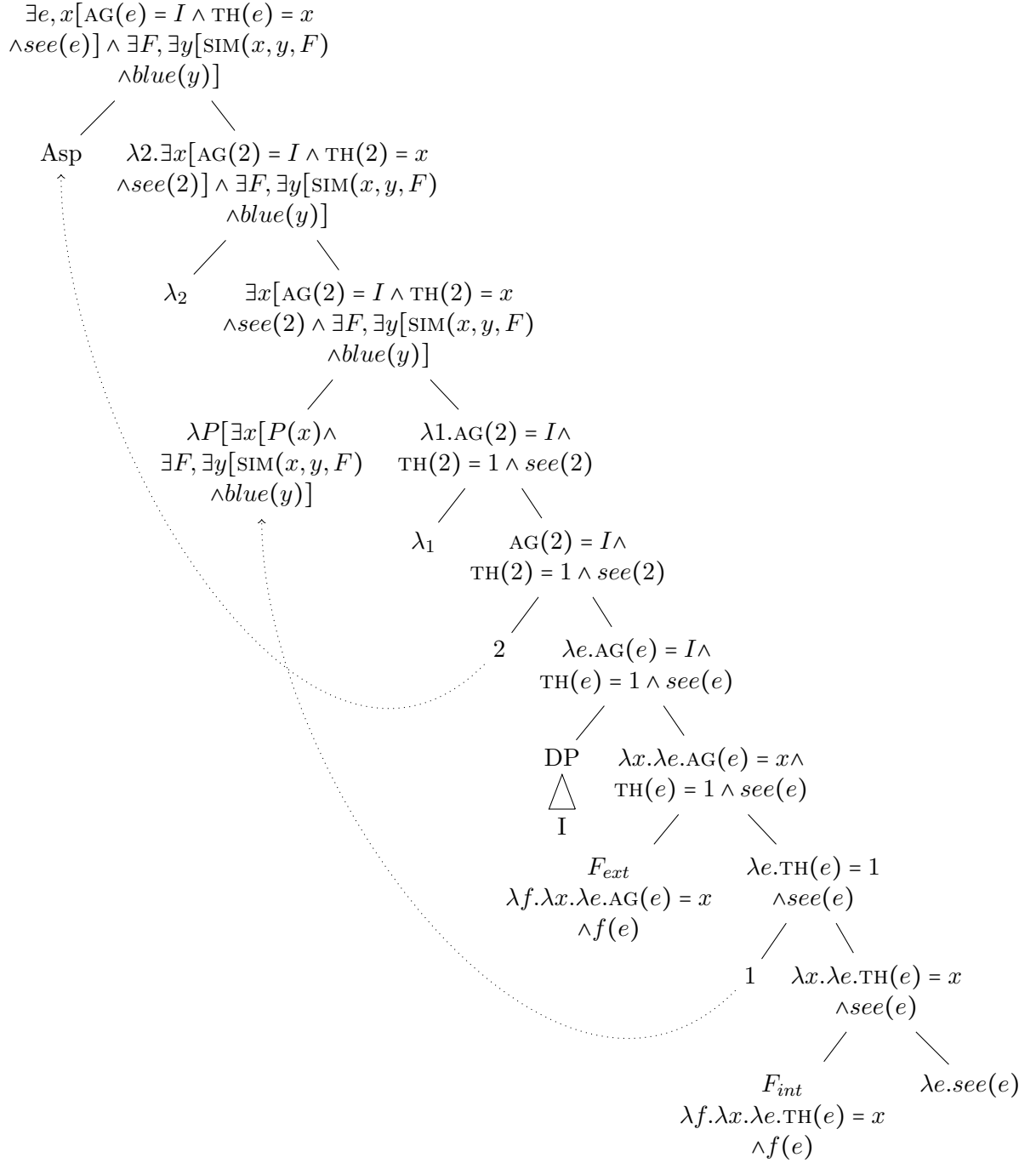
Figure 3.3.: Derivation of *Ik zag iets van blauw* 'I saw something blue' based on Elliott's (2017) framework. In this derivation, I have adopted Moulton's (2015) notation of the movement, which uses, e.g., additional arrows in order to aid the reader.

non-polar/polar *van* takes arguments which are contentful. The immediate question that arises is what sort of dimension of properties of contentful entities could be relevant for these uses of *van*. I postpone the answer to the end of this section and first address the question how non-polar/polar *van* composes with its complements. Let us first take a look at the application of (70) to non-polar uses of *van*, such as (83) (repeated from (26)).

(83)   Nu   kreeg   ik een mailtje *(van): 'je   was   een succes.'
       Now received I   an email   of   you were a   success
       'Now I received an email like "you were a success."'

<div align="right">(Coppen and Foolen 2012:265)</div>

In (84), I repeated the proposed semantics for *van* in (84a) and the meaning for *een mailtje* 'a little email' (simplified to *een mail* 'an email') in (84b). As for the semantics of the quote, I do not further specify this than (84c) (based on Maier 2018).

(84)   a. $[\![\mathbf{van}]\!]^{c,w} = \lambda Q.\lambda x.\exists y, \exists F[\mathrm{SIM}(x,y,F)] \wedge Q(y)$

       b. $[\![\mathbf{een\ mail}]\!] = [\![\mathbf{een}]\!]([\![\mathbf{mail}]\!]) =$
            $\lambda R\lambda Q.\exists z[Q(z) \wedge R(z)] \ (\lambda x.mail(x)) =$
            $\lambda Q.\exists z[Q(z) \wedge mail(z)]$

       c. $[\![\ \mathrm{QUOT}\ \mathbf{"you\ were\ a\ success"}]\!] =$
            $\lambda z.\ \mathrm{FORM}(z) = \ulcorner \text{you were a success} \urcorner$

Now, putting this together, we get the result in (85). First, in (85a), *van* composes with the quote. Second, in (85b), I combine the resulting phrase with the quantifier restrictor. Third, in (85c), the quantifier *een mailtje* 'a little email' forms the argument of the result of our step in (85b).

(85)   a. $[\![\mathbf{van}]\!]([\![\mathbf{"you\ were\ a\ success"}]\!]) =$
            $\lambda Q.\lambda x.\exists y, \exists F[\mathrm{SIM}(x,y,F)] \wedge Q(y)(\lambda z.\mathrm{FORM}(z) = \ulcorner \text{you were a success} \urcorner)$
            $= \lambda x.\exists y, \exists F[\mathrm{SIM}(x,y,F)] \wedge (\lambda z.\mathrm{FORM}(z) = \ulcorner \text{you were a success} \urcorner)(y)$
            $= \lambda x.\exists y, \exists F[\mathrm{SIM}(x,y,F)] \wedge \mathrm{FORM}(y) = \ulcorner \text{you were a success} \urcorner$

       b. $[\![\mathbf{Q\ restrictor}]\!]([\![\mathbf{van\ "you\ were\ a\ success"}]\!]) =$
            $\lambda Q.\lambda \mathcal{R}.\lambda P.[\mathcal{R}(\lambda x.P(x) \wedge Q(x))]$
            $(\lambda z.\exists y, \exists F[\mathrm{SIM}(z,y,F)] \wedge \mathrm{FORM}(y) = \ulcorner \text{you were a success} \urcorner)$
            $= \lambda \mathcal{R}.\lambda P.[\mathcal{R}(\lambda x.P(x) \wedge \lambda z.\exists y, \exists F[\mathrm{SIM}(z,y,F)]$
            $\wedge \mathrm{FORM}(y) = \ulcorner \text{you were a success} \urcorner)(x))]$
            $= \lambda \mathcal{R}.\lambda P.[\mathcal{R}(\lambda x.P(x) \wedge \exists y, \exists F[\mathrm{SIM}(x,y,F)] \wedge \mathrm{FORM}(y) = \ulcorner \text{you were a success} \urcorner)]$

c.   ⟦**Q van "you were a success"**⟧(⟦**een mailtje**⟧) =
$\lambda \mathcal{R}.\lambda P.[\mathcal{R}(\lambda x.P(x) \wedge \exists y, \exists F[\text{SIM}(x,y,F)] \wedge \text{FORM}(y) = \ulcorner \text{you were a success} \urcorner)]$
$(\lambda Q.\exists y, \exists z[Q(z) \wedge mail(z)])$
$= \lambda P.[\lambda Q.\exists z[Q(z) \wedge mail(z)](\lambda x.P(x) \wedge \exists y, \exists F[\text{SIM}(x,y,F)] \wedge \text{FORM}(y)$
$= \ulcorner \text{you were a success} \urcorner)]$
$= \lambda P.\exists z[(P(z) \wedge \exists y, \exists F[\text{SIM}(z,y,F)] \wedge \text{FORM}(y) = \ulcorner \text{you were a success} \urcorner)$
$\wedge mail(z)]$

Now, the end product in (85) can combine with a predicate like *krijgen* 'to get', as in the utterance in (83). How this works compositionally was shown for a similar sentence in Figure 3.3. The end product of (85c) tells us that there is an entity z, with the property P, such that it is similar to y in terms of the dimension F and y has the properties of being an email and that its form is *you were a success*. In this case, the most plausible meaning of F would be content or form. In (85), it is difficult to distinguish between the two because the content can be inferred from the form as well. We return to this below. For now, it is important to see that we can account for non-polar *van* in combination with a noun, using the same definition as for similative *van*.

In principle non-polar *van* may also occur with definite descriptions, like in (86a) as discussed in Section 3.3.2 (recall example (19)). In that case, the Q-restrictor is not required, as non-polar *van* and its complement, e.g. a quote like in (85a), compose with a predicate, e.g. *commentaar* 'comment' in (86b), through predicate modification (PM, as defined in (87)). After that, the complex composes with the ι-operator. The resulting entity can now become the theme of the relevant event through composition with a predicate that composed with F_{int} (cf. Figure 3.3). The former composition is shown in (86c):

(86)   a.   Toen kreeg ik het commentaar van 'dat is onzin'
            Then got I   the comment   of   that is nonsense
       b.   ⟦**commentaar**⟧ = $\lambda x.comment(x)$
       c. $\text{PM}(\lambda x.\exists y, \exists F[\text{SIM}(x,y,F)] \wedge \text{FORM}(y) = \ulcorner \text{that is nonsense} \urcorner)$
            $(\lambda x.comment(x))$
            $= \lambda x.\exists y, \exists F[\text{SIM}(x,y,F)] \wedge \text{FORM}(y) = \ulcorner \text{that is nonsense} \urcorner \wedge comment(x)$

(87)   **Predicate modification**:
       If α is a branching node, $\{\beta, \gamma\}$ is the set of a's daughters, and ⟦β⟧ and ⟦γ⟧ are both in $D_{\langle e,t \rangle}$ then
       ⟦α⟧ $= \lambda x \in D_e.⟦\beta⟧(x) = ⟦\gamma⟧(x) = 1$ (Heim and Kratzer 1998:65)

Let us now consider one example of non-polar *van* in combination with the predicate *denken* 'think', for instance (88), to see how complementation works.

(88)   Je   denkt van 'je   was   een success'.
        you think of   you were a   success
        'You think like, you were a success.'

Again, I illustrate this in Elliott's 2017 neo-Davidsonian framework on clausal complementation (cf. Chapter 2). The denotation of non-polar *van* and its complement is given in (89a) (based on (85a)). The meaning of *denken* 'think' is shown in (89b). We see that *thinking* is the property of an event e; therefore, this event is contentful. As considered in Section 2.2.5.1, Eliott proposes predicate modification (PM) to combine the clause and the verb - see (89c).

(89)   a. $[\![$**van 'you were a success'**$]\!]$ =
              $\lambda x.\exists y, \exists F[\text{SIM}(x, y, F)] \wedge \text{FORM}(y) = \ulcorner \text{you were a success} \urcorner$
        b. $[\![$**think**$]\!] = \lambda e.\ \text{think}(e)$
        c.   PM($[\![$**van 'you were a success'**$]\!]$)($[\![$**think**$]\!]$) =
              $\lambda e.\ \text{think}(e) \wedge \exists y, \exists F[\text{SIM}(e, y, F)] \wedge \text{FORM}(y) = \ulcorner \text{you were a success} \urcorner$

Similarity and polar *van*   Recall that I assume for polar *van* that its complement is in fact proposition-like, but involves ellipsis. Overtly, we only see the polarity item, *wel* or *niet*, which has not been elided. Due to the propositional ellipsis site, the analysis proposed for non-polar *van* can be extended to polar *van*, as both simply take a contentful argument. For the present purposes, I assume that polar *van* takes a *that*-clause as its argument, that involves a polarity particle and ellipsis. Recall from Section 3.3.1 that non-polar *van* can also take *that*-clauses as its argument. I consider the question why polar *van* should compose with a *that*-clause and not with a quote in the end of this section. For now it is important that the present analysis makes polar *van* identical to non-polar *van*, except that the former involves ellipsis. The syntax of this elliptical construction is explored in the next paragraph. A preliminary sketch (excluding ellipsis) of polar *van* composing with a *that*-clause is given in (90).

(90)   a.   ... van dat Jan wel   komt
                  of   that Jan WEL komt
              '... like that Jan will come.'
        b. $[\![$**van**$]\!]$($[\![$**dat Jan wel komt**$]\!]$) =
              $\lambda Q.\lambda x.\exists y, \exists F[\text{SIM}(x, y, F)] \wedge Q(y)(\lambda z.\text{CONT}(z) = \text{Jan komt wel}) =$

$$\lambda x.\exists y, \exists F[\text{SIM}(x, y, F)] \wedge (\lambda z.\text{CONT}(z) = \text{Jan komt wel})(y) =$$
$$\lambda x.\exists y, \exists F[\text{SIM}(x, y, F)] \wedge \text{CONT}(y) = \text{Jan komt wel}$$

The result in (90) is a function from entities to truth values, that yields true if there is a dimension of comparison in terms of which the entity x is similar to the entity y, whose content is that Jan is coming. In case of (90), the value of F seems to be content. As we know nothing about y, except for its content, this seems to be the only reasonable dimension of comparison. Now, this complex has the same type as a *that*-clause, therefore, it can combine with a propositional attitude verb in the same way as *that*-clauses do (cf. Section 2.2.5).

Note that we cannot say the same for responses that involve *het van wel*, such as (91B) (repeated from (33B)).

(91) A: Zou   dat mijn bruidsjapon   zijn?
          would that my   wedding.dress be
          'Could that be my wedding dress?'
      B: Ik denk het van wel.
          I   think it   of   WEL
          'I think it is.'

                 (*De boeken der kleine Zielen*, part I, page 116, Louis Couperus)

For responses like (91B), I assume that the pronoun *het* 'it' and polar *van* compose through functional application, see (92c). The assumed meanings for *het* 'it' and polar *van* are shown in (92a-b).

(92) a. $[\![\textbf{het}]\!] = \lambda F : \iota z.F(z)$
      b. $[\![\textbf{van dat hij wel komt}]\!] = \lambda x.\exists F[\text{SIM}(x, y, F)] \wedge \text{CONT}(y) =$
          Jan komt wel
      c. $[\![\textbf{het van dat hij wel komt}]\!] =$
          $[\![\textbf{het} ([\![\textbf{van dat hij wel komt}]\!])]\!] =$
          $\lambda F : \iota z.F(z) \ (\lambda x.\exists F[\text{SIM}(x, y, F)] \wedge \text{CONT}(y) = \text{Jan komt wel}) =$
          $\iota z.\exists F[\text{SIM}(z, y, F)] \wedge \text{CONT}(y) = \text{Jan komt wel}$

The formula in (92c) can now compose with an propositional attitude verb through Elliott's (2017) F_{int}, which combines the verb with its internal argument, as was shown in Figure 3.3. The composition is shown again in two steps in (93d-e):

(93) a. $[\![\textbf{denken}]\!] = \lambda e.think(e)$
      b. $[\![\textbf{het van dat hij wel komt}]\!] =$

$\iota z.\exists F[\text{SIM}(z, y, F)] \wedge \text{CONT}(y)$ = Jan komt wel

c. $[\![\mathbf{F}_{int}]\!] = \lambda f.\lambda x.\lambda e.\text{TH}(e) = x \wedge f(e)$

d. $[\![\mathbf{F}_{int}]\!] ([\![\mathbf{denken}]\!]) =$
$\lambda f.\lambda x.\lambda e.\text{TH}(e) = x \wedge f(e)(\lambda e.think(e)) =$
$\lambda x.\lambda e.\text{TH}(e) = x \wedge think(e)$

e. $[\![\mathbf{denken\ het\ van\ dat\ hij\ wel\ komt}]\!] =$
$\lambda x.\lambda e.\text{TH}(e) = x \wedge think(e) (\iota z.\exists F[\text{SIM}(z, y, F)] \wedge \text{CONT}(y) =$
Jan komt wel) $=$
$\lambda e.\text{TH}(e) = [\iota z.\exists F[\text{SIM}(z, y, F)] \wedge \text{CONT}(y)$ = Jan komt wel] $\wedge think(e)$

The formula in (93e) can now compose with F_{ext} and subsequently with an agent.

In each of the above uses of *van*, we quantify over F. For (89) and (93), the question is what the possible values of F could be. I suggested that F in (89) could be either form or content. In (93c), the most plausible possibility seems to be content, as content is (i) part of the meaning of (93c) (due to it involving a *that*-clause); and (ii) inferable from the ellipsis site, as ellipsis sites require *semantic* equivalence with the antecedent (following Merchant 2001). Therefore, it seems that for non-polar *van* both form and content could be the dimensions of comparison, whereas for polar *van* content is the only choice - in case of ellipsis, form seems to be less relevant than content. To accommodate the flexibility of F in case of non-polar *van* I have left F unspecified in (70). Therefore, the comparison *van* makes can be both form or content. Furthermore, if we leave the dimension of comparison undefined, we are able to provide the same analysis for similative, non-polar and polar *van*.

However, it should be noted that form and content as dimensions of comparison are quite different than those discussed by Umbach and Gust. In contrast to, e.g., *car* or *color*, we cannot dissect the dimension of content or form quite easily. For *color*, we could simply provide a set of classification functions representing all colors. This might end up being a rather large set, but we could imagine labeling each color that we can distinguish with the naked eye. For form, we could say that it introduces a binary measure function which returns true or false if the form is similar or not. In principle, the same thing could be proposed for content. However, there are reasons to assume that content involves multiple dimensions itself and that therefore, this matter is more delicate. There are infinite ways in which, for instance, the content of speech or thought events can differ from one another, as there are infinitely many propositions. In addition, the content of one event may entail the content of another one. Such properties set content as a dimension of comparison apart from dimensions like colors.

I refer the reader to Asher (1993) and McGrath and Frank (2018) for a more thorough discussion of such properties of propositions. The comparison of propositions requires a deeper discussion that cannot be done justice here. Nevertheless, for the present purposes, following the apparatus introduced by Umbach and Gust (2014), we can see that all relevant classification functions introduced by content must be similar for the two contentful entities linked together by *van*. However, which classification functions are introduced by *van*, or the comparison of propositions in general, is a complex matter that deserves a lengthy discussion. I therefore leave this question for future research.

Polar *van* and ellipsis In Section 3.3.1, I suggested that responses with polar *van* involve ellipsis. A reason for doing so, is that it allows us to treat the polarity items *wel* and *niet* occurring in responses with polar *van* like the *wel* and *niet* occurring in regular sentences. In addition, such an ellipsis account enables us to analyze non-polar and polar *van* as one and the same item, not involving different arguments. In the following, I explore how this ellipsis site in polar *van* can be analyzed in terms of work by Merchant (2001) and Van Craenenbroeck (2009).

Van Craenenbroeck investigated Wambeek Dutch responses with *toch wel* and *toch niet*. This response is a combination of two modal particles used to express disagreement with a previous assertion, see Van Craenenbroeck (2009:161-162). These modal particles may precede an assertion, as is shown in (94). In (94), we also see the analysis that Van Craenenbroeck provides for the response with *toch wel*. Crucially, the affirmative particle moves from the polarity phrase (PolP) into the specifier of the CP (see also Holmberg 2013 on *yes* and *no*). *Wel* moves because the polarity is focused in such clauses. In Wambeek Dutch, the polarity particle thus occurs twice.

(94) $[_{VFoc°}$ toch $[_{CP}$ wel [Marie gui $[_{PolP}$ wel [nui de cinema]]]]]]
         TOCH   WEL Marie go   WEL   to the cinema
                                                         (Van Craenenbroeck 2009:161)

We might apply the same to polar *van*. Suppose that polar *van* is selected by the verb and that polar *van* on its turn selects a *that*-clause, a CP. Now, following Van Craenenbroeck's structure, we could say that *wel* (or *niet*) moves out of the PolP - situated in the clause selected by polar *van* - into SpecCP, in order to mark the focus on the polarity.

(95) $[_{VP}$ denk $[_{P}$ van $[_{SpecCP}$ wel $[_{C}$ dat [Jan $[_{PolP}$ ~~wel~~ [komt]]]]]]]]

In uses of polar *van*, we see that phrases below *wel* or *niet* go unpronounced. I assume

that Merchant's (2001) [E]-feature is situated in the C head and licenses the ellipsis (see also Merchant 2005).

The analysis proposed for polar *van* in (95) is based on Merchant's (2001) analysis of sluices, shown in (96). Sluicing is the phenomenon where an embedded interrogative clause occurs without its TP. The clause thus seems to consist of a wh-word only. This wh-word is located in SpecCP; the C head bears the E feature, thereby licensing ellipsis.

(96)   Abby danced with someone, but I don't know [$_{SpecCP}$ who [$_C$ [E] [$_{IP}$ ~~she danced with~~]].

Merchant suggests for sluices like (96), that their TPs can go unpronounced provided that the antecedent and the elided TP are semantically equivalent.[20] Applied to the example in (96), this means that the TP *Abby danced with someone* and the TP *she danced with someone* are required to be identical, which is the case if *she* refers to Abby. For the ellipsis site in (95), we can argue that it can go unpronounced if the materials are identical to the antecedent proposition as well, a salient proposition in the discourse.

Above, I assumed that polar *van* selects a *that*-clause as its argument. We could in principle also argue that polar *van* selects a quote as its argument instead. In this case, the polarity item should be extracted from the quote. Both the alternatives with polar *van* and a *that*-clause or a quote are felicitous.

(97)   a.   Ik denk van dat hij wel komt.
              I   think of   that he WEL comes

        b.   Ik denk van: hij komt   wel.
              I   think of   he comes WEL

However, recall that quotes equal form. As Sophie Repps points out to me, it is not quite clear what the consequences are for the syntactic status of such objects, and whether we could in fact extract polarity items from such environments. In contrast, extraction and ellipsis in and around the CP are possible and in fact well studied (see, e.g., Merchant 2001, Van Craenenbroeck 2004, 2009, Repp 2009). Therefore, it is plausible to assume that polar *van* involves *that*-clauses and not quotes.

In this subsection, I demonstrated that we can analyze similative, non-polar and polar *van* as one and the same item hosting the similarity function, proposed by Umbach and Gust. I showed that the analysis for similative uses of *van* can be extended to polar and non-polar *van*. The crucial difference being that the latter two compose with properties

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[20] For the syntactic requirements of the [E] feature, I refer the reader to Merchant (2001, 2005).

of contentful entities, whereas the former composes with properties of non-contentful entities.

3.5.3. Explaining the use of non-polar/polar *van*

In this subsection, I show how the similative analysis of non-polar/polar *van* can explain their properties, discussed in Section 3.2 and Section 3.3. I first consider the predicates non-polar/polar *van* can or cannot occur with. Finally, I consider the role of polar *van* in the Dutch embedded polar response paradigm.

3.5.3.1. The predicates non-polar/polar *van* can(not) combine with

The explanation for the restricted set of predicates that non-polar/polar *van* can occur with naturally follows from the analysis above. As mentioned, Umbach and Gust's SIM *implies* non-identity. Non-polar/polar *van* thus always involves a comparison between two contentful entities, which are similar in terms of F, but need not be identical. If non-polar/polar *van* thus occurs with a verb like *denken* 'think', the suggestion is that the subject thought something that is similar but not identical to the embedded clause.[21] As a result, *van* introduces a hedge. This is precisely how the uncertainty of *van* arises. It would namely be more informative to simply state whatever the subject was thinking instead of comparing what was thought to something else, unless the speaker has reason to do so. The reason to do so, I think, is the uncertainty with respect to the complement or the unestablishedness of the proposition in the complement (cf. Siegel 2002). In Chapter 4, we will see that the latter reason is also important for the use of *so* in English.

Recall that we saw that non-polar and polar *van* cannot occur with factive and some non-representational predicates. The former are predicates like *haten* 'hate' or *betreuren* 'regret'; the latter predicates like *proberen* 'try', with the exception of *vragen* 'ask', as was noted in Section 3.3.2. Both reasons for using non-polar/polar *van* - uncertainty or unestablishedness - lead to infelicitous in combination with factive predicates for obvious reasons. Factive predicates presuppose their complement and therefore do not allow for such uncertainty or unestablishedness.

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[21] Upon first sight, this might seem problematic for quotes, which, one may assume, literally represent the form of speech events. However, in this I follow Wade and Clark (1993), as well as Maier (2017), who assume that quotes usually do not literally represent the speech act under reference. Rather, Wade and Clark (1993) suggest that quotations 'are intended to depict only some aspects of the original speaker's utterance' (p. 819), in this sense, the authors argue that quotes are more similar to demonstrations. Note, however, that speakers may still *try* to represent the form of the quote as literal as possible.

As for the non-representational predicates, the case is somewhat different. In Chapter 2, we saw that these predicates do not involve an information state in Anand and Hacquard's framework. The incompatibility of non-polar/polar *van* with these predicates might not be immediately clear. To see this, let us first return to the analysis. I proposed that non-polar/polar *van* indicate that there is a contentful entity similar to the proposition which forms the complement of *van* in terms of content. Due to this similative meaning, non-polar/polar *van* forms a hedge. With non-polar *van* we can thus create a hedged clause and with polar *van* a hedged response. Now, focusing on non-polar *van* first, we can see that these hedged clauses are very useful for reporting on mental states, particularly those which are not one's own, as these cannot be reported with certainty. Therefore, I argue that we hardly find uses of non-representational predicates with non-polar *van*, because the kind of discourse move that *van* thrives in, does not involve non-representational predicates.

Polar *van* consists not only of the same similative marker, but also of a polarity particle. This particle restricts its use further to the set of predicates that are informative in answers to questions. In Chapter 2, we saw that this is in fact one of the properties of representational predicates. Therefore, it follows that also in responses with polar *van* only representational predicates can be used.

3.5.3.2. Polar *van* in the embedded response paradigm

Based on the account set forth in this section, we can easily see what contribution polar *van* makes in the Dutch embedded polar response paradigm.

On a more abstract level, polar *van* allows speakers to respond in a way that expresses less certainty than responses with *het* 'it' would do. This uncertainty is not hardwired in the semantics of polar *van*. It is due to the similative meaning of *van*, which implies non-identity of the object of thought and the complement of *van* in responses with polar *van*. Therefore, the speaker asserts s/he thinks something similar, possibly identical, to the affirmative or rejecting answer to the polar question asked. Suppose a speaker asks the question p?. Its interlocutor might now respond that s/he thinks that p or $\neg p$. The use of polar *van* in such responses suggests that the speaker is thinking something similar to either the affirmative or rejecting response to a question. Rather than providing a direct answer, the object of thought is compared to p or $\neg p$. Therefore, the speaker insinuates that s/he is not certain. This property of polar *van* also leads to effects of unestablishedness. By that, I mean that polar *van* signals that the proposition under discussion is not accepted as common ground, due to the hedge of polar *van*. However,

this is not hardwired into the meaning of *van* (in contrast to for instance the proposal for English *so* in Chapter 4). Two examples show uncertainty is not part of the meaning of *van*. First, as seen in (98) (repeated partially from (4), from Section 3.2.1) polar *van* may also be used in cases of disagreement, when the speaker is not unsure.

(98)   A: Komt Piet naar het feestje?
            comes Jan to   the party
            'Is Jan coming?'

       B$_2$: Jan denkt van niet, maar ik denk van wel.
            Jan thinks of   not   but   I   think of   WEL

Second, as discussed in Section 3.2.2, polar *van* can be used in combination with *zeker weten* 'know for sure' (Hoeksema, 2006), see (99) (based on (9a)).

(99)   Ik weet zeker van wel.
       I   know sure of   WEL
       'I am sure of it.'

(99) is especially used in contexts in which the interlocutors disagree.

On a less abstract level, polar *van* enables speakers to respond to questions using assertive predicates. In Section 3.2.2, we saw that polar *van* can be used to form embedded responses with assertive predicates like *beweren* 'claim' or *zeggen* 'say'. This is not the case for *het* 'it'. The difference between the two responses is once again illustrated in (100) (repeated from (6)).

(100) A   Heeft Jan de hond uitgelaten?
            has   Jan de dog   let.out
            'Did Jan take out the dog?'

       B   #Piet beweert het niet.
            Piet claims   it   not
            'Piet did not claim it.'

       C   Piet beweert van niet.
            Piet claims   of   not
            'Piet claims he didn't.'

Therefore, polar *van* enriches the Dutch embedded polar response paradigm on different levels.

3.6. Conclusion

The two goals of this chapter were (i) to shed light on the use and meaning of polar *van*; (ii) to gain understanding concerning its role in the Dutch embedded response paradigm.

As for the first goal, we saw that polar *van* is used to construct responses that indicate uncertainty. That is, if a speaker is less sure of an answer, s/he is more likely to use polar *van*. I take to this be due to the similative meaning of *van*. This similarity implies non-identity. Thus, responses with polar *van* can be taken to 'approach' the answer the speaker thinks is correct. Responses with polar *van* therefore are less conclusive, than, e.g., responses with *het* 'it', because they only indicate an inclination to *p* or ¬*p*. We saw that the same effects as those of polar *van* arise with non-polar *van*. Non-polar *van* indicated that some quote or embedded clause was similar to something that had been said or thought. Therefore, utterances with non-polar/polar *van* provide a way of hedging.

Regarding the second goal of this chapter, we saw that, due to its similative properties, polar *van* provides a hedgy alternative to responses with *het* 'it'. We saw in Section 3.2.1 that responses with *het* are more neutral than those with polar *van*. Therefore, speakers choosing polar *van* over *het* 'it' must have a special reason to do so. I suggested this is uncertainty or unsettledness. By using polar *van*, the speaker creates some distance from the answer, which might lead to a sense of unsettledness. As such, I argue that Dutch polar *van* provides a more subjective response than for instance responses with *het* in Dutch (see Chapter 6), making it a Type I response.

In conclusion, in this chapter I presented a unified analysis of polar/non-polar *van*, that shows the strong connection between these uses of *van* and the similative preposition *van*. In my analysis, I used aspects of meaning and syntax that have been independently argued for by, e.g., Umbach and Gust (2014) and Van Craenenbroeck (2009). Therefore, the present analysis is highly parsimonious.

However, there are two important questions concerning the Dutch embedded polar response paradigm that remain to be settled. First, the question why Dutch cannot use the response particles *ja* and *nee* in embedded responses. Second, the question why Dutch does not allow for the NCA in embedded responses. Concerning the first question, I suggest in Chapter 6 that this is due to the syntactic status of *ja* and *nee*. In older stages of Dutch, the response particles could be embedded (cf. Section 6.4.1.1) and in southern varieties they still can (see Van Craenenbroeck 2002). This question deserves more attention in future research. The second question will be discussed in Chapter 5 in which I compare English and Dutch in more detail.

4. Responses with *so* and the Table[1]

4.1. Introduction

This chapter is concerned with embedded polar responses utilizing *so*, as shown in (1B-C).

(1) A: Is John coming to the party?
     B: I think so.
     C: I don't think so.

B's response in (1) is affirming, i.e. we can conclude from this response that s/he thinks that John is indeed coming to the party. C's response is rejecting; s/he thinks that John is not coming to the party. On first sight, the use of *so* and its restrictions do not seem so different from other embedded polar response items. For instance, as we will see later on, *so* mostly occurs with representational predicates like *think* and *believe.* In addition, *so* cannot occur with factive predicates (Kiparsky and Kiparsky, 1971), see (2). We saw the same holds for polar *van* in Chapter 3. Furthermore, *so* cannot occur with *doubt* as is shown in (3B) (see also Sailor 2012; Needham 2012). Similarly, polar *van* is not found with *(be)twijfelen* 'doubt' in Hoeksema's (2006) corpus. We will see in Chapter 5 that the same two restrictions apply to responses with *not.*

(2) We should listen to him sometime. #We would not regret so.

(3) A: Did John break his nose?
     B: #I doubt so.

To explain the pattern observed above, *so* has been suggested to presuppose that the speaker is not committed to its referent (see, e.g., Cushing 1972; Cornish 1992; Needham 2012). However, note that *so* may also occur with *know*, see (4B). In this sense, *so* differs quite radically from other embedded response items.

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[1]This chapter is based on the publication Meijer (2018).

(4)   A: Do you really think so?

       B: I know so!

In the previous chapter, we saw that polar *van* cannot occur with *know* in embedded polar responses.[2] In Chapter 5, we will see that te same holds for, e.g., responses with *not.* German *nicht* 'not' may occur with *wissen* 'know'. However, such responses do not answers questions as defined in Chapter 2. Rather, these constitute responses like *I don't know.* Therefore, the felicity of (4B) raises the question of why *so* should be fine with *know.*

To explain this pattern, I argue that *so* differs from other items used in embedded polar responses, in that it bears a presupposition with respect to the common ground (CG) status of its referent. In a nutshell, I argue that *so* presupposes that its referent is still on the Table (in terms of Farkas and Bruce 2009, discussed in Chapter 2). This presupposition makes embedded polar responses with *so* different from other ones in English. Rather, its use, as indicating that a proposition is not settled yet in discourse, is more similar to the way embedded polar responses with polar *van* are used in Dutch. As such, I argue that *so* is a Type I response, like polar *van.* Such responses indicate that the matter in question is not settled yet.

In addition, I argue that *so* differs from other propositional anaphors in another way. In previous work, it has often been analyzed as a propositional anaphor like *yes* or *no* (Needham, 2012; Krifka, 2013) or a licensor of ellipsis (Kiparsky and Kiparsky, 1971; Kramer and Rawlins, 2009). In either case, these theories make the wrong predictions with respect to the movement operations *so* may be subjected to. I argue that *so* rather behaves like an adverb than a response particle or a (partially) elided CP.

In this chapter, I start out by discussing the distribution of *so* in Section 4.2. I focus on different uses of *so* and restrict the type of uses of *so* discussed in this chapter. In Section 4.3, I discuss previous accounts of *so.* In Section 4.4, I present the present proposal on *so.* In Section 4.4.1, I consider the pragmatics of *so* and thus its restriction to a certain set of predicates. In Section 4.4.2, I discuss the semantics of *so*, i.e its semantic type. Section 4.5 concludes this chapter.

4.2. Embedded polar responses with *so*

This section introduces the main data and restricts the uses of *so* that are discussed in this chapter. In Section 4.2.1, I consider the different uses found of the lexical item *so.*

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[2] Recall from Chapter 3 that polar *van* may occur with *weten* 'know' if its factivity is cancelled.

In Section 4.2.2, I focus on the *so* central to this chapter. In Section 4.2.2.1, I discuss the main data concerning *so*, i.e. the predicates it may occur with. In Section 4.2.2.2, I deal with the environments it may occur; and in Section 4.2.2.3 with the movement *so* is able to make.

4.2.1. Different uses of *so*

The lexical item *so* bears many different uses in the English language. In the following, I briefly distinguish between seven different ones, following roughly the distinction made by Needham (2012). Only the final use of *so* is of interest for this dissertation.

Degree operator   The item *so* can occur as a degree operator or adverb. In this case, *so* indicates that some degree is high. The sentences in (5) and (6) illustrate this. In (5), the speaker says that she is happy to a high degree. In (6), the degree of the memorableness of what the subject wrote is high.

(5)   I know I don't look happy, but I'm just so happy.   (Needham 2012:38)

(6)   He can go to his grave smiling that he wrote something so memorable. (ibidem)

Needham points out that in each of these uses, *so* can be replaced by *very* without change in the meaning of the utterance.

Causal discourse marker   The item *so* can also be used as a causal discourse marker or, as Needham puts it, as a linking adverbial. In this use, *so* signals that there is a causal relation between two propositions. It could be replaced by *therefore* without loss of meaning.

(7)   I heard you mention last week that you like chocolates, so I got you some today.
                                                                            (Needham 2012:37)

(8)   We were hungry, so we went out for food.

Additive marker   Another use of *so* that Needham describes is one in which it is a variant of the English additive markers *too* and *also*. Thus, in (9), *so* signals that a previously mentioned predicate, in this case *grew*, also applies to an entity in the second proposition. In (9), the predicate *burst into flames* also applies to *his pants*.

(9)   As Belle's frustration with me grew, so did my fear of upsetting her.

(Needham 2012:38)

(10)   The room burst into flames. So did his pants.   (ibidem)

Manner adverb   *So* can also be used in a way similarly to the Dutch and German adverbs *zo* and *so* 'like this/that'. An example of this is given in (11). Here, the head of the subject is cocked in a certain way that is salient in the discourse.

(11)   He artfully placed the foils in a face-framing halo, head cocked just so, forehead
          crinkled in concentration.   (Needham 2012:36)

QUD opener   One can also use *so* to indicate that one is about to switch the topic of the conversation, or even to signal that one is starting a new converstation (Needham 2012:37). I take this use to indicate that the speaker is opening a new question under discussion (QUD), or in terms of Farkas and Bruce (2009), puts a new item on the Table - obviously, this is a very preliminary claim that would require further research.

   In case of (12), the new topic the speaker addresses is whether the addressee is dating some guy. In (13), the new issue would be what happened at some point to a salient group of people.

(12)   So, what...are you, like, dating this guy?   (Needham 2012:37)

(13)   So, what happened was we were all listening to music.   (ibidem)

VP-anaphor   *So* can also be anaphoric to VPs instead of entire clauses. The examples in (14)-(15) illustrate this. Note that in these cases, it seems that *so* co-refers with *do*. In (14), *do so* refers to *determine if Mars has - or ever had - the conditions necessary to support life* and in (15), it refers to *appear malleable* (Needham 2012:38-39).

(14)   The MSL's objective is to determine if Mars has - or ever had - the conditions
          necessary to support life. And it will do so with the most advanced set of
          scientific tools included on any off-Earth expedition.   (Needham 2012:38)

(15)   She knew how to appear malleable. It just required a lot of effort to do so.

(Needham 2012:39)

Propositional anaphor   Finally, *so* can be anaphoric to a proposition. This use is central to the present chapter and we already saw some of its occurrences above. (16) and (17)

show some more uses. In (16), *so* seems to stand in for the proposition *I am hurt* and in (17), this seems to be the proposition *she won't start*.

(16)   A: Are you hurt?
       B: I don't think so.   (COCA 2015)

(17)   You see, she won't start. I told you so.   (Needham 2012:39)

(16) shows us that the proposition that *so* refers to is not syntactically identical to the previous proposition (and hence, B's response in (16) does not mean that the addressee is not hurt).

In the following, I will focus only on this use of *so*.

4.2.2. The distribution of the propositional anaphor *so*

In Section 4.2.2.1, I consider the propositional attitude verbs that *so* can occur with. In Section 4.2.2.2, I touch upon the other linguistic environments that *so* can occur in. Finally, in Section 4.2.2.3, I discuss the movement of *so*.

4.2.2.1. The propositional attitude verbs that *so* can combine with

The propositional attitude verbs that *so* often occurs with are predicates like *appear*, *assume*, *believe*, *suppose*, *suspect* and *think* (see, e.g., Cushing 1972, Cornish 1992, Needham 2012). In this respect, *so* thus does not differ very much from the items used in embedded polar responses discussed in the previous chapters. As was mentioned above, again similar to the other items, *so* cannot co-occur with factive predicates (Kiparsky and Kiparsky 1971). (18), repeated from (2), illustrates this.

(18)   We should listen to him sometime. #We would not regret so.

More recently, however, it was pointed out by Bhatt (2010) and Moulton (2015), *so* can occur with predicates like *admit*, *convince* or *know*, see (19)-(21).

(19)   Gebara further asserted that politically 'advanced' priests and nuns favor de-criminalization, but admit so only in 'very restricted circles'.
                          (Moulton 2015, from Serbin, Ken, *Christian Century 1995*.)

(20)   Each of the stories is about a 'real' person; we are convinced so because their presence is faithfully recorded in photographs.
       (Moulton 2015, from Ramamurthy, Priti. 'Why is Buying a "Madras" Cotton

Shirt is a Political Act. A Feminist Commodity Chain Analysis.' Feminist Studies 30:3. 2004.)

(21)   Rooney knew he was special from a young age. And those who nurtured a talent that comes along rarely in any sport knew so, too.
(Bhatt 2010, from http://www.dailymail.co.uk/sport/article-389647/Walking-miracle.html, 2006)

A more frequent use of *so* with *know* is shown in (22).

(22)   A: It will rain tomorrow.
        B: You think so?
        A: I KNOW so!

It appears that uses of *know* with *so* are mostly felicitous in case the speaker is anticipating or encountering disagreement from his/her addressee. The utterance in (23), for instance, is fine for most speakers, but comes with a slightly 'defensive' reading.[3]

(23)   John is coming to the party. I know so, because he told me.   (Meijer, 2018)

If we alter the discourse, as illustrated in (25), and B affirms the first part of the assertion, before the *know so*-utterance, the judgments change. Now, the continuation *know so* is out. The minimal variant of *this* is a better continuation. Note that this utterance is also slightly marked. Presumably this is the case because it is odd to back up a previous utterance once the addressee has already signaled agreement. Yet, this use of *this* is not as infelicitous as the use of *so*.

(24)   A: Bill is coming to the party.
        B: Yes.
        A: I know {#so | this}, because he told me.   (Meijer, 2018)

Now that we have a rough idea of the predicates that *so* can occur with, there are two further points concerning the distribution of *so* that need to be addressed. First, it seems that *so* does not require its antecedent discourse to be syntactically or semantically *identical* to the proposition that *so* refers to. For clarification, consider (25):

(25)   Daddy's after me to go back, but I don't think so.   (COCA 2015)

---

[3] Some native speakers have pointed out to me that for them the use of *know so* is most natural in response to a question such as *Do you think so?*, like (22).

If *so* did in fact require its antecedent to be identical to the referent of *so*, the meaning of the *so*-utterance in (25) would be something like *I don't think that daddy's after me to go back.* However, this is not the reading of (25); in this case, we would end up with a contradiction (*Daddy's after me to go back but I don't think daddy's after me to go back*). The actual reading of this example seems to be *but I don't think that I will go back.*

Second, it has been pointed out to me that *think so* could be a fixed construction.[4] However, note that *think so* can be modified, see (26). This suggests that to *think so* is not a grammaticalized construction.[5]

(26)   A: You're really good.
       B: So - thank you, thank you.
       A: I really think so.   (Needham 2012:43)

Furthermore, if responses with *so* were all lexicalized constructions, we would not expect *so* to occur with so many different predicates. It is unlikely that *so* would lexicalize with many different predicates.

4.2.2.2. The environments that *so* can occur in

As we have already seen, *so* can occur with propositional attitude verbs. However, *so* can also felicitously occur in conditional clauses and with sentential adverbs. (27) shows the use of *so* in a conditional clause; (28) shows *so* together with a sentential adverb.

(27)   A: Did Alfonso not go to the party?
       B: If so, it must've been boring.   (Kramer and Rawlins 2012)

(28)   A: Did Alfonso not go to the party?
       B: Maybe so.   (Kramer and Rawlins 2012)

Furthermore, it is worth pointing out that each of these environments also allow for the embedding of *not*.

(29)   A: Did Alfonso not go to the party?
       B: If not, it must've been boring.
       C: Maybe not.

---

[4] I thank Sophie Repp for raising this issue.
[5] Cf. Simons 2007 and Rooryck 2001 on parentheticals.

This use of *not* will be discussed in Chapter 5. The items *so* and *not* thus seem to be in complementary distribution to some extent (as was also noted by, e.g., Cushing 1972, Kramer and Rawlins 2012) and this similarity goes beyond the attitude verbs both items can combine with. However, note that the uses of *not* and *so* differ in that *not* cannot form an embedded response with *know* any more (see Chapter 5 for an elaborate discussion), whereas *so* can occur with *know*, see (21).

In the remainder of this chapter, I focus mostly on occurrences of *so* with propositional attitude verbs, as was done in previous chapters as well. Yet, in my analysis I will take occurrences of *so* in conditional clauses/with sentential adverbs into consideration, as an account of *so* should be able to explain all of these uses.

4.2.2.3. The movement of *so* vs. *that*-clauses

The linguistic environment central to the use of *so* and this thesis is the object position of clause embedding predicates. In such positions *so* seems to replace *that*-clauses. However, it is worth pointing out that as objects of propositional attitude verbs, *so* and *that*-clauses behave differently in terms of syntactic movement. Moulton (2015) notes that *that*-clauses may be left-dislocated, but only if they 'associate with gaps in positions where DPs are otherwise licensed' (Moulton 2015:2, building on work by Williams 1981, Grimshaw 1982, Postal 1986, Webelhuth 1992, Alrenga 2005). The examples in (30)-(31) illustrate this.

The examples in (30a-b) show that that predicates like *believe* can take a *that*-clause or a DP as their complement. Their clausal complements may also move, as is shown in (30c).

(30) a. Most baseball fans {believed | knew | expected} that the Giants would win.
   b. Most baseball fans {believed | knew | expected} {that | it}.
   c. That the Giants would win, most baseball fans {believed | knew | expected}.   (Moulton 2015:2)

(31) shows that predicates like *boast*, which do not take DPs (see (31b)), do not license such *that*-clause movement (see (31c)).

(31) a. Albert {boasted | commented | complained} that the results were fantastic.
   b. *Albert {boasted | commented | complained} {that | it | a belief that the results were fantastic}.

    c.   *That the result were fantastic, Albert {boasted | commented | complained}.

                                                        (Moulton 2015:2)

In contrast, *so* can be extraposed to environments which do not associate with DP-gaps, see (32). This observation is unexpected, if we were to assume that *so* has the same type as *that*-clauses (see also Moulton 2015).

(32)   a.   It seems {so | that John left}.

        b.   *That (it) seems./*It seems that.

        c.   So it seems.   (Moulton 2015:2)

A complete account of *so* should also be able to address this difference from *that*-clauses in terms of movement. I discuss this in detail in Section 4.4.2.

4.3. Previous accounts of *so*

In this section, previous theories of *so* are discussed. In Section 4.3.1, syntactic analyses are considered. We will see that a syntactic account of *so* at least requires a small pragmatic component in order to account for the different predicates *so* may combine with. In Section 4.3.2, pragmatic analyses are discussed. The present proposal, discussed in section Section 4.4, builds on the latter accounts.

4.3.1. Syntactic accounts

In the following, I consider Kiparsky and Kiparsky's (1971) account of *so* (vs. *it*) in Section 4.3.1.1. In Section 4.3.1.2, I turn to the analysis by Kramer and Rawlins (2009).

4.3.1.1. *So* as the complement of non-factive predicates (Kiparsky and Kiparsky 1971)

In Kiparsky and Kiparksy's (1971) paper on factive predicates, they suggest that factive and non-factive complements have a different syntactic (deep) structure, as shown in (33ab) respectively.

(33)   a. factive clause: b. non-factive clause:

                         NP   NP

                       / \ |

                 (fact) S   S

                             (Kiparsky and Kiparsky, 1971: 356)

The difference between the two types of complements is that factive complements always involve a possibly silent noun *fact* (Kiparsky and Kiparsky, 1971). This noun gives rise to the factive reading of such predicates. In non-factive clauses, this noun is not present. Note that *fact* need not be present in the surface form of factive clauses, as it can be deleted at the level of either the 'derived structure', or the 'basic form' (Kiparsky and Kiparsky, 1971: 356). (34a) and (34b) illustrate this; in the latter example, *fact* has been deleted.

(34)   a.   I regret the fact that John is ill.
        b.   I regret that John is ill.   (Kiparsky and Kiparsky, 1971)

In their discussion, Kiparsky and Kiparsky (1971) suggest that *so* can only be anaphoric to a sentence, S, whereas *it* is anaphoric to NPs. Further, they argue that *so* cannot be the complement of factive predicates since these complements are only 'exhaustively dominated' by a noun phrase, headed by (a silent) *fact* (Kiparsky and Kiparsky, 1971: 362). Therefore, such predicates can only combine with *it*. Non-factive complements, in contrast, 'are exhaustively dominated' by both an NP and an S (ibidem), as is shown in (33b). Therefore, both *it* and *so* may be used as complements of non-factives.

   This analysis runs into several problems. As is also pointed out by, e.g., Cornish (1992); Cushing (1972); Gast and König (2008); Needham (2012), a purely syntactic account of *so* cannot explain the difference in meaning found for sentences such as (35). The use of *so* in this example seems less committed and atelic compared to the use of *it*.

(35)   A: I heard that Mike was at the party last night.
        B: I believe {it | so}.   (Needham, 2012)

In addition, Needham (2012) and Cushing (1972), amongst others, point out that there are also non-factive predicates that cannot occur with *so*, like *doubt* (recall (3)). This is unexpected on Kiparsky and Kiparsky's account.

4.3.1.2. *So* as an ellipsis licensor (Kramer and Rawlins 2009)

Kramer and Rawlins (2009) suggest that *so*, just like *not*, licenses ellipsis. They focus mostly on *yes* and *no*, but extend their account to *maybe so/not* as well. In Section 5.4.2, I will discuss this account in detail, as it makes some specific assumptions concerning negation and the use of *not*. For the present discussion of Kramer and Rawlins' account of responses with *so*, only their basic assumptions are relevant.

Kramer and Rawlins (2009) suggest that *so* is an overt expression of Σ (cf. Laka 1990; see Kramer and Rawlins 2009, p. 7), which licenses ellipsis and ensures that its complement elided. Furthermore, following Merchant's (2001) identity condition for ellipsis, the elided TP must entail the antecedent TP and the other way around. The example in (36) illustrates this.

(36) A: Is John coming to the party?
      B: I think [$_\Sigma$ so $[_{TP}$ John is coming to the party]].

For (36), it is clear that the antecedent TP entails the supposedly elided TP in (36B), that John is coming to the party.

I see two problems for this account of *so*, that apply to other ellipitical accounts of *so* as well. First, in responses like (35B), we cannot both spell out *so* and the elided clause, as is illustrated as (37B):

(37) A: Is John coming to the party?
      B: *I think so John is coming to the party.

However, in Kramer and Rawlins' elliptical analysis of responses with *not*, which they treat on a par with *so*, we *can* spell out both responses with *not* and the entire clause. (38) shows this.[6]

(38) A: Is John coming to the party?
      B1: Maybe not.
      B2: Maybe he is not coming to the party.

A question for this syntactic account of *so* is why uses of *so* as sketched in (37B) are ungrammatical.

Second, note that syntactic accounts in general run into difficulty where it comes to the 'non-literal' references of *so*. Recall that the ellipsis site is required to entail its antecedent and the other way around. However, it is difficult to argue that this is always the case. A relevant example, (25), is repeated in (39). In this example, the referent

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[6]As I will discuss in Section 5.4.2, in Kramer and Rawlins' analysis, *not* moves from Neg° into Σ° in, e.g., (38B1). In (38B2), such movement is not necessary as there is no ellipsis and thus no ΣP. Note that the counterpart of (38B2) with *so* is, similar to (37B), not felicitous either:

(i) A: Is John coming to the party?
     B: Maybe John is so coming to the party.

associated with *so* is not identical to the preceding utterance *daddy's after me to go back*. As discussed above, it seems more natural that the *so*-utterance actually means *I don't think that I will go back.*

(39)   Daddy's after me to go back, but I don't think so.   (COCA 2015)

It is unclear whether an account based on mutual entailment of the antecedent and referent of *so* can explain the meaning of (39).

As mentioned above, another problem for ellipsis accounts of *so* in general is posed by the restricted set of predicates *so* can occur with. It does not follow directly from Kramer and Rawlins' account that *so* can only occur with a specific set of predicates.

4.3.2. Pragmatic accounts

In this section, I discuss accounts of *so* as an anaphor to 'non-definite' sentences in Section 4.3.2.1. In Section 4.3.2.2, I discuss Needham's (2012) account of *so* as a QUD anaphor.

4.3.2.1. *So* as a marker of non-definite sentences (Cushing 1972, Cornish 1992)

Cushing (1972) views propositional attitude verbs and sentential proforms in the light of whether or not the subject has taken a 'stance' on the proposition in the complement. Attitude verbs that signal that the subject does not take a stance, bear the feature [−STANCE]. Examples of such predicates are given in (40).

(40)   (41)   a.   I don't know if pronominalization is interpretative, but I (would) suppose so.

            b.   I don't know if rules have to be extrinsically ordered, but I (would) guess so.

            c.   I don't know if distinctive features can be non-binary, but I (would) surmise so.

            d.   I don't know if Marcuse is still a CIA agent, but I (would) think so.

                                                              (Based on Cushing 1972, p. 189)

Cushing argues that *so* can only occur with [−STANCE] predicates like those in (41) and not with [+STANCE] predicates. The latter are predicates that indicate that the subject has taken a stance. Examples of such predicates are factive predicates or predicates like *doubt.* This set of predicates selects complements that bear the feature [+DEFINITE].

[−STANCE] predicates select [−DEFINITE] complements. According to Cushing, the former are asserted and the latter are non-asserted sentences. Cushing argues that *so* bears the features [−DEFINITE]. He argues the same holds for *not*. In contrast to *not*, *so* bears the feature [−NEGATIVE] as well.[7] This means that *so* can only occur with attitude verbs that are [−STANCE] and, consequently, that *so* can only refer to propositions that are introduced into the discourse as non-asserted and non-negative. Note that the division between [−STANCE] and [+STANCE] is not the polar opposition it seems to be (cf. also Needham's 2012 discussion of Cushing 1972). *Believe*, for instance, can both be [−STANCE] and [+STANCE], according to Cushing, depending on whether it occurs with *so/not* or *it* respectively. The difference is shown in (42).

(42) a. Paul thinks that complementation is partly semantic and Carol believes {it | *so} (too).

b. Paul thinks that complementation is partly semantic and Carol believes {*it | so} too.   (Cushing, 1972: 195)

Cushing suggests that the difference between (42a) and (42b) is that in (a), Carol's belief is about Paul's position, whereas in (b), she simply has an opinion and might not be aware of Paul's thoughts on the issue in question. Unlike Cushing, I take the differences in (42) to arise from the meanings of the proforms *it* and *so*, which may interact with the meaning of the predicate (cf. also Chapter 6) and the presence of the additive particle *too*. As was discussed in Chapter 2 and will be discussed in Chapter 6, *it* presupposes uniqueness. In Section 4.4.1, we will see that *so* presupposes that its referent is still under discussion. Therefore, the use of proforms contribute to the different meanings found in (42).

In an approach rather similar to Cushing's, Cornish (1992) suggests that *so* is indefinite, intensional and adverbial (in contrast to *it*, which he suggests is definite, extensional and nominal). He argues that speakers use *so* when they do not want to speculate on the truth of a proposition. Thus, Cornish focuses more on the intention of the speaker. However, as Cushing (1972) suggests that [−DEFINITE] sentences, i.e. those which *so* refers to, are not asserted, the accounts do seem very similar. Whether or not a speaker wants to assert a proposition also depends on his/her intentions.

Intuitively, these accounts seem to be on the right track. If *so* only refers to sentences whose truth is not established yet, it would explain parts of its distribution. However, as

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[7] Beside these two features, Cushing also argues that *so* bears a pronominal feature and a sentence features, such that it is an anaphor for sentences only. In contrast, *it* realizes the features [+STANCE], [−NEGATIVE] and [+/−SENTENCE].

we saw above, speakers of *so* utterances can in fact be rather sure about the truth of the proposition that *so*-refers to, even if s/he is the subject of the clause containing so. Two of such examples are shown in (43) and (44) (repeated from (26) and (21) respectively).

(43)   A: You're really good.

          B: So - thank you, thank you.

          A: I really think so.   (Needham 2012:43)

(44)   Rooney knew he was special from a young age. And those who nurtured a talent that comes along rarely in any sport knew so, too.   (Bhatt, 2010)

In both of these cases, for the speaker seems to be convinced that the referent of *so* is true. This is even the case for (43A), in which *so* occurs with *think*, which Cushing considers a [−STANCE]-predicate. Yet, in this case, the speaker appears very certain. This example suggests that fixing a level of 'certainty' for clause-embedding predicates like *think* cannot explain all of their uses. The data in (43)-(44) are thus problematic for both Cushing' and Cornish' approach to *so*.

Note that there also seems to be an issue with the [−NEGATIVE] feature that *so* is suggested to bear in Cushing's account. As was noted by Kramer and Rawlins (2012), in response to a question with low negation, both *so* and *not* seem to be anaphoric to this negated proposition, see (45).

(45)   A: Did Alfonso not go to the party?

          B: If {so | not}, it must've been boring.   (Kramer and Rawlins 2012)

The data in (45B) are incompatible with *so* bearing the feature [−NEGATIVE]. For further issues with Cushing's account, I refer the reader to Section 5.4.1.

4.3.2.2. *So* as anaphoric to the QUD (Needham 2012)

Needham's (2012) proposal for *so* consist of two parts. First, she argues that *so* refers to the immediate polar question under discussion (Roberts 1996/2012, QUD). Second, she argues that *so* signals that the speaker is not committed to the truth of the proposition that *so* refers to. Her definition is shown in (46):

(46)   *so*: Let M be the discourse move made previous to the utterance containing propositional *so*, and QUD_M the QUD associated with that move and $[\![\text{QUD}_M]\!]$ = $\{p_M\}$.[8]

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[8] Note that Needham deviates from the standard assumptions concerning the semantics of questions

⟦**so**⟧ = p$_M$, defined only if |⟦QUD$_M$⟧| = 1 and p$_M$ ∉ S$_a$, where S$_a$ is the commitment slate associated with the speaker of the *so*-containing utterance.

(Needham 2012:66)

Let us tackle these claims one by one. Let us first consider the claim that *so* refers to a QUD. Needham suggests, following Roberts (1996/2012), that this QUD can be implicit. Implicit QUDs are for instance introduced by modal operators such as *should have* (cf. Grant et al. 2012) or by clause embedding predicates like *think*. According to Needham, the assertion by A introduces the QUD *should we get married?*. B refers to this QUD with *so*.

(47)   A: I think we should get married.
        B: I think so too.   (Needham 2012:71)

Needham suggests that this accounts for the observation that *so* is found more often in response to questions than assertions, as QUDs are always questions. However, if we assume that assertions always answer a QUD or put an issue on the Table (cf. Chapter 2), it is not quite clear why the QUD corresponding to a question asked should have a different status in the discourse than those corresponding to an assertion. In each case, the QUD is the overarching question that drives the conversation (Roberts 1996/2012).

Needham's second claim is that *so* presupposes that its referent is not in the commitment slate of the speaker (in terms of Gunlogson 2001, 2008). This means that the speaker is not committed to the truth of the proposition under reference. Thereby, she rules out occurrences of *so* with factive predicates, as these presuppose the truth of their complement.

Although Needham's proposal seems to be on the right track, there are problems with both claims that she makes. Let us first assess the claim that the proposition that *so* refers to is not in the commitment slate of the speaker. This part of Needham's theory seems untenable. The examples above showed that *so* can be the argument of *know*, which indicates commitment to the proposition on the side of the subject referent. Above, we saw that this can be the speaker of the utterance (e.g. in *I know so*). In this case, the speaker clearly commits to the referent of *so*. To explain such usages, Needham suggests that they are echoic (as they often occur in response to *do you think so?*). However, note that *know* can also occur with *so* in non-echoic uses like (48)

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in assuming that the immediate QUD forms a singleton set, e.g., {p}. Recall from Section 2.4 that questions are usually taken to be a non-singleton set, like {$p, \neg p$}.

(repeated from (21)).

(48)   Rooney knew he was special from a young age. And those who nurtured a talent
        that comes along rarely in any sport knew so, too.   (Bhatt, 2010)

(48) thus forms a counter example against the idea that uses of *know so* can only be
echoic.

Furthermore, we have seen that *so* frequently occurs with the predicates *think* or
believe. With Needham's theory, we would have to assume that, when used in the
first person, these predicates do not commit the speaker to the complement. However,
examples like (49) show that predicates like *think* can in fact commit the speaker to a
proposition. In addition, (49) shows that such propositions can be referred to with *so*,
as Needham also points out herself.

(49)   I think this is the most important election of the last century and a half. I really
        think so.   (Needham 2012:72)

We thus have to conclude that predicates like *think* are able to express commitment.
Therefore, in utterance like (49) the speaker commits his/herself to the complement
of *think*, i.e. s/he puts it into her commitment slate. Thereafter, s/he refers to this
proposition using *so*. As a consequence, (49) shows that speakers may use *so* to refer to
a proposition that they have publicly committed themselves to.

Now let us consider the idea that *so* refers to the QUD. There are two scenarios in
which Needham's account seems to make the wrong predictions as well. Consider the
dialog in (50).[9] With focus on *John*, the assertion in (50A) has a QUD that is a *wh-*
question, i.e. *Which of the boys went to school?* (Roberts, 1996/2012). However, B's
response seems to convey that B doesn't think that John went to school.

(50)   A: [John]$_F$ came to school.
        B: I don't think so.

As Needham's definition of *so* requires the QUD to be a singleton set, she incorrectly
predicts (50B) to be infelicitous.

It thus seems that we need to allow for a more flexible referent of *so*; it might be a
QUD introduced by the preceding utterance, but it could also be the sentence radical of
the preceding utterance. Another example that illustrates *so*'s requirement for flexibility
is shown in (51)-(52). (51) was already considered in (47); (52) is a minimal variant of

[9]I thank Yu'an Yang for this example.

(47).

(51)   A: [I think [we should get married]$_p$]$_q$.

            B: I think so$_p$ too.   (Needham 2012:71)

(52)   A: [John thinks [we should get married]$_p$]$_q$.

            B: I guess so$_q$.

We see that if we swap *think* for *guess* and leave out the additive marker *too*, the referent of *so* changes. However, as Needham predicts only the immediate QUD to be relevant, which is tied to the previous assertion, it is unclear how she can account for the pattern observed above.

The proposal presented by Needham is interesting and seems to account for many aspects of the distribution of *so*. However, it also seems that we need a more flexible approach to account for *so* and the discourses it occurs in, in order to deal with the data in (51)-(52) or the uses of *know* with *so*. I will lay out such an account in the following section, which builds on Needham's approach.

4.4. The present proposal for *so*

The present study will make the following two claims concerning *so*:

  (i) the referent associated with *so* is the top item under discussion, i.e. a proposition that is on top of the Table T (in terms of Farkas and Bruce 2009, see Chapter 2) in a context c at the speech time;

  (ii) *so* is not just a propositional anaphor, but an anaphoric adverb that modifies clause-taking predicates and supplies an argument for such predicates.

In Section 4.4.1, I first discuss the pragmatic side of the proposal for *so*, i.e. Claim (i), in more detail and consider what it means to be on the Table. After that, I discuss results from two corpus studies that provide evidence for Claim (i). In Section 4.4.2, I deal with the semantic side of the proposal, i.e. Claim (ii), and its repercussions.

4.4.1. Claim (i): *So* and the Table

I argue that *so* refers to a proposition that is on the Table, i.e. under discussion (in the framework of Farkas and Bruce (2009)), and furthermore, that this proposition is the top item on the Table. The proposal is shown in (53).

(53) $[\![\textbf{think so}]\!]^{c,w} = think(p)$, is defined if p is $Top(T^c)$ in the context c at the speech time

This definition is tailored for the verb *think*, but could be adjusted to any predicate that is consistent with the presupposition of being on the Table, as will be shown below. Due to the nature of Claim (ii), considered in Section 4.4.2, I will not provide the denotation of *so* in isolation yet.

I argue that Claim (i) makes two important predictions, one with respect to the dialogues *so* occurs in, Prediction I, and one with respect to the predicates *so* may occur with, Prediction II. I discuss these predictions below. Thereafter, I consider both of them in more detail and show two corpus studies that provide support for the present claim.

Prediction I   A prediction of the present claim, in (53), is that the use of *so* is only felicitous if the *so*-utterance and the utterance containing its antecedent do not both entail the referent of *so*. That way, the two utterances cannot lead to acceptance of the referent as CG and therefore, the referent of *so* remains on the Table. There are of course many scenario's in which this is the case. For instance, in cases in which the antecedent to *so* is a question (questions do not entail their sentence radical); but also in case the *so*-utterance is a rejection of its antecedent. In Section 4.4.1.1, I consider the different situations in which this prediction could be borne out. Thereafter, in Section 4.4.1.2, I show that dialogues with *so* found in the Corpus for Contemporary American English (COCA) are in line with this.

Prediction II   A second prediction is that *so* can only occur with representational attitude verbs, that are compatible with its presupposition. These attitude verbs introduce an information state according to which the proposition at-issue holds or not. Section 4.4.1.3 discusses this prediction in detail. In Section 4.4.1.4, I provide data from COCA that shows this prediction is correct.

4.4.1.1. Prediction I: discourses with *so*

In the following I consider Prediction I in more detail. I start with a small recap of the Table and continue with the consideration what it means for a proposition to remain on the Table.

What does it mean to *be* on the Table?   Recall from Section 2.5.2 that Farkas and Bruce (2009) assume that the Table is a stack of QUDs. The top item is the last added item. In case of an assertion p, this is the sentence radical p and its singleton set, $\{p\}$. In case of a simple polar question p?, the sentence radical p and the denotation $\{p, \neg p\}$ is added. I assume that more complex assertions or questions can add more information to the Table. As a result, one assertion may introduce multiple propositions that are available for reference. I argue that there are different types of operators that may put their prejacent on the Table, when occurring in an assertion or a question, beside the sentence radical of that assertion/question.

I assume that attitude verbs can put their complement on the Table as well (cf. Simons 2007; Goodhue and Wagner 2018; Snider 2017). As discussed in Section 2.3.2.3, Simons (2007) shows that sometimes complements of attitude verbs bear the main point of the utterance. In such uses, I assume that the complement is available for reference. An example, repeated from Chapter 2's (83), is shown in (54). The semi-factive verb *discover* generally presupposes its complement; therefore, the main point of an utterance involving *discover* is usually not the complement, but the way the complement came to be known as true. However, the use of *discover* in (54) is different, as the complement clause answers A's question and therefore it is relevant to the QUD (Simons, 2007). In terms of Farkas and Bruce, we can say that B puts the complement clause on the Table in an attempt to settle A's question.

(54)   A: Where was Harriet yesterday?
       B: Henry discovered that she had a job interview at Princeton.

                                                                    (Simons 2007)

Simons argues the function of *discover* in (54) is evidential: B indicates how s/he came to know about Harriets whereabouts (cf. the discussions in evidential responses in Section 6.4.1.1 and Section 5.3.1.3).

In line with Simons' line of reasoning, Goodhue and Wagner (2018) show that response particles can target embedded clauses, see (55). Of course, the felicity of such responses is dependent on the context, but it shows us that embedded clauses can be at-issue, i.e. on the table.

(55)   A: [John believes that [Mary will come to the party]$_p$]$_q$.
       B1: No$_q$, he doesn't.
       B2: No$_p$, she won't.   (Goodhue and Wagner, 2018: 19)

I take the these examples to indicate that the Table can contain propositions different from those corresponding to the sentence radicals of interrogative and assertive moves made in a discourse.

Concerning epistemic modals like *might*, I assume that these put their prejacent on the Table as well. In making this assumption, I build on Yalcin's (2011) work, who suggests that *might*-utterances indicate that the prejacent of the modal is compatible with the information state of the speaker (see also Veltman 1996). That means that in Yalcin's model, the utterance in (56) indicates that the speaker considers the proposition that *it is raining in Topeka* compatible with his/her knowledge, i.e., the speaker cannot rule out that it is raining in Topeka.

(56)   It might be raining in Topeka.

Therefore, in Yalcin's (2011) model, 'there are no $\Diamond \phi$-worlds' (p. 309), as the modalized proposition $\Diamond \phi$ in (56) does not describe our world. Rather, it indicates that the speaker's mind does not exclude that it is raining in Topeka.

Evidence from the domain of responses stems from von Fintel and Gillies (2011). They consider the following scenario in which B is looking for his/her keys. For all A knows, B's keys could very well be in the car. Now, consider the dialogue in (57).

(57)   A: Your keys might be in the car.
        B: No. They aren't.   (Von Fintel and Gillies 2011)

With his/her utterance, A publicly commits to the claim that B's keys might be in the car. Now, this assertion is on the table. However, B's rejecting *no* seems to imply that B thinks that the keys are not in the car. It thus seems that B rejects the proposition that the keys are in the car and *not* the proposition that the keys *might* be in the car (von Fintel and Gillies, 2011). B could for instance elaborate on this by saying that s/he already looked in the car and therefore, is sure that the keys are not there. Therefore, (57) shows that the prejacent of *might* in (57A) is also available for reference and therefore on the Table.

I assume that if an operator like one of those above is present, their prejacents are also available for reference. There is thus no longer one single top item on the Table, but rather those items introduced by the most recent utterance. Which of these is targeted by an anaphor like *so* depends also on the perspective of the next discourse move. Recall from (51) and (52), but also from (55), that which proposition a speaker intends to refer to depends on his/her utterance. These examples all show that the referent may be

clarified with subsequent lexical material if necessary.

What does it mean to *remain* on the Table?   Recall that I argued that *so* signals that its referent is on the Table at utterance time. Thus, the referent of *so* is not settled at the moment of the speech event.

In Chapter 2, I argued, following Farkas and Bruce (2009), that the answers to questions are never accepted as CG immediately, as the asker of the question has to signal agreement with the answer. This may happen implicitly. However, as we predict answers to remain on the Table until this moment of agreement, we expect *so* to be felicitous in responses to questions, as long as the predicate *so* occurs with does not violate this premise (and can be used in embedded polar responses).

As for assertions, we expect reference to a proposition p introduced in an assertion to be possible with *so* if the previous assertion did not entail p, but did put it on the Table, or if the *so*-utterance itself does not entail p (such as in a rejecting response). To see what this means, let us look at different kind of utterances and their affect on the Table in more detail. Take for instance the three different propositions in (58). They all relate to the proposition that it will rain tomorrow and they all put this proposition on the Table. However, only (58a) entails this proposition. If I say (58b) and you agree, it does not become CG that it will rain tomorrow. Neither does it in case of (58c), even if we know that Bill is absolutely sure about this (assuming that Bill has no magical powers that enable him to know what tomorrow's weather will be like and that we both know he does not). For (58bc) we can thus say that if we accept them as CG, it does not mean that we accept (58a) as CG.

(58)   a.   It will rain tomorrow.
        b.   It might rain tomorrow.
        c.   Bill thinks it will rain tomorrow.

If an assertion does entail a proposition p, even the most implicit, possibly non-verbal, sign of confirmation could lead to the acceptance of p into the CG. Such non-verbal signs could be nodding, but we can also imagine that a speaker takes no objection to a proposition to be a sign of acceptance of a proposition.

Of course, affirmative responses also lead to acceptance of a proposition into the CG. Rejecting responses do not. Similarly, *so* responses involving a modal item or a quantified subject, such as (59), do not lead to acceptance of the referent of *so* into the CG.

(59)   Some would think so.

In contrast to other theories of *so*, we can now account for the occurrence of *so* as the argument of a verb like *know*. We expect this combination to be felicitous as long as the proposition under reference is not settled in the discourse. We can also account for the difference between (60) and (61).

(60)   It will rain tomorrow. I know so because I checked the weather report.

(61)   A: It will rain tomorrow.
          B: Yes, mom told me.
          A: #I know so, because I checked the weather report.

The utterance in (60) is predicted to be felicitous *if* the speaker of (60) is to assume that his/her listeners will not accept the first utterance by default. In case of (61), we see that A's utterance is accepted by B anyway. Therefore, we predict a subsequent use of *so* to be bad, as its referent is already accepted as CG.

As mentioned, items placed on the Table can be refuted by other speakers, or they can be accepted as CG. For *so*, I suggested that it must refer to a proposition under discussion at the speech time and stays under discussion according to the speaker. Note that this is rather similar to Needham's (2012) approach to *so*. The crucial difference between the approaches, however, is that in her account it must be the speaker who is not committed to the referent of *so*, such that the proposition cannot be CG. On the present account, it need not be the speaker who is not committed. The use of *so* simply suggests that not everyone agrees at the time of speech that the proposition under discussion can be accepted as CG. This way, we can account for uses of *I know so* or *I really really thinks so*, which are problematic for Needham.

4.4.1.2. Verifying Prediction I

In Section 4.4.1, I suggested that the first prediction, that follows from our claim in (53), is that in discourses with *so*-utterances, the *so*-utterance and its antecedent discourse move never both entail the proposition that *so* refers to. As mentioned above, this condition is satisfied in many different discourses. In the previous subsection, I illustrated that it is relevant whether the referent of *so* is embedded below an operator and whether the *so*-utterance itself is.

To test Prediction I, a corpus study was conducted. I investigated only occurrences of the predicate *think* with *so* in the Corpus for Contemporary America English (COCA,

Antecedents p	questions ($n = 68$)	assertions ($n = 28$)
(i) embedded prop.	9	8
(ii) prop. below NEG/MODAL	6 (+1?[12])	7
(iii) remaining	52	13
***so*-utterances**		
(iv) involving negation	41	19
(v) involving modality	5	5
(vi) no modal/negation	23	5

Table 4.1.: Corpus study in COCA, search: *think so* ., $n = 100$, including 4 false hits (based on Table 1 in Meijer 2018).

Davies 2008-).[10,11] The first 100 hits were analyzed. The results are shown in Table 4.1. In the middle and right column, we see the results for responses to questions and assertions respectively. Rows (i)-(iii) show whether the antecedents of *so* were (i) embedded propositions or (ii) propositions scoping below a modal/negative operator or (iii) neither of the two. Rows (iv)-(vi) show whether the *so*-utterances themselves involved (iv) negation or (v) a modal item or (vi) no such operator.

More *so*-responses were found in response to questions ($n = 68$). In response to assertions, 28 *so*-utterances were found. Zooming in on the responses to questions, we see that nine *so*-utterances referred to embedded propositions and six (+ one?[13]) referred to propositions that took scope below an operator. The *so*-responses to questions were rejecting responses 41 out of 68 times, i.e. 41 responses involved a negation. Five out of 68 responses involved a modal. Two examples of discourses that were found are given in (62) and (63).

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[9]I searched for "*think so* .". The ' . ' was included to filter out other uses of *so* (e.g. the degree modifier in *think so much*). Note that this way occurrences like *I think so too* were also excluded. A future study should takes such responses into account. The sample found in COCA and considered here can be downloaded from `https://sites.google.com/site/amarlijnmeijer/publications/data`. The entire corpus is available at `https://www.english-corpora.org/coca/`.

[10]Note that I have not investigated whether the division of negated vs. non-negated, modalized vs non-modalized, embedded vs. non-embedded assertions and questions is similar for dialogues not involving *so*. The purpose of the present corpus study was to investigate the dialogues *so* occurs in, and to see whether *so* responses that refer to target propositions that are entailed by their utterance are found at all and if so, what these responses look like. The argument I am delivering is thus not a statistical one. In addition, the question whether propositional anaphors *can* refer to assertions that do not involve a negation, modal or other kind of non-veridical operator is not quite relevant as we know this is possible, see for instance (55), or a *yes*-response to (57).

[12] The unclear antecedent was a proposition in the scope of *would*. The native speaker consulted found it difficult to say whether *so* was anaphoric to the entire proposition (including the modal) or to the prejacents of the modal, but leaned towards the latter. Therefore, these uses were tentatively categorized as being anaphoric to the propositions below the modal.

[13] See Footnote 12.

(62)   "[Is she hurt]$_p$?"

        "I don't think so$_p$."   (COCA 2015)

(63)   You're wondering whether [she's driven him into becoming delusional]$_p$? I don't

        think so$_p$. His fear is real.   (COCA 2015)

Turning to the responses to assertions, we see that eight out of 28 *so*-responses were anaphoric to an embedded proposition. Seven referents of *so* were propositions that took scope below a negation or a modal. Out of the *so*-responses to assertions, 19 were rejecting responses. Five contained a modal. Two examples of *so*-utterances that formed responses to assertions are shown in (64)-(65):

(64)   "He will think [I've left him]$_p$."

        "He does not think so$_p$."   (COCA 2015)

(65)   I wasn't [thinking about Sam]$_p$, even though you might think so$_p$.

                                                                  (COCA 2015)

The most interesting category for the present proposal is formed by those *so*-utterances that were responses to assertions, but did not involve a negation nor a modal. These responses are particularly interesting, because in these responses a speaker asserts a proposition, which seems to be affirmed by the *so*-response. Therefore, one might conclude that this proposition now becomes CG and thereby falsifies the claim presented in (53).

Table 4.1 tells us that 24 *so*-responses to assertions involved a negation or a modal. Five did not. In two cases, *so* seemed to target a proposition that was embedded below one or multiple non-actuality operators, see (66) and (67) respectively.

(66)   A: I think he wants to get treated right. He's black, right? So maybe [this

              message is to white people]$_p$.

        B: I think so$_p$.   (COCA 2015)

(67)   A: Jack seems like he might [think that was pretty funny]$_p$.

        B: Oh, I think so$_p$.   (COCA 2015)

In both cases, a native speaker suggested that *so* seems to refer to the proposition below one or more modals - *maybe* in (66) and the modals *seems like* and *might* in (67).

The remaining three *so*-responses that did not involve a modal or negation all involved a quantified subject, shown in the examples below.

(68)   [Psychology is a science]$_p$: at least some students think so$_p$.   (COCA 2015)

(69)   [The tree of life might seem like a stable design, appropriate for indelible ink]$_p$. Plenty of people think so$_p$.   (COCA 2015)

(70)   [And he just may pull it off]$_p$. Even some of the department's most vocal and longtime critics think so$_p$.   (COCA 2015)

In (68) *at least some students think so*, which implies that not all students agree, i.e. not everyone agrees that psychology is a science. The same holds for (69), in which *plenty of people think so*, which implies that not everyone does. Similarly, in (70), *some of the department's most vocal and longtime critics* think so, which implies that not all of the department's most vocal and longtime critics do. In (70), *so* may also refer to the proposition below *may*. However, due to the quantified subject of this *so*-response, this consideration becomes irrelevant.

These results show us that it is indeed the case that in discourses with *so*, the referent of *so* does not become CG. One could argue that the predicate *think* is rather weak in the sense that it commits the subject referent to a proposition in a weaker way than for instance *know* (cf. Cushing 1972). However, note that even with this weakly committing predicate we do not find any *so*-responses which seem to clearly lead to acceptance of the referent of *so* into the CG. That is, all referents of *so* either scope below a modal, negation, clause embedding predicate or the *so*-responses involve a modal, negation or quantified subject. Thus, even if we take a "weak" predicate like *think*, either the *think so*-response is further embedded below non-actuality operators or its antecedent discourse move does not entail the referent of *so*.

In Section 4.4.1.4, I consider the different clause embedding predicates with which *so* may occur. In that section, I also address the question whether it is the predicate or *so* that signals the non-settledness of the proposition under reference. First, I consider the second predication that followed from Claim (i).

4.4.1.3. Prediction II: the distribution of *so*

If Claim (i), repeated in (71), is correct, *so* is predicted to be able to only co-occur with predicates that are compatible with their complement being under discussion.

(71)   The referent associated with *so* is under discussion, i.e. a proposition that is on top of the Table T (in terms of Farkas and Bruce 2009, see Chapter 2) in a context c at the speech time;

In Section 4.4.1, I suggested that Prediction II suggests that *so* can only occur with representational attitude verbs, that are compatible with its presupposition.

I assume that the presupposition of *so* is evaluated with respect to the information state of the speaker. In this, I follow Yalcin (2007, 2011), who suggests that for instance unembedded *might*-statements are evaluated with respect to the information state S of the speaker. Yalcin furthermore argues that propositional attitude verbs like *think* shift the information state to the information state S', which is associated with the attitude holder, x. His proposal is sketched in (72). (72) shows that the utterance involving the attitude verb is evaluated with respect to the information state of the speaker, S; the complement of the attitude verb is evaluated with respect to the information state provided by the attitude verb, S', i.e., that of the attitude holder x.

(72) $[\![att\ \phi]\!]^{c,w,S,g} = \lambda x.\ \forall w' \in S'[\![\phi]\!]^{c,w',S',g} = 1$, where S' is the quantificational domain provided by *att*.

$\qquad\qquad\qquad\qquad$ (Anand and Hacquard 2013:(29); based on Yalcin 2007)

To see how this helps us analyze *so*, let us consider the dialog in (73):

(73)   A: Is he in the market for a bride?

$\qquad$ B: He claims so. $\qquad\qquad\qquad\qquad\qquad\qquad$ (Based on COCA 2008)

In (73B), the speaker distances him/herself from the claim that *he is in the market for a bride*, although the male individual in question has apparently made this claim. By using *so*, the speaker indicates that according to his/her information state, the proposition at-issue cannot be accepted into the CG yet. It seems that the speaker has reason to doubt the 'in the marketness' of the male individual.

In order to evaluate what (73B) means, we thus need two information states: (i) the information state of the speaker according to which the referent of *so* remains on the Table (and thus, is not accepted as CG (yet)); (ii) the information state of the subject of the attitude verb, according to which the proposition under reference holds or not. Note that these information states might also be one and the same. This happens in case the subject of an attitude verb with *so* as its complement is the first person, see (74B).

(74)   A: Is John coming to the party?

$\qquad$ B: I think so.

In order to make a prediction about the predicates that *so* can occur with, we must thus know which predicates introduce such information states. Recall from Chapter 2,

that according to Anand and Hacquard (2013), representational attitude verbs introduce information states. These are verbs like *believe*, *claim*, *doubt*, *hope* or *think*. In Romance, the complements of such predicates usually are in indicative mood (see Anand and Hacquard 2013 and references therein). Furthermore, these predicates can embed epistemic modals. As discussed in Chapter 2, hybrid predicates like the dubative *doubt* and the emotive doxastives *hope* and *fear* are outliers. These predicates can only embed epistemic possibility modals and not necessity modals, see (75)-(76):

(75)   a.   John doubts that Mary may have known her killer.
         b.   #John doubts that Mary must have known her killer.

                                                  (Anand and Hacquard 2013:10)

(76)   a.   John fears that Mary may have known her killer.
         b.   #John fears that Mary must have known her killer.

                                                  (Anand and Hacquard 2013:10)

As mentioned in Chapter 2, non-representational attitude verbs, such as *command* or *want*, are not concerned with information states, but rather with the preference of their subjects. These predicates cannot embed epistemic modals, see (77):

(77)   a.   #John {commands | wants} that Mary may have known her killer.
         b.   #John {commands | wants} that Mary must have known her killer.

                                                  (Anand and Hacquard 2013:10)

Anand and Hacquard argue that representational predicates can embed epistemic modals, because epistemic modals need an information state to quantify over (following Hacquard 2006; Yalcin 2007). Non-representational predicates cannot embed epistemic modals, because they do not introduce a domain of quantification.

4.4.1.4. Verifying Prediction II

In order to test the predicates with which *so* can co-occur, I looked into COCA. I searched for occurrences of *so* together with specific predicates.[14] Thus, the corpus study does

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[14] The searches all were of the following type: "[PREDICATE] so .", so that all forms of the verb were taken into account. Thus, for *think*, the search item was "[think] so .". The period was added such that non-relevant uses of *so* (like *so much*, see section 4.2.1), were filtered out. As a consequence, not *all* uses of the predicates with *so* and the predicates searched for could be included (it might be that there were also uses like *I think so, but …*) (cf. also Footnote 9). However, as the present corpus study was only meant to give insight into the predicates that are often found with *so* and those that are not often found with *so*, I do not consider this a problem. The search was conducted in June 2017. As

not provide an exhaustive overview.

The results are shown in Table 4.2. The number between brackets following each predicate signals how many hits were found in COCA, relative to the total number of hits of the predicate. We see that generally the predictions are borne out. The two top

n hits with *so*	Predicates searched for in COCA
$n > 10$	*appear* (32/129736), *assume* (32/45888), *believe* (405/228502), <u>*hope*</u> (1399/155179), *know* (21/1213856), *say* (1640/2545469), <u>*seem*</u> (98/280331), *suppose* (182/20311), *tell* (559/511579), <u>*think*</u> (7456/987224)
$0 < n < 11$	<u>*argue*</u> (1/65282), *admit* (1/44499), *claim* (1/93399), <u>*convince*</u> (1/21822), (*see* (3/932664))
$n = 0$	*acknowledge* (0/28889), *comprehend* (0/3838), *confirm* (0/26386), *demonstrate* (0/39348), *deny* (0/33110), *doubt* (0/46253), *exclaim* (0/4314), *ignore* (0/34915), *figure out* (0/23790), *notice* (0/61768), *realize* (0/81684), *regret* (0/12424), *resent* (0/3732)

Table 4.2.: The predicates searched for, categorized according to the amount of occurrences with *so*; underlined predicates cannot select *it* (Table 2 in Meijer 2018).

rows show the predicates that occurred with *so* in COCA. These are clearly all doxastic and assertive predicates, i.e. representational predicates. The semi-factive *see*, in the middle row, forms an exception. However, as discussed in Meijer (2018), native speakers disliked the uses of *see* found with *so*, with the exception of one speaker who thought one use was okay.[15] The occurrences of the other predicates in the middle row with *so* were generally liked better (although not all uses were accepted by all speakers).[16]

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mentioned in Footnote 9, the corpus is available at `https://www.english-corpora.org/coca/`.

[15] There were in total four occurrences of *see* with *so*. One of these was clearly uttered by a non-native speaker of English. His non-nativeness was clear from the context and subsequent utterances. Therefore this occurrences was excluded. The other three hits in COCA were:

(78) (i)   If I may saw so.
      (ii)   And now you have prostrate devices controlled by thought that we've seen so.
      (iii) It's a wonderful environment, except when you start working in it, you obviously are stirring it up, so that there is a difficulty in terms of them seeing so.

As mentioned in Meijer (2018), out of four native speakers, all thought (i) and (ii) were bad. Three of them thought (iii) was bad as well; one speaker liked (iii). However, note that in the case of (iii), the referent of *so* does not appear to be settled in the discourse, as the third party mentioned does not see this matter like the speaker does. Therefore, this use of *see* does not pose a problem for the present theory as it seems to deviate from the factive use of *see* as well.

[16] Out of five native speakers, two disliked the uses of *claim* and *argue* with *so*. Note that both these

These uses will be discussed in more detail below. In the following, I disregard the use of *see* with *so*, due to the difference in judgments for this predicate.

The predicates that often occur with *so* in COCA Let us first consider the set of predicate that *so* often occurs with. As was also found by other authors, *so* commonly combines with predicates like *believe*, *think* or *hope*. These are doxastic predicates and give us insight into the private mental state of the attitude holder (Anand and Hacquard, 2014). Further, we see *so* may occur with *say* and *tell*. These are assertive predicates. These introduce an information state, but foreground the attempted common ground update (see Anand and Hacquard 2014, as discussed in Chapter 2). These predicates thus in general have a communicative meaning. However, note that they can also be used to give insight into someone's mental state. In such uses, they do not foreground an attempted common ground update. This is shown in Simon's (2007) example (discussed in Section 4.4.1.1) and in the example from COCA in (81).

(80)   A: Where was Harriet yesterday?
        B1:   Henry said that she had a job interview at Princeton.

                                                            (Simons, 2007: 1036)
        B2:   Henry told me that she had a job interview at Princeton.

(81)   After the customer paid he would concentrate on the next repair and wait for
        the bell on his door to announce the arrival of more shoes. He did beautiful
        work. My parents said so.   (COCA 2015 FIC)

In these examples, the complements of the clause-embedding predicates provide answers to the questions. The predicates *say* and *tell* are thus used to inform us about Harriet's whereabouts according to Henry's information state or the information state of the

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predicates occurred with a non-animate subject, see (79) (discussed in more detail in (83) and (82) respectively):

(79)   (i)   Rumor claims so.
        (ii)   The success of avenue Q would argue so.

For the speakers who disliked these, the judgments for *argue so* seemed to improve if an animate subject replaced the non-animate ones; for *claim so*, this was only the case for one of the two speakers (in contrast to suggestions in Meijer 2018).

Two speakers disliked the use of *convince so*. One of these speakers also disliked the *claim so*. This speaker however suggested that these uses were better than the uses of *see so* discussed in Footnote 15.

Out of four native speakers, the use of *admit so* was disliked by one speaker, who preferred *it* strongly in this case.

parents of the speaker in (81) and not to inform us of a specific saying or telling event.

The predicates that rarely occur with *so* in COCA   The set of predicates that only occur with *so* a few times are shown in the middle row of Table 4.2. These form a small set: *argue*, *admit*, *claim*, *convince.* Moulton (2015) and Needham (2012) already showed that *so* may occur with *admit.* Moulton (2015) in addition showed *so* may occur with *convince.* With the exception of doxastic *convince*, these predicates are assertives and thus denote communicative acts (Anand et al., 2019). As mentioned above, assertives introduce an information state of the attitude holder, whilst reporting a discourse move. Anand and Hacquard (2014) suggest that such moves can but need not 'bleed' into the present CG. If a complement bleeds into the present CG, it is accepted in this CG. Note that in embedded polar responses, assertives are used evidentially: the speaker presents the reported discourse move as evidence for an answer to the question (see also Section 4.4.1.1). In discussing the assertive predicates listed above in detail, let us first zoom in on *argue* and *claim.* The hits found in COCA are shown in (82) and (83).

(82)   Could all that signal hope we Americans may be getting over our sexual hang-ups? Maybe becoming more tolerant, less hypocritical, less uptight and, best of all, less judgmental of the private behavior of others? The success of Avenue Q would argue so.

(83)   A: Is he in the market for a bride?
       B: Rumor claims so.

For both *argue* and *claim*, it seems that they may easily report discourse moves without suggesting that the complement of these predicates is true. I assume that this is due to the nature of these moves. If one reports that something has been *argued* or *claimed* to be true, choosing these predicate and not a stronger predicate such as *proof* or *demonstrate* signals that the speaker may not be fully convinced of the truth of the complement. As will also be discuss in Chapter 6, this property makes these predicates uninformative in embedded polar responses. Therefore, these may less often with *so*, because they are dispreferred in embedded polar responses in general. Note that *tell* and *say* are assertive predicates as well that are also less strong than *proof* or *demonstrate.* Yet, these predicates are, in contrast to *argue* and *claim*, not associated with a context of a discussion or argument in which other speakers are to be convinced of the position of

the subject referent.[17] This differences makes it easier to use *say* and *tell* with *so*, i.e. to simply give insight into the mental state of the subject referent, and present their source as more reliable.

Let us turn to *admit*. The hit found in COCA is shown in (84).

(84)   For all this time, I had been driven nearly crazy with thoughts of ghosts – one in particular, even though I would have been the last to admit so.

In (84), the speaker commits to a proposition and thereafter refers to it with *so*. The proform forms the argument of *admit*, which is taking scope below *would*. It is clear that the speaker does not want the referent of *so* to become common ground.

(85) provides Moulton's (2015) example of *admit* with *so*.

(85)   Gebara further asserted that politically 'advanced' priests and nuns favor decriminalization, but admit so only in 'very restricted circles'. (Moulton 2015)

(85) contains additional information on the CG that the speaker reports on. The reported CG is one of *restricted circles*, which is not the CG of the speaker's context in (85). The confession of the politically 'advanced' priests is thus *not* CG in the context of (85). Therefore, (85) adheres to the claim in (53).

For *admit*, Anand and Hacquard (2014) suggest that it often presupposes that its complement is true, due to the kind of discourse move *admit* denotes (p. 74f). As such, it might seem factive. Anand and Hacquard suggest that the discourse move that it reports can 'lead to acceptance of the complement *p* into the CG of the reported discourse' (Anand and Hacquard 2014:74). The reportedly true proposition *p* in such cases 'bleeds' into the current CG. However, this need not be the case. Therefore, the factivity of *admit* is an 'illusion' (Anand and Hacquard, 2014: 75). To illustrate this, the authors provide the example in (86), which is clearly not factive:

(86)   In Ancient Greece it was widely accepted that the Earth was flat. Eratosthenes however thought that it was round. After his peers demonstrated to him that he couldn't be right, he finally admitted that the Earth was flat.

(Anand and Hacquard 2014:75)

If *admit* can but need not presuppose its complement, that explains why it is only rarely found with *so*. In its factive-like uses, *admit* is incompatible with *so*. The semi-factive

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[17]See for instance discussions on `https://forum.wordreference.com/threads/argue-that-claim-that.2380248/` and `https://hinative.com/en-US/questions/3024` for this take on *claim/argue*.

predicate *know* seems to be an exception, as the number of hits for *know so* is a bit bigger. This is not unexpectedly, since *know* does not report a discourse move or some kind of event, but rather mentions a mental state of knowing something to be true. Therefore, it might be more likely to not presuppose its entailment, in contrast to for instance another semi-factive predicate like *realize* or *figure out.* The latter two kind of predicates do not only convey information about the believe state of the attitude holder, but they also inform us about the way the attitude holder *came to know* about the complement (Karttunen, 1971; Hooper and Thompson, 1973). Although *know* is categorized as a semi-factive, it lacks such additional information. Rather, *know* simply suggests the speaker knows the complement to be true.

Let us now consider the use of *convince* with *so.* (87) shows the hit found in COCA.

(87)   Then there's nothing to do but to drift with the tide – he's weaving his way through waves of electric wires, a sea of telegraph trees, a jungle under the water – with his mouth slightly open. His memory comes back – his fishhood memory. Once upon a time, fish could fly. He's convinced so.

As mentioned in Footnote 16, two out of five native speakers disliked (87). Following the present theory, the use of *so* in (87) would signal that the speaker does not agree with the third person that fish could fly. It could be the case that predicates like *convince* are also used to settle propositions as CG, like Anand and Hacquard (2014) suggest for, e.g., *confirm* and that therefore, the use of *so* in sentences like (87) is dispreferred for some speakers. However, this "settling" effect does not seem to be strong for *convince* as other speakers do accept (87).

(88) shows Moulton's (2015) example of *convince so.*

(88)   Each of the stories is about a 'real' person; we are convinced so because their presence is faithfully recorded in photographs.   (Moulton 2015)

In (88), the subject holds a specific opinion, i.e. they think that the complement is true, but do not presuppose that everyone thinks this is the case. This suggestion is supported by the speaker's use of the *because*-clause, which signals that the speaker may not consider the referent of *so* settled in the discourse (as otherwise providing additional support for his/her claim would be unnecessary).

The predicates that do not occur with *so* in COCA   Finally, let us turn to the set of predicates that *so* was not found with in the corpus. These are shown in the bottom

row of Table 4.2. The finding that *so* does not occur with factive predicates is not new and not surprising. However, *so* also does not occur with semi-factives except for *know*. Semi-factives like *realize* are usually used to convey that a proposition is indeed true. As was already suggested above, predicates like *realize* or *figure out* suggest that some kind of event took place that caused the attitude holder know that the complement is true. Therefore, we do not expect such predicates to occur with *so* easily. Furthermore, this effect is very probably strengthened by aspect markers. Arregui (2007) for instance suggests that perfect aspect presupposes that the event took place. Following this line of reasoning, *John realized p* signals that there was a realization event with John as the agent in the actual world. For such an event, there must be evidence for *p* to be true, if we take John to be of sane mind. It seems very difficult to construct examples in which the presupposition of such predicates is canceled and the use of *so* is natural at the same time. The dialogue in (89) attempts to create such a context.

(89)   John is getting married to Mary, but A and B strongly suspect that he actually loves Suzy; however, he does not seem to realize this.

   A: John still has feelings for Suzy.
   B: If he would only realize so before the wedding.

In the present account, we predict B's use of *realize so* to be better than the use of this phrase with perfect aspect. A first consultation of a native speaker suggests that this is indeed true, but he still prefers *it* instead of *so* in (89B).

However, there are also some non-factive predicates like *confirm*, *doubt* or *deny* that do not occur with *so* in COCA. I argue that the meaning of predicates like *deny* or *confirm* is not compatible with a proposition still being on the Table, either because they are too negative (like *deny*), or because they are too positive (like *confirm*). For the latter, one could see that the complement of *confirm* may easily bleed into the common ground. Anand and Hacquard (2014) suggest that the subject's intent with, e.g., *confirm* and *deny* 'is partly to resolve a question under discussion' (p. 84). Therefore, we expect these predicates to be incompatible with *so*, as *so* signals the exact opposite.

As was discussed in Chapter 2, the predicate *doubt* is a different matter. Anand and Hacquard (2014) argue that *doubt* is doxastic and thus representational. However, *doubt* has also been suggested to share a property with non-representational predicates: it involves an ordering component concerning probability (Anand and Hacquard, 2013). More specifically, *doubt* signals that the attitude holder considers the complement unlikely. Support for this hybrid analysis of *doubt* stems from Romance, in which *doubt*

sometimes takes subjunctive complements, although representational predicates usually take indicative complements (see Anand and Hacquard 2013 and references therein). According to Anand and Hacquard (2013), *doubt* indicates that the attitude holder considers the worlds that verify the complement less likely than those that falsify the complement. Logically, the attitude holder must therefore still allow for the complement to be possible.

My hypothesis is that speakers use *doubt* to politely indicate that a proposition is not true (cf. also Simons 2007: 1042). The example in (90) shows this. In case of this dialogue, it seems like a good strategy for B to use *doubt*. This verb provides a way to signal that an attitude holder does not think that something is the case and at the same time avoid a conversational crisis. In case *so* is used with *doubt*, that purpose is lost, as *so* would signal that its referent is still under discussion.

(90)   A: She needs a ride to the Trumbull building. I told her I'd be right over.
        B: In this storm? I don't think so. Aunt Ibby, (...) I know your Buick is a
              very safe car, but I doubt that the roads are all plowed yet. Driving in
              this storm just isn't a good idea.   (COCA 2015)

Cushing (1972) also suggested that *doubt* involves a definite stance. This suggestion is in line with the idea that speakers may use *doubt* to convey that they do not take the complement to be true, although semantically *doubt* may signal that its complement is possible (albeit unlikely). The example in (91) further illustrates this.

(91)   I guarantee you that the president wants to shut the hole. I don't doubt that.
                                                                         (COCA 2010)

In (91), the speaker first guarantees the addressee something and then says that s/he does not doubt this. In order to guarantee someone something, you must be very certain that it is true.

More research is needed to further explore the pragmatics of *doubt*. However, for the purposes of the present chapter it is important to realize that although the incompatibility of *doubt* and *so* is not quite expected at first sight, this predicate does behave unexpectedly in other domains as well. Anand and Hacquard (2013) attribute this to its hybrid nature. In Chapter 5 and Chapter 6 we will see that *doubt* also behaves differently from other predicates in that *I doubt it* forms a felicitous response to a question, whereas *I doubt not* is not felicitous. Thus, *doubt* is also an outlier with respect to other kinds of responses and not just for those with *so*.

Summarizing, I have shown that the predicates that *so* occurs with are compatible with its presupposition, that the referent of *so* is still on the Table. The predicates that *so* cannot combine with either presuppose the truth of their referent or denote discourse moves that lead to refutation or acceptance of a proposition into the CG, such that their meaning is not compatible with *so*'s 'on the tableness' for strategic reasons.

4.4.1.5. Two potential problems

There are two potential problems with the present account of *so*. First, one could hypothesize that it is not *so* but the predicate it occurs with that signals the non-settledness of *so*'s referent. Second, there are certain uses of *so* in the past tense that seem to form counter examples to the present theory. In the following, I address these issues.

To remain on the Table: signaled by *so* or by the predicate it occurs with? One could ask whether the unsettled nature of *so*-utterances arises due to *so*, as I propose, or due to the predicates it occurs with.[18] An argument for the latter position could be that *so* can only occur with predicates that are compatible with their complement being on the Table and that *so* cannot cancel the presupposition of factive predicates such as *regret* or *notice*. Therefore, one may hypothesize that the unsettled nature of *so*-utterances arises because predicates such as *think* do not settle their complements and therefore, their complement always remains on the Table. To see this, consider (92).

(92)   A: Is John coming to the party?
         B: I think {he is | so}.

In (92), one may argue that B is responding with *think* and therefore signals that s/he is not quite sure if John is coming to the party. Alternatively, he could have responded with *Yes, he RSPV'd a week ago*. Thus, regardless of the use of *so*, the issue of John coming to the party remains on the Table in (92).

In order to substantiate this claim, we must thus look at other kinds of predicates. In Section 4.2.2, we considered examples of *know so*. Whenever *so* occurs with *know*, the factivity of *know* is cancelled. In addition, in section 4.2.2, we saw that *so* cannot occur with *know* if its referent was already accepted as common ground, in contrast to pronouns like *this*, see (93) (repeated from (24)).

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[18] I thank Sophie Repp and Seth Cable for raising this question on separate occasions.

(93)   A: Bill is coming to the party.
       B: Yes.
       A: I know {#so | this}, because he told me.   (Meijer, 2018)

It was also noted in Section 4.2.2, that providing further support for your assertion may be perceived as odd if another speaker has already accepted it, like in (93). So both A's possible responses in (93) are somewhat odd. Yet, native speakers suggest that A's response with *so* is worse than with *this*. This shows us that *so* cannot be used if its referent is no longer on the Table and that *so* can cancel the factivity of *know*. I take the data in (93) to show that the presupposition of the non-settledness of the referent of *so* does not depend on the clause-embedding predicate *so* occurs with, but on *so* itself. This property makes *so* fundamentally different from other items used in embedded polar responses.

Problems with the past tense   There are some uses of *so* that could be considered problematic for the proposal outlined in (53). Consider the example in (94). Here, we see past tense marking on the propositional attitude verb that occurs with *so*.

(94)   A: Can I get you a drink?
       B: Yes, please.
       A: I thought so.

In (94), at the time of A's response, the proposition that *so* refers to - *can I get you a drink* - is no longer on the Table, since B already settled it (and presumably, A accepted this response). We could say that, following Farkas and Bruce's line of reasoning, B's answer *yes* is only common ground after the other discourse participants signal their agreement. Therefore, at the moment of A's response, B's answer need not be common ground yet. However, since A's question is one that only B can settle, it is slightly odd for A to give his/her consent on the answer. Yet, crucially, giving such consent is not impossible. With such uses, A signals that s/he already foresaw this direction of discourse. Therefore, such utterances lead to a 'superiority' effect.

(95) provides a similar case:

(95)   '(...) instead, I saw Dill ringing the bell with all his might in to Atticus's face. Jem looked so awful I didn't have the heart to tell him I told him so.'

                                        (*To Kill a Mockingbird*, Harper Lee)

In case of (95), mischievous children, Jem, Dill and the first person, are caught red-

handed by Atticus. Before acting out their mischievous plan, the first person had already informed Jem, her older brother, that she thought the plan was no good. After their father Atticus shows up, this becomes clear for all three of the children. Therefore, one could say that is common ground that executing their plans was a bad idea.

There are two ways of dealing with (95). We could either say that the proposition that their plan was a bad idea is not common ground because it was not explicitly agreed upon (see Stalnaker 2014 for a discussion of such cases) or that it is common ground because all discourse participants saw the bad outcome of the plan. I want to explore the latter analysis. In (95), the first person, Scout, who did not tell her brother that she told him so before, would (by doing so) signal to him that she already foresaw the direction the common ground would go in, before this actually happened - just like in (94). Similar to (94), (95) has a 'superiority' effect: it indicates that the speaker was better at seeing the way things were going than the addressee. Therefore, such utterances are very different from other utterances with *so* seen up until now, as these lacked this 'strategic' effect. The use of *so* in cases like (95) thus emphasizes that the interlocutors have disagreed on the common ground status of the proposition under reference in the past and signal that the speaker was right.

Alternatively, we could make our definition of *so* relative to the event time of the predicate that *so* occurs with and try to circumvent problems with past tense this way. (96) shows an adjusted definition.

(96)   ⟦ think so⟧^{c,w} = $think(p)$, is defined iff $p \in T^c$ at the run time t of the thinking event

With (96), we might explain (95) and say that the speaker already told Jem that the plan was a bad idea and that this was still unsettled at the moment of telling. However, consider the example in (97).

(97)   A: Do you think that John will win the match on Saturday?
         B: Well, I thought so, but now I am not sure anymore.

With our tentative definition in (96), we would suggest for (97B) that the referent of *so* was under discussion at the thinking time and not at the speech time. However, it is not at all clear that there was a Table or a discourse at the thinking time. Thus, the time relative definition in (96) might help us in solving the tense problem sketched above, but it also introduces a new problem, namely, the exclusion of responses such as (97B).

Therefore, I stick with the initial account of *so* and consider the past tense uses of

so, sketched in (94) and (95), but not the one in (97), strategic. Speakers use *so* in this manner to convey that they correctly suspected what the discourse or the actual world would look like at the present moment, at a moment in the past.

4.4.1.6. Interim Summary

In this section, I considered Claim (i), that *so* is anaphoric to the top item on the Table, in more detail. I considered two predictions made by this claim. Prediction I postulated that *so* only occurred in dialogues in which the referent of *so* is not settled. I showed that this prediction is borne out in the uses of *so* found in COCA. Most *so*-utterances involved some modal item or a negation. Those that did not either referred to a proposition embedded below a non-actuality operator or involved a quantified subject.

Prediction II suggested that *so* only occurs with representational predicates, that are compatible with its presupposition. This prediction too was borne out. I demonstrated that *so* only occurs with doxastic and assertive predicates, like *think*, *believe* or *say*.

4.4.2. Claim (ii): The type of *so*

In order to give a type theoretical analysis of *so*, we need a type that can account for the use of *so* as the argument of propositional attitude verbs, as well as for the movement pattern observed in Section 4.2.2.3. There, I illustrated that *so* moves differently from *that*-clauses. In the following, I discuss three possible type theoretical analyses of *so*. In Section 4.4.2.1, I consider the analysis of *so* as a plain propositional anaphor. In Section 4.4.2.2, I discuss the idea that *so* is of type *e*. Finally, in Section 4.4.2.3, I defend the analysis that *so* is actually an adverb.

4.4.2.1. *So* of a propositional type

The most straightforward type theoretical analysis of *so* would be one in which *so* has the type of a proposition, i.e. $\langle s, t \rangle$. Although the question of what the type of *so* is, was not explicitly raised in previous literature, most authors seem to assume that *so* has the type of a proposition (see for instance Needham's definition in (46)).[19] The tentative analysis in (98) shows what the semantics of *so* could look under the present analysis laid out in the previous section.

(98) $\llbracket \mathbf{so} \rrbracket$ = p, defined if p $\in T^c$ *(to be revised)*

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[19]The only exception I am aware of is Cornish (1992), who suggests that *so* is adverbial. Yet, he does not provide a detailed analysis.

In (98), *so* simply refers to a salient proposition in the discourse that satisfies the presupposition of being the top item on the Table in a context *c*.

Considering the fact that *so* can occur in conditional clauses, with sentential adverbs and clause embedding adverbs, this analysis seems appealing. Such operators are usually assumed to take arguments of type $\langle s, t \rangle$. However, considering the recent literature on *that*-clauses and propositional attitudes, this analysis of *so* becomes problematic. As discussed in Chapter 2, Kratzer (2006) and Moulton (2009, 2015) suggest that propositional attitude verbs like *believe* or *say* take arguments of type *e*, rather than $\langle s, t \rangle$. To circumvent this problem, one could claim that *so*, as an argument of propositional attitude verbs, is always accompanied by a covert complementizer, see (99). The semantics of the complementizer, as proposed by Moulton (2015), is repeated in (100).

(99)   I think [$_{CP}$ C so]

(100) $\llbracket \mathbf{C} \rrbracket = \lambda p.\lambda x_c.\lambda w.[\text{CONT}(x)(w) = p]$

$\qquad\qquad\qquad\qquad\qquad\qquad\qquad$ (Moulton 2015:9, based on Kratzer 2006)

However, note that *so* can be topicalized, see (101). Native speakers report that this use of *so* seems to bear the same presupposition as the non-topicalized uses.[20]

(101)   J: My father gave his life so that we may have a chance to defeat this.
$\qquad$ A: So you told us. $\qquad\qquad\qquad\qquad\qquad$ (Star Wars Rogue One)

The topicalization of *so* is difficult to account for, if we assume that *so* must co-occur with a covert complementizer. For covert complementizers, it has been argued that they

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[20] There is a homophonous preverbal adverb *so* that seems to lack the presupposition described in section 4.4.1 (cf. Section 4.2.1), see for instance (i). In this case, *so* immediately precedes the verb.

(i)   Mrs. Murray: Mr. President, I ask unanimous consent that the Committee on Commerce, Science and Transportation be authorized to meet on Wednesday, August 1, 2001, at 09:30, on trade issues.
The President Officer: Without objection, it is so ordered.
$\qquad\qquad$ (United States of America Congressional Record, Volume 147 Part II, page 15397)

This preverbal and adverbial use seems to be a remnant of the manner adverb *so* (see Gast and König 2008). This adverb lacks the presupposition that the *so* in embedded responses has. Note furthermore, that we cannot use this *so* post-verbally, see (ii):

(ii)   #(Without objection,) it is ordered so.

In Section 4.4.2.3, I briefly return to such uses of *so*.

cannot be topicalized, see (102).

(102) a. $[_{CP}$ That $[_{IP}$ John likes Mary]] Jane didn't believe.
       b. *$[_{IP}$ John likes Mary] Jane didn't believe.   (Boskovič and Lasnik 2003)

The data above show that it is unlikely that *so* has type $\langle s, t \rangle$. Such a type would rule out topicalization of *so*; yet, (101) shows us topicalization of *so* is possible. Furthermore, such an analysis of *so* predicts that *so* has the same distribution as *that*-clauses. In Section 4.2.2.3, we saw that this is not the case.

If we were to assume another framework of propositional attitude verb that does not argue that such verbs take arguments of type *e*, e.g., a more classical Hintikkan framework, the topicalization problem would dissolve. In such a framework, the presence of a covert complementizer is not necessary. However, as argued in Chapter 2, such an account would not only require us to assume that there are two variants of each propositional attitude verb (one taking arguments of type $\langle s, t \rangle$ for attitude verbs with *that*-clauses, another taking arguments of type *e* for phrases like *believe it*); it would also require us assume two variants of *that*-clauses (one for modifying noun phrases, another for complementing predicates). Therefore, I considered this approach less parsimonious than the Kratzer-Moulton approach. I refer the reader to Section 2.2.5 for this discussion.

However, if we were to assume such an Hintikkan framework, despite its disadvantages, there is still one odd prediction that an analysis like (98) makes. It namely suggests that *so* can be used as a response particle, like *yes* or *no*. These particles are usually assumed to be propositional anaphors (e.g. by Krifka 2013, Roelofsen and Farkas 2015). However this not what we find for *so*, see (103):[21]

(103) A: Is John coming to the party?
       B: #So.

Manfred Krifka (p.c.) suggested that the ungrammaticality in (103) could be accounted for in the following way. In Krifka (2013), he suggests that *yes* has an assertive component, i.e. *yes* always forms an assertion. Therefore, *yes* is a stronger, more informative competitor of *so*, as *so* is not assertive. Furthermore, one could argue that since *so* bears a presupposition that its referent is on the table, it is not informative to use *so* without other lexical material in response to questions.

So it seems that one could make such an analysis of *so* work in principle, under the assumption that there are two types of clause embedding predicates and two types of

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[21]I thank Angelika Kratzer for pointing this out to me.

that-clauses. It should be pointed out that one advantage of this approach is that it is easy to account for the use of *so* in conditional clauses and with sentential adverbs (as these both take complements of a propositional type). Yet, as this approach also has clear disadvantages, it is worthwhile to explore other analyses of *so.*

4.4.2.2. *So* of an entity type

Moulton (2015) implicitly suggests that *so* could be of type *e*, since *so* seems to move differently from *that*-clauses and cannot take entities as its argument, unlike *that*-clauses. A possible implementation of this idea is given in (104).[22]

(104) $\llbracket \textbf{so} \rrbracket = \text{x}$, defined if $\text{CONT}(x) = p \wedge p$ is $top(T^c)$ *(to be revised)*

The tentative proposal in (104) suggests that *so* is anaphoric to salient content that corresponds to a proposition on the Table.

One problem with (104) is that it seems difficult to account for the occurrence of *so* in conditional clauses and with clause taking adverbs. Let us first focus on conditional clauses. An example is given in (105).

(105)   Is John coming tonight? If so, we should order more pizza.

Conditional clauses are usually analyzed as taking a propositional argument (Bhatt and Pancheva 2003). However, note that occurrences of for instance *anything* in conditional clauses is possible:

(106)   If anything, John wants to eat pizza.

The use of *so* in conditional clauses might be similar to the use of *anything* in such clauses. However, since the use of NPs in conditional clauses is not widespread, it is unclear how this use relates to the analysis of *so* in (104).

Turning to sentential adverbs such as *possibly*, we saw that these can also combine with *so*. These adverbs are usually analyzed as taking a propositional argument as well. However, Bogal-Albritten (2013) shows how such adverbs, like *possibly* in (107), can be applied to DPs as well, with the right type-shifting operations.

(107)   Mary hiked possibly the tallest mountain in Ireland.

So although the use of *so* in conditional clauses and with sentential adverbs is not

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[22]This is my hypothetical implementation and not Moulton's.

straightforward under the present analysis, it seems that there are ways to work around these issues.

A problem of (104) is that it becomes difficult to see what sets *so* apart from pronominal items like *it*, *that* and the NCA. If *so* is indeed of type *e*, we expect it to be able to appear in the subject position, like, e.g., *it*. However, Hankamer and Sag (1976) show that this is not the case; see (108).

(108) a.   {*So | it} is widely believed.

    b.   {*So | it} seems.   (based on Hankamer and Sag 1976: 417)

In addition, if *so* were of type *e*, we expect *so* to be modifiable by *that*-clauses, just like the entities in (109) are:

(109) a.   I regret it that we ordered more pizza.

    b.   The idea that John is the murderer.

Yet, (110) shows that we cannot modify *so*.

(110) #I believe so that John is the murderer.

The data above cast some doubt on the idea that *so* is indeed of type *e*. Let us consider an alternative analysis of *so* as an adverb.

4.4.2.3. *So* of an adverbial type

The previous two analyses tacitly assumed that the predicates that *so* combines with, are functionally applied to *so*, i.e. that *so* is always the argument in the semantic sense. However, it might also be the other way around. Suppose that *so* is a modifier that takes a clause embedding predicate as its argument and supplies an argument for this predicate; (111) illustrates this suggestion.[23] In (111), Q is the clause embedding predicate and x is the content argument of the predicate.

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[23] For simplicity's sake, in (111), I assumed that *so* already composed with a covert propositional variable, such as p in (i):

(i) $[\![\mathbf{so}]\!] = \lambda q.\lambda Q.\ \lambda y: q$ is $top(T^c)\ .\ \exists x[Q(x)(y) \wedge \mathrm{CONT}(x) = q]\ (p)$
    $\equiv \lambda Q.\ \lambda y: p$ is $top(T^c)\ .\ \exists x[Q(x)(y) \wedge \mathrm{CONT}(x) = p]$

After this composition, the variable p refers to a proposition that is salient in the context and satisfies the presupposition that its referent is the top item on the Table.

(111) $[\![\textbf{so}]\!] = \lambda Q.\ \lambda y\colon p$ is $top(T^c)$. $\exists x[Q(x)(y) \wedge \text{CONT}(x) = p]$[24]

In the proposal in (111), *so* selects for a propositional attitude verb and provides an argument for this verb. The presupposition sketched above restricts the possible interpretations that the argument can get.

   In Elliott's (2017) framework, the denotation of *so* would be slightly different, as he assumes that the external and internal argument are severed from the verb. In (112), I show how we can adjust (111) such that it fits Elliott's framework.

(112) $[\![\textbf{so}]\!] = \lambda f.\ \lambda e\colon p$ is $top(T^c)$. $f(e) \wedge \text{TH}(e) = x \wedge \text{CONT}(x) = p$

(112) shows that *so* provides a direct object, the theme (TH), for the predicate, x. Alternatively, we could assume that there is no direct object, just like in Elliott's complementation operation (cf. Section 2.2.5.1). (113) sketches such an analysis.

(113) $[\![\textbf{so}]\!] = \lambda f.\ \lambda e\colon p$ is $top(T^c)$. $f(e) \wedge \text{CONT}(e) = p$

An advantage of (112) over (113) is that it is not possible to add an internal argument to (112), whereas it is in (113). However, adding an internal argument to (113), once it already composed with an attitude verb, like *believe*, would result in an ungrammatical string:

(114)   *believe so it.

This differences makes (112) preferable over (113).

   Gast and König (2008) point out that the *so* under consideration in this chapter grammaticalized out of the marker of manner and degree deixis. An example of such a manner adverb is shown in (115)

(115)   'I'll be jiggering.' And so saying he went into ... (Gast and König, 2008: (15d))

The authors suggest that the manner feature is still available in the preverbal position in modern English. They suggest that in the post-verbal position, the adverb was destressed and lost its manner feature. This way, the propositional anaphor *so* came into existence.

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[24]Note that I deviate from Meijer 2018 in the treatment of the external argument. Meijer (2018) assumes that the external argument is added later in the composition, by an additional layer such as Kratzer's (1996) VoiceP. However, such an operation requires input of a different type than the output of (111). Therefore, I make the much simpler assumption in (111) that the external argument is included in the composition already. Note that these considerations become irrelevant if we adopt Elliott's (2017) event semantics, see (112).

The diachronic relation between these two instances of *so* provides a further argument for the adverbial status of the *so* central to this chapter. If Gast and König (2008) are right, the grammaticalization process of the deictic marker involved the development of a presupposition and the addition of a verbal argument.

An advantage of the analysis in (111) is that it predicts that *so* behaves like other adverbs, like *not* and *otherwise*. Both can occur in conditional clauses and with adverbs such as *possibly*, as is shown below. As was mentioned above, the use of *not* is discussed in more detail in Chapter 5.

(116)   Is John not coming to the party? If {not | so}, I should fix another ride.

(117)   A: Is John coming to the party?
         B1:   I think {so | not | otherwise}
         B2:   Possibly {not | so}.

In principle, the use of *so* in the constructions above is not straightforward to account for, on the assumption that *so* is adverbial. However, the fact that the adverbs *not* and *otherwise* may also occur in these constructions suggests that this problem is a more general one and therefore no counter example against the analysis in (111). However, in order to be able to incorporate such uses, either the formula in (111) must be revised in order for *so* to be able to co-occur with adverbs and conditional clauses, or an operation like function composition or predicate modification must be implemented. I will refrain from giving such an analysis here, as this analysis would have to incorporate the semantics of conditional clauses as well as that of sentential adverbs, which falls outside the scope of the present work.

It must be pointed out that Needham (2012) has argued that *thinking so* does not mean the same as *thinking (in) this way* or *like that*; see (118). She suggests that this shows us that an adverbial analysis of *so* is not on the right track.

(118)   A: Did you remember to lock the door?
         B: I think {so | #in this way | #like this}.   (Needham 2012:18)

However, the meaning of the adverbial analysis of *so* in (111) means something different than the adverbial alternatives that Needham provides. The meaning of *so* presented in (53), the presupposition that the referent of *so* is on the Table, and (111), the adverbial analysis, together convey a different meaning from *like this/that*.

4.5. Conclusion

In this chapter I considered embedded polar responses in English with the proform *so*. In Section 4.1, I showed that *so* is different from other items used in embedded polar responses in that it can occur with *know*. I made two claims concerning *so*, one with respect to its pragmatics and one with respect to its semantics.

First, I proposed that *so* can only occur with predicates and in contexts that are compatible with the presupposition that the referent of *so* is still under discussion, i.e. on the Table, at the speech time. Following work by Farkas and Bruce (2009), Anand and Hacquard (2013, 2014) and Yalcin (2007), I showed that it follows from this presupposition, that *so* (i) can only be used in dialogues in which its referent is not settled and (ii) can solely occur with predicates that introduce an information state and are compatible with their complement being on the Table. In arguing that *so* refers to a proposition on the Table, I built on work by Cushing (1972), Cornish (1992) and, most prominently, Needham (2012). However, the present account can, in contrast to previous accounts, explain the discourse sensitive use of *so*, as well as *so*-utterances in which the speaker is clearly committed to the proposition that *so* refers to. As such, I argue that embedded polar responses with *so* are Type I responses, like those with polar *van*.

I provided corpus data in favor of this account. It should be noted, however, that in some cases, the corpus data was unclear. For instance, the use of *convince so* was rejected by some speakers. It would be good to conclusively test the results from the corpus study in experimental work, such that these details can be worked out.

Second, I argued that *so* is a modifier of propositional attitude verbs and contains an item anaphoric to propositional content. With this claim, I am diverging from previous accounts of *so*, which assume that *so* is of a propositional type. The adverbial account of *so* cannot only explain its movement better, it can also account for the infelicity of *so* as a response particle. In addition, this account illustrates how *so* is similar to *not*, as both are adverbs. Furthermore, the account shows how the two adverbs are different, as *so* bears a presupposition with respect to the common ground status of its referent, whereas *not* does not.

Thus, building on the previous literature, I have proposed a new account of *so*. I showed that *so* is rather different from other items used in embedded polar responses, in comparison to the English but also the Dutch paradigm. In the previous chapter and in the remainder of this dissertation, we will see that no other items analyzed in this dissertation bear a similar presupposition with respect to the discourse situation. This

makes *so* a unique propositional anaphor. One of the consequences of this analysis is that *so* is not the right anaphor to use as a diagnostic for the studies of other propositional anaphora.

Part II.

Type II responses

5. The negative operator and the null complement anaphor

5.1. Introduction

The present chapter considers embedded polar responses that at first sight seem to involve only a negative marker, alongside the attitude verb and subject. Examples of such responses in English are given in (1).

(1) A: Is John coming to the party?
    B: I think not.
    C: I hope not.

The same type of response is available in German, with the negative operator *nicht* 'not'; see (2).

(2) A: Kommt Jan zur   Party?
        comes   Jan to.the party
        'Is John coming to the party?'
    B: Ich denke nicht.
        I   think not
        'I think not.'
    C: Ich hoffe nicht.
        I   hope not
        'I hope not.'

In contrast, this construction is not available in Dutch, as is shown in (3).

(3) A: Komt Jan naar het feestje?
        comes Jan to   the party
        'Is John coming to the party?'
    B: #Ik denk niet.
        I think not
        'I think not.'

C: #Ik hoop niet.
    I   hope not
    'I hope not.'

If grammatical at all, the responses in (3B-C) could only be taken to convey that the speaker is not thinking or hoping at all. As will be discussed in Chapter 6, an exception to this pattern is the use of *weten* 'know' in combination with *niet* 'not' - see (4B).[1]

(4)   A: Komt Jan naar het feestje?
                comes Jan to   the party
                'Is John coming to the party?'

        B: Ik weet niet.
                I   know not
                'I don't know.'

However, (4B) is tied to a somewhat lower register than its counterpart involving *het* 'it'.

    The examples above thus show that German and English show the same pattern, from which Dutch deviates. English and German also pattern alike with respect to being unable or able to use the weak pronoun in embedded polar responses. Both languages are unable to use a weak pronoun in combination with, e.g., *think* or *denken* 'think' - see (5B) and (6B) - in embedded polar responses. Yet, with the predicate *doubt* or *bezweifeln* 'doubt' both languages may use the weak pronoun, see (5C) and (6C). Similarly, both languages can embed a null complement anaphor (NCA) in combination with, e.g., *think* or *denken* 'think', but not with *doubt* or *bezweifeln* 'doubt' - compare (5D) and (6D) to (5E) and (6E).

(5)   A: Is John coming to the party?

        B: #I think it.

        C: I doubt it.

        D: I think.

        E: #I doubt.

(6)   A: Kommt Jan zu der Party?
                comes   Jan to the party
                'Is John coming to the party?'

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[1]In Chapter 6, I argue that (4) might as well involve an elided *whether*-clauses. Therefore, it does not seem very plausible for (4) to involve an NCA, as NCA are not found in elsewhere in Dutch. I refer the reader to Chapter 6 for the full discussion.

B: #Ich denke es.
I   think it.
Intended: 'I think he is.'

C: Ich bezweifele es.
I   doubt   it
'I doubt it.'

D: Ich denke (schon).
I   think SCHON
'I think.'

E: #Ich bezweifele.
I   doubt
Intended: 'I doubt it.'

In Chapter 6, I will consider the pattern observed in (5)-(6). I will argue that the incompatibility of a predicate like *think* in English and *denken* 'think' in German in combination with the weak pronoun is due to the availability of the NCA in responses with these predicates. I will suggest that the availability of a phonologically even weaker pronoun renders the weak pronouns superfluous. The NCA cannot occur in combination with *doubt* and therefore, this predicate can be combined with *it* in polar embedded responses - in this case the weak pronoun is the weakest alternative available.

As we saw in Chapter 1 and Chapter 3, Dutch behaves differently from German and English with respect to embedding the weak pronoun. Dutch may form polar embedded responses with the weak pronoun *het*, but not with NCA; see (7).

(7)   A: Komt Jan naar het feestje?
comes Jan to   the party
'Is John coming to the party?'

B: Ik denk *(het).
I think it
'I think so.'

In a nutshell, I argue in this chapter that the infelicity of the NCA in (7B) explains the inability of Dutch to form embedded polar responses with *niet*. I hypothesize that embedded polar responses with negative operators involve NCA as well. Both the negative operator and the NCA lack a Type I response implicature or presupposition, making such responses of Type II.

In this chapter, I focus on the responses in (1) and (2) in English and German. In Section 5.2, I consider the use, diachronic changes and syntactic status of the negative markers *not* and *nicht*. After that, in Section 5.3, I provide more data concerning the

responses with *not/nicht* and their restrictions. I demonstrate that the German data provide a much clearer empirical picture and form a superset of the English data, as the English construction is more limited than its German counterpart. English responses with *think*, like (1B), for example, are disliked by some speakers. In fact, I suggest that *not* responses with Neg-raising predicates, such as *think* or *believe*, are dispreferred in general. I hypothesize that this is due to diachronic changes of the English marker *not*, discussed in Section 5.2. In a nutshell, I argue that responses with *not* are remnants from an earlier stage of English. These responses are still productive in combination with non-Neg-raising predicates, as they are rejecting responses in which the negation scopes below the predicate (in contrast to, e.g., responses with non-Neg-raisers and *so* such as *I don't hope so*). I will show in Section 5.3 that such scopal considerations are irrelevant for Neg-raising predicates and therefore, they are no longer productive. In the remainder of this chapter, I therefore focus on the German data, as an account of the German data encompasses the English data too, due to the superset relation between the two. In Section 5.4, I consider previous analyses of embedded polar responses involving a negative operator and see to what extent these are applicable to their German responses with *nicht*. In Section 5.5, I present a proposal that can explain the complex data set and is more parsimonious than previous proposals, as it does not involve tools that are not independently argued for. My main argument is that embedded polar responses with negative operators involve NCA as well. Section 5.6 concludes this chapter and shows that the present proposal also takes into account the other differences between German, English and Dutch, shown in (5)-(7).

5.2. Negation in English and German

To gain some insight into the negative markers under discussion in this chapter, this section provides a brief overview of the diachronic development of *not* and *nicht*. The diachronic perspective is relevant because it - as we will see - illustrates similarities and differences between negation in English and German which are important to the present discussion. The first part of this section, Section 5.2.1, revolves around English *not*. I show that English responses with *not* are most likely remnants from a previous stage of English. In Section 5.3, I demonstrate that this may explain the more limited availability of responses with *not*. The second part of this section, Section 5.2.2, focuses on *nicht* in German. In that section, we see that the German data concerning negation provide a clearer picture in comparison to the English data.

5.2.1. English *not*: roots and present-day use

In Section 5.2.1.1, I discuss the diachronic change undergone by negation in English. After that, in Section 5.2.1.2, I consider the syntactic status of *not* in present-day English. In addition, in Section 5.2.1.3, I consider other changes in the previous stages of the English language, that are relevant for the present-day use of *not*.

5.2.1.1. The diachronic change of negation in English

The expression of negation in natural languages has been noted to (be able to) change cyclically, meaning that the way of marking negation goes through changes to eventually end up similar to its starting phase. Such cycles are named after the work of Otto Jespersen (see, e.g., Dahl 1979; Zeijlstra 2004; van Gelderen 2008).

Zeijlstra (2004) distinguishes six phases of change in the syntactic status of English negation, which constitute the Jespersen cycle. Table 5.1 shows the different phases, in which Phase 7 equals Phase 1. As we see in this table, in Phase 1, the negative marker *ne* is attached to the verb V. In English, this expression of negation occurred around the 7th and 8th century. In the second phase, the marker *ne* is still attached to the verb. The second phase differs from the first phase in that adverbs may be added to the complex to express negation. Phase 2 occurred around the 11th and 12th century. In the third phase, both the marker attached to the head and the adverb become obligatory. According to Zeijlstra (2004), this change is due to the phonological reduction of the marker attached to the verb (p. 56). As this marker becomes phonologically weaker, the need to express negation by other means becomes stronger.

In the fourth phase, the marker attached to the verb becomes optional. The adverbial marker remains obligatory. In the fifth phase, the marker attached to the verb is no longer used. This phase describes English from the 14th till mid 17th century (see Haeberli and Ihsane 2015). In the sixth phase, the adverbial marker optionally behaves as if attached to the verb. Zeijlstra (2004) suggests that it is 'available in two forms' (p. 56), affixal or adverbial. In the next phase, distinguished as Phase 7 in Table 5.1, there are no longer two forms available: only the marker attached to the head is. Thus, Phase 7 equals 1 and therefore, the cycle is complete.

5.2.1.2. *Not* in present-day English

From the diachronic perspective presented above, *not* in present-day English is an adverbial marker. The contracted form *n't* can be attached to the finite verb and is therefore

Phase	Structure	English example	Century
1	Neg$_1$-V	*ne*-V	$7^{th}/8^{th}$
2	Neg$_1$-V (Neg$_2$)	*ne*-V *na/nauht/noht*	$11^{th}/12^{th}$
3	Neg$_1$-V Neg$_2$	*ne*-V *nauht*	
4	(Neg$_1$-)V Neg$_2$	(*ne*-)V *naugt*	
5	V Neg$_2$	V *naugt*	14th till mid 17th
6	V Neg$_2$ / V-Neg$_2$	did *not*/ did*n't* V	$16^{th}/17^{th}$ onward
7 (=1)	V-Neg$_2$		

Table 5.1.: Change in Negation in English (Zeijlstra 2004 and Haeberli and Ihsane 2015)

often considered a syntactic head (see, e.g., Haegeman 1995; Zeijlstra 2004). Two arguments for analyzing *not* as an adverb are its behavior with respect to head movement and the *why not*-test (Merchant 2006).

First, as Haegeman shows, *n't* moves along with the finite verb, a head, out of the VP, whereas *not* does not. This is illustrated in (8).

(8) a. Has John [$_{VP}$ not left]?[2]
     b. Has<n't> John [$_{VP}$ <*n't> left]?   (Haegeman, 1995: (34))

Syntactic heads, like finite verbs, typically either block movement of other heads, or move along with the moving head. For (8b) we could therefore say that *has* has moved out of the VP and took *n't* with it. Items that do not block head movement, like *not* in (8a), are assumed to be phrasal instead.

Second, Merchant (2006) suggests that only adverbs can adjoin to adverbs. Therefore, the observation that *not* can adjoin to adverbial *why* shows that *not* is adverbial as well (Merchant, 2006) - see (9a). The same does not hold for the contracted form *n't*, as is shown in (9b).

(9) a. Why not?
     b. *Why n't?

These two tests clearly affirm the adverbial status of *not*.

However, there are authors who have argued that *not* may also be a syntactic head. For a different view on the syntactic status of *not*, see, e.g., Pollock (1989); Zanuttini (1996); Repp (2009). Such accounts need to assume for (9a) that this expression is a remnant from Phase 5, or that English *not* forms an exception to the *why not*-rule

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[2]Zeijlstra (2004) notes that *Has not John left?* is acceptable only as an archaic expression.

(which seems to hold cross-linguistically). In addition, such accounts also need to explain why responses with *not* behave like (8a) instead of (8b). Again, a solution could be to assume that *not* responses are lexicalized. However, that would mean that all potential *not* responses, like *I hope not* or *I guess not*, are fixed expressions, which does not seem very parsimonious. Therefore, I side with Haegeman and Zeijlstra on this matter and assume that *not* is adverbial.

5.2.1.3. Related changes in English

In the previous subsection, we saw that English negation has undergone change in the last few centuries. Based on, e.g., Merchant's (2006) *why not*-test, I suggested that *not* is adverbial in present-day English. Following Zeijlstra (2004), I assumed that this adverb is a remnant from earlier stages of English, that can still be used productively. In this section, I suggest that responses with *not* stem from an earlier stage of English as well. In the next section, we will see that this explains the limited availability of *not* responses, in contrast to *nicht* responses, which I will discuss in Section 5.3.1.2.

In the previous subsection, I sketched the transition in the Jespersen cycle from Phase 5, in which negation is marked by an adverb, to Phase 6, in which negation can be marked by an adverb or a syntatic head. In English, this transition is located around the 16th to 17th century. Around the same time, two further changes occurred in English, that are relevant for responses with *not*. First, this period involves the introduction of *do*-support (Haeberli and Ihsane 2015 and references therein). Nowadays, negative sentences in English usually involve *do*-support - also with *think*, see (10). (11) shows that the counterparts of the sentences in (10) without *do*-support are ungrammatical.

(10)   a.   I do not think that John smokes.

          b.   I don't think that John smokes.

(11)   a.   *I \<not\> think \<not\> that John smokes.

          b.   *I \<n't\> think \<n't\> that John smokes.

In older stages of English, *do*-support was not used. Haeberli and Ihsane (2015) suggest *do*-support became more frequent in the second half of the 16th and the most used option in the second half of the 17th century. The lack of *do*-support in embedded polar responses with *not* is not surprising, if we assume that such responses are remnants from an earlier stage of English.

However, there is second change in English that is often related to the first one: the loss of verb moment. In older stages of English, the finite verb moved out of the VP,

into the functional domain, as is shown in (12a). In present-day English, however, the finite verb remains in the VP and *do* is inserted in the functional domain; see (12b).

(12)   a.   By thy thanks I set [$_{VP}$ not a straw]   (Roberts 1993)
       b.   ... I do [$_{VP}$ not set a straw]

Haeberli and Ihsane (2015) argue that this movement was lost in two 'major phases of decline (...), one around 1500 and the other around 1700' (p. 520). These two changes, the introduction of *do*-support and the loss of verb movement, thus roughly occur in the same period. For a discussion of how these changes are related, I refer the reader to Haeberli and Ihsane (2015).

For the present purposes, it is important to see that our responses with *not* look more like (12a), involving verb movement, than (12b), not involving verb movement. In responses with *not*, the finite verb also occurs left to the negation, which marks the left border of the VP. In addition, the responses with *not* lack *do*-support. It might thus very well be the case that embedded polar responses with *not* are a remnant from Phase 5. Note that Haeberli and Ihsane suggest that some predicates 'are more resistant to the rise of *do* than others' (p. 521, citing Ellegård 1953), e.g., *have* and *doubt*. On the basis of this, it is not surprising that some predicates might still resist *do*-support in certain constructions, such as *not* responses. In fact, in the second half of the last century, predicates like *know* and *ask* could still occur without *do*-support. Such uses seem to involve verb moment too; see for instance (13) and (14).

(13)   a.   I will not be ashamed to say 'I know not', nor will I fail to call in my
            colleagues when the skills of another are needed for a patient's recovery.
                          (Modern version of the Hippocratic Oath, written in 1964)
       b.   ¬ > KNOW

(14)   a.   Ask not what your country can do for you (...)
                          (Inaugural address, John F. Kennedy, 1961)
       b.   ¬ > ASK

It should be noted that these examples do pertain to a certain, more formal register. In addition, observe that both predicates in (13) and (14) seem to scope below negation. As a result, *I know not* in (13) seems to convey that the speaker does not know the answer. In this sense, these uses are different from the embedded polar responses with *not*, as in those, the predicate may also outscope the negation. We consider the scopal relations in more detail in Section 5.3.1.

If embedded polar responses with *not* are indeed a remnant from Phase 5, this explains both the unexpected surface order of the predicate occurring to the left of the negation and the lack of *do*-support. The limited availability of responses with *not* in contrast to responses with *nicht*, discussed in Section 5.3.1.2 would also be explained if these responses are indeed remnants from an older stage of English. However, this hypothesis does not yet explain why this 'older' use of *not* is still (partially) used in embedded responses. Further, it does not explain what the nature of embedded polar responses with *not* is. *Not* may be a licensor of ellipsis (as suggested by Kramer and Rawlins 2009); *not* may also have been reanalyzed as a negative proform (corresponding to Cushing's 1972 proposal). I consider the first question in Section 5.3. I discuss previous proposals in Section 5.4. Yet, in the next subsection, I first deal with negation in German.

5.2.2. German *nicht*: roots and present-day use

Zeijlstra (2004) argues that German currently is in Phase V of the Jespersen Cycle. Recall from Section 5.2.1.1 that in Phase 5 negation is marked by an adverb. We therefore expect that *nicht* will not block head movement. (15a) shows that in embedded clauses, the finite verb remains in situ. In matrix clauses, the finite verb moves to the second position, i.e. forming a verb second (V2) sentence. In negative clauses, the finite verb thus moves over the negation. Hence, the negative marker does not block this head movement (see also Repp 2009).

(15)   a.   ... dass Hans [$_{VP}$ nicht läuft].
           that Hans not walks
           '... that Hans isn't walking.'

       b.   Hans läuft [$_{VP}$ nicht].
           Hans walks not
           'Hans isn't walking.'

Another prediction Zeijlstra (2004) makes is that *nicht* can be used in *why not?* constructions (Merchant, 2006). Again, the prediction is borne out.

(16)   Warum nicht?
       why   not
       'Why not?'

Thus, these two test affirm Zeijlstra's hypothesis that *nicht* is an adverb.

Being a Phase 5 language, the prediction is that there were older phases of German in which there was a preverbal negative marker. Jespersen (1917) argues this was *ni,*

which eventually weakened into *(e)n* and was finally lost (p. 9). Before being lost, the preverbal marker was accompanied by a negative adverb. As we saw for English, this adverb started out as an optional marker, which became the obligatory *nicht* (see Jespersen 1917).

It has also been argued that *nicht* is a syntactic head. Haftka (1994) argued for this because *nicht* cannot be topicalized, in contrast to other adverbs - see (17).

(17) {Ständig | Wahrscheinlich | *Nicht} bewundert Luise Peter.
      continuously probably   not   admires   Luise Peter
      '{Luise admires Peter all the time. / Luise probably admires Peter. / Luise
      does not admire Peter.'}'   (Jacobs, 1983: 144))

Yet, Repp (2009) points out that sentences like (17) with *nicht* might be infelicitous due to their information structure. She suggests that *nicht* can be topicalized if it is modified by an intensifier like *gar* 'totally', see (18). (18) is felicitous in a 'a situation where it is at issue how much Peter was admired by Luise' (Repp, 2009: 56).

(18) GAR nicht bewundert Luise Peter.
      at.all not   admires   Luise Peter
      'Not at all does Luise admire Peter.'   (Repp, 2009: 56)

For a further discussion of the syntactic status of *nicht*, I refer the reader to Repp (2009).

In this section we saw that both *not* and *nicht* can be analyzed as adverbial negative markers. Additionally, I suggested that responses with *not* stem from an older stage of English.

5.3. Embedded polar responses with *not* and *nicht*

In this section, I consider the predicates with which *not* and *nicht* can form embedded polar responses. In Section 5.3.1, I focus on propositional attitude verbs that can(not) occur with *not* and *nicht*. Thereafter, in Section 5.3.2, I focus on related responses with *not* and *nicht*.

5.3.1. Propositional attitude verbs

In Section 5.3.1.1, I consider the predicates with which Cushing (1972) suggested *not* may occur. We will see that responses with *nicht* largely pattern with those with *not*. After that, in Section 5.3.1.2, I focus on English responses, which differ in combination

with so-called Neg-raising and non-Neg-raising predicates. We will see that *not* responses with Neg-raising predicates are not productive anymore. In Section 5.3.1.3, I show that for responses with *nicht* Neg-raising is not a relevant criterion, as responses with both Neg-raising and non-Neg-raising predicates are productive.

5.3.1.1. Predicates with which *not*/*nicht* may (not) occur

Cushing (1972) suggests that *not* can only occur with clause-embedding predicates that bear the feature '[−STANCE]'; in Chapter 4 we saw that his claim for *so* is similar. As I discussed there, [−STANCE] predicates are predicates that indicate that the subject is not taking a stance on the complement. Examples of [−STANCE] predicates are *suppose*, *guess*, *surmise* and *think*. Examples of their uses with *not* are given in (19):[3]

(19)   a.   I don't know if pronominalization is interpretative, but I (would) suppose {so | not}.

   b.   I don't know if rules have to be extrinsically ordered, but I (would) guess {so | not}.

   c.   I don't know if distinctive features can be non-binary, but I (would) surmise {so | not}.

   d.   I don't know if Marcuse is still a CIA agent, but I (would) think {so | not}.   (Based on Cushing 1972, p. 189)

The same holds for the German counterparts with *nicht*. Responses with predicates that do not indicate a strong stance are all felicitous.[4]

(20)   A: Kommt Jan zur   Party?
               comes   Jan to.the Party

   B: Ich vermute nicht.
         I   suspect not

   C: Ich denke nicht.
         I   think not

   D: Ich glaube nicht.
         I   believe not

   E: Ich hoffe nicht.
         I   hope not

---

[3] Note that Cushing only provides the examples listed in (19) with *so*. However, based on his predictions, their counterparts with *not* should be felicitous as well.

[4] Out of nine native speakers, at least seven thought each of the predicates in (20B-E), were felicitous.

> F: #Ich erwarte nicht.
>   I   expect not

(20F) shows that *nicht* cannot form embedded responses with *erwarten* 'expect'. According to Cushing, who does not give an example of *expect* with *so* or *not*, this predicate is [+STANCE]. As a consequence, we can infer that, to him, *not* responses with *expect* should be infelicitous.[5]

According to Cushing, predicates that do indicate a stance, [+STANCE] predicates, are, e.g., *doubt* and *disbelieve* (Cushing, 1972: 188). Sailor (2012) suggests that *doubt* indeed cannot occur with *not*:

(21) ??I doubt not.   (Sailor, 2012)

The same holds for responses with *nicht*:[6]

(22) #Ich bezweifle nicht.
       I   doubt   not

Further, according to Cushing, the set of factive predicates (as distinguished by Kiparsky and Kiparsky 1971) is a proper subset of [+STANCE] predicates. Sailor (2012) shows that factives cannot occur with *not* either:

(23) #I regret not.

The same holds for German *nicht*:[7]

(24) #Ich bedauere nicht.
       I   regret   not

I consider Cushing's theory in more detail in Section 5.4.1. In the following, I consider further predicates that may commonly occur with *not* and are so-called non-Neg-raising predicates, in contrast to Neg-raising predicates. We will see that German responses with *nicht* differ from their English counterparts in this respect.

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[5] Cushing does mention that *would expect not* is felicitous. He attributes this to *would expect* being a [−STANCE] predicate and *expect* a [+STANCE] predicate.

[6] Out of nine native speakers, all nine thought (22) is bad.

[7] Out of the nine native speakers asked, seven thought (24) was bad; the remaining two thought it was mediocre.

5.3.1.2. Neg-raising, non-Neg-raising predicates and *not*

In line with Cushing's (1972) findings, the Cambridge Dictionary suggests that *not* can occur with *afraid*, *guess* and *hope*.[8] Examples are given below.[9]

(25)   A: Can we speak to Mr Brindley, please?

      B: I'm afraid not. He's busy.   AFRAID > ¬

(26)   A: It looks as if Louis won't be coming with us after all.

      B: I guess not. It's a pity.   GUESS > ¬

(27)   She thinks she might lose her job in the New Year, but she hopes not. HOPE > ¬

In each of the examples, it seems to be the case that the predicate outscopes the negation. That is, (25) does not mean that the speaker is not afraid that A can speak to Mr Brindley. In contrast, it means that the speaker is afraid that A cannot speak to him. Similarly, (26) seems to convey that the speaker is guessing that Louis won't be coming with them. It does not mean that speaker does not guess that Louis will be coming with them. The same line of reasoning can be extended to (27).

In contrast to Cushing's (1972) suggestions, the Cambridge Dictionary suggests that *believe*, *expect* and *think* occur with *not* less often. Cushing predicts *believe* and *think* to be perfectly fine with *not* and *expect* to be out. However, the acceptability or frequency of the former two responses may have changed over the past 40 years. The Cambridge Dictionary says that such uses occur 'in classic literature and in very formal situation, but it is not common in everyday modern English'.[10] In Section 5.2.1.1, we considered uses of *know not* and *ask not*, in (13) and (14). In that section, I suggested that these are associated with a certain register too.

The question arises why there should be a difference between these two sets of predicates in English, but not in German. It is important to note that there is a further difference between *afraid* and *hope* on the one hand and *believe*, *expect* and *think* on the other. The latter are so-called Neg-raising predicates (Bartsch, 1973; Zeijlstra, 2017; Gajewski, 2007; Collins and Postal, 2014). Note I left out *guess* here, because there seems to be dialectal differences with respect to whether or not *guess* can function as a Neg-raising predicate (see Collins and Postal 2014, 2017). I address this further be-

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[8]   See `https://dictionary.cambridge.org/grammar/british-grammar/so-and-such/so-and-not-with-expect-hope-think-etc`, visited May 2018.

[9] These examples are taken from `https://dictionary.cambridge.org/grammar/british-grammar/so-and-such/so-and-not-with-expect-hope-think-etc`, visited May 2018.

[10]   See `https://dictionary.cambridge.org/grammar/british-grammar/so-and-not-with-expect-hope-think-etc`, visited May 2018.

low, after considering *not* responses with Neg-raising and non-Neg-raising predicates respectively.

Neg-raising predicates   Neg-raising predicates are embedding predicates which in co-occurrence with clausal negation allow for a reading on which the negation appears part of the embedded clause (cf. Section 2.3.3). This is illustrated in (28) for *think* and in (29) for *believe*.

(28)   I don't think that Louis will be coming with us.
      =   I think that Louis won't be coming with us.

(29)   I don't believe that Louis will be coming with us.
      =   I believe that Louis won't be coming with us.

Collins and Postal (2014, 2017) suggest that the predicates in (30) all allow for matrix clause negation to appear part of the embedded clause.

(30)   appear, advisable, advise, believe, choose, expect, feel, feel like, figure, guess (dialectal), imagine, intend, likely, look like, mean, plan, reckon (dialectal), recommend, seem, sound like, suggest, suppose, supposed, tend, think, turn out, want, used to   (Collins and Postal, 2017: (13))

Non-Neg-raising predicates in contrast do not allow for clausal negation to behave as if it is part of the embedded clause. This is illustrated for *hope* in (32).[11]

(32)   I don't hope that Louis will be coming with us.
      ≠   I hope that Louis won't be coming with us.

Collins and Postal note that the majority of clause-embedding predicates are non-Neg-raisers.

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[11] Recall from Section 2.3.3 that *hope* seems to be a non-Neg-raising predicate when occurring with finite clauses only (Fischer 1998):

(31)   a.   I never hope to see you again.
                  ≈ 'I hope that I will never see you again.'
          b.   I don't hope that I will ever see you again.
                  ≉ 'I hope that I will never see you again.'   (Fischer, 1999: 59)

Neg-raising and embedded responses   It seems unsurprising that Neg-raising predicates behave differently from non-Neg-raising predicates in rejecting embedded polar responses as well. To see the consequence of this property in embedded responses with Neg-raising *think*, consider (33). Speaker B may respond with *not* or *so*.

(33)   A: Is John coming to the party?
       B: I think not.
       C: I don't think so.

Both responses are in principle acceptable (although the use of *not* responses with *think* is less frequent as discussed above) and amount to roughly the same meaning,[12] see (34), because it is irrelevant for Neg-raising *think* whether negation is in the embedded or main clause.

(34)   ⟦I don't think so⟧ ≈ ⟦I think not⟧

The same does not hold for the non-Neg-raising predicate *hope*, as is shown in (35). In this case, speaker B may felicitously use *not* in his/her embedded responses, but the rejecting counterpart with *so* is not felicitous.[13] Note that in (35B), *hope* outscopes *not*; in (35C), *not* outscopes *hope*.

(35)   A: Is John coming to the party?
       B: I hope not.   *hope* > ¬
       C: #I don't hope so.   ¬ > *hope*

The use of *not* thus does not equal a negated response with *so*, in case of *hope*:

(36)   ⟦I don't hope so.⟧ ≠ ⟦I hope not.⟧

I assume that the matrix clause negation in (35C) leads to an odd response, because it is not informative to say that it is not the case that you hope p, in response to a question (cf. the discussion in Section 3.2.2 and Section 6.4.1.1). Therefore, non-Neg-raising predicates are infelicitous in embedded responses if they occur with matrix clause negation (cf. also Section 6.4.1.1). However, the use of *not* in (35B) does provide a way

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[12] In Chapter 4, I argued that *so* bears an additional presupposition that sets it apart from other items that can be used in English embedded polar responses. Due to this presupposition, rejecting responses with *so* differ from other rejecting responses.

[13] See `https://forum.wordreference.com/threads/i-hope-not-or-i-dont-hope-so.2487297/`. In addition, I asked eight native speakers of American English and five of them disliked (35C) in the presented context.

for speakers to briefly reject a proposition with a non-Neg-raising predicate like *hope*, as this predicate outscopes the negation. Hence, the use of *not*, in combination with non-Neg-raising predicates, enriches the embedded polar response paradigm.

Recall that the Cambridge Dictionary suggested that the non-Neg-raising predicates *hope* and *afraid* occur with *not* more commonly than the Neg-raisers *think*, *believe* or *expect* do. There thus seems to be a correlation between whether a predicate is a non-Neg-raising one and whether it more commonly occurs with *not*. It seems that responses with *not* are formed more commonly with non-Neg-raisers. I hypothesize that this is due to such predicates not being able to form informative responses with matrix clause negation, as was illustrated in (35C). It seems plausible that this use of *not*, which I hypothesized is a remnant from an older stage of English, survived with non-Neg-raisers as there is no alternative item that could be used with such rejecting responses. Embedded ellipsis clauses, like *I hope he didn't*, do provide a slightly longer alternative.

Even though such a diachronic explanation seems plausible, it is not possible to draw a firm conclusion from the present data set. Especially because the categorization of *guess* is unclear. It is suggested by the Cambridge Dictionary to more commonly occur with *not*. Yet, *guess* is not a non-Neg-raiser in all dialects of English (Collins and Postal, 2014, 2017). It might of course be the case that speakers for whom *guess* is a Neg-raiser did lexicalize responses with *guess* and *not*. Whether this is indeed the case and whether there is a correlation between the status of *guess* as a non-Neg-raiser in a certain dialect and its ability to occur with *not* in that dialect, or whether the use of *guess not* is perhaps decreasing in present-day English are important questions. Nevertheless, a cross-dialect or a diachronic study into the status of *guess* and its co-occurrence with *not* fall out of the scope of the present study. Therefore, I will, as already announced in Section 5.1, focus on the German data from this point on, which does not have a preferred alternative, like *so*, in case of Neg-raising predicates. In Section 5.3.1.3, we will see that the German data form a superset of the English data. An account of German non-Neg-raising predicates in combination with *nicht* would thus also explain these uses in English.

5.3.1.3. Predicates and *nicht*

Above, I suggested that German responses with *nicht* differ from their English counterparts in that they are less restricted. As mentioned, the use of *nicht* in combination with *denken* 'think' or *glauben* 'believe' is felicitous and furthermore frequent. In this respect, the German responses with a negative operator thus differ from their English counterparts. In this subsection, I present data from a small corpus study that shows

that German responses with *nicht* indeed differ from English ones with *not.*

Table 5.2 shows the occurrences of *nicht* together with clause-embedding predicates in the Cosmas II Tagged T corpus.[14,15] The proportions following each predicate show the amount of hits of the predicate with *nicht* relative to the total hits for the predicate.[16] This table only includes occurrences of clause-embedding predicates with *nicht* that could be used to respond to a simple polar question.[17,18]

n hits	Predicates
0 < n < 11	*befürchten* 'fear' (1/48.910), *fürchten* 'fear' (5/33.875), *meinen* 'mean/think' (2/513.414), *sagen* 'say' (2/1.596.689), *scheinen* 'seem' (1/186.056), *tippen* 'bet' (1/7.087)
n > 10	*denken* 'think' (122/209.113), *finden* 'find' (14/1.093.729), *glauben* 'believe' (228/182.961), *hoffen* (64/185.674)

Table 5.2.: Occurrences of clause-embedding predicates with *nicht* in Cosmas II' Tagged T corpus.

We see that *nicht* mostly occurs with doxastic predicates like *denken* 'think', *finden*

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[14] The web-version of the Cosmas II corpus, by the IDS Mannheim, was used. For more information, see `https://cosmas2.ids-mannheim.de/cosmas2-web/`.

[15] The following search was used: (MORPH(N) oder MORPH(PRON per irr)) /+w1 MORPH(VRB fin v) /+w1 "nicht" /w0 <se>, which resulted in a string consisting of a noun or pronoun followed by a finite verb followed by *nicht*. In addition, it was specified that *nicht* should be sentence final.

[16] Search for total occurrences: &predicate, e.g., *&glauben.*

[17] For instance, one hit *erwarten nicht* 'expect not', was excluded, as this formed a response to a question of the following structure *Could we expect ϕ?* The answer *Erwarten nicht.* 'Expect not.' further did not involve a subject nor verbal inflection. In addition another hit with *erwarten* 'expect' was excluded because it seemed to be part of a riddle of a fairy tale: *Das richtige Warten erwartet nicht*, meaning literally 'the right waiting does not expect.'

[18] I have left out hits with *wissen* 'know' (74/344.545) because together with *nicht*, *wissen* does not provide embedded polar responses as defined this thesis. The full fledged version of the response in (37b) involves reference to the question in (37a) and does not embed a potential answer to the question; see (37d).

(37) a.   Wird es morgen   regnen?
          shall it tomorrow rain
      b.   Ich weiß nicht.
          I   know not
      c.   Ich weiß nicht, ob   es morgen   regnet.
          I   know not   whether it tomorrow rains
      d.   #Ich weiß nicht, dass es morgen   (nicht) regnet.
          I   know not   that it tomorrow not   rains

I refer the reader to Chapter 6's Section 6.4.1.1 for a discussion.

'find' or *glauben* 'believe'. Less frequently, it occurs with other doxastic predicates like *fürchten* 'fear' or *meinen* 'mean/think'. Note, however, that the former is a non-Neg-raising predicate:

(38)   Ich fürchte nicht, dass es morgen   regnet.
         I   fear   not   that it tomorrow rains
         'I'm not afraid that it'll rain tomorrow.'

    ≠   Ich fürchte, dass es morgen   nicht regnet.
         I   fear   that it tomorrow not   rains
         'I am afraid that it won't rain tomorrow.'

Nicht occurs even less frequently with assertive predicates like *sagen* 'say'. This pattern corresponds to the pattern we saw for polar *van* and *so* in Chapter 3 and Chapter 4 respectively. From perspective of the clause-embedding predicates this makes sense. Recall from Chapter 2, that doxastic predicates are the ones that simply give insight into one's private mental state. To do so is exactly the job of neutral polar embedded responses. The use of assertive predicates conveys less direct responses. Although these do involve a mental state, their main point is to communicate a reported common ground update (e.g., that *x* said *p*). Therefore, embedded responses with assertives provide less direct and less informative responses. They suggest that the speaker has not enough evidence or knowledge to assert that s/he thinks that *p* is the case or not. Rather, s/he must resort to an evidential utterance, that is based on a third speaker's utterance (see Section 6.4.1.1 for a discussion of evidential responses).

The data in this subsection thus show that the German responses with *nicht* can occur with more predicates than English responses with *not*. Before continuing to other responses with *not* and *nicht*, let us briefly consider why the English restriction of *not* responses to non-Neg-raising predicates does not apply to German. For English non-Neg-raising predicates, I argued that there is no brief alternative rejecting embedded polar response when it comes to responses with *not*. For Neg-raising predicates there is such a preferred alternatieve: *so* in co-occurrence with clausal negation. Rejecting responses involving *not* and a Neg-raising predicates thus need not rely on this relatively archaic construction. Unlike English, German does not have a similar preferred alternative for rejecting responses with Neg-raising predicates. Therefore, I suggest, the use of *nicht* is not restricted in the same way as *not*.

5.3.2. Other responses with *not* and *nicht*

In addition to occurring with verbs, *not* and *nicht* can both also occur with sentential adverbs. This is illustrated for *not* in (39):

(39)   A: Is John coming to the party?
         B: {Possibly | Fortunately | Certainly} not.   (Kramer and Rawlins, 2009)

(40) shows the same for German:[19]

(40)   A: Kommt Jan zur   Party?
             comes   Jan to.the party
         B: {Zum Glück | Definitiv} nicht.
             to.the luck   definitely   not

Furthermore, *not* and *nicht* may also occur in the antecedent of a conditional; see (41)-(42).[20]

(41)   Is John coming to the party? If not, I need to find another ride.

<div align="right">(cf. Kramer and Rawlins 2009)</div>

(42)   A: Hat Jan den Hund ausgeführt?
             has Jan the dog   out.led
             'Did Jan take out the dog?'
         B: Wenn nicht, dann hat Peter das   gemacht.
             if   not   then has Peter that done
             'If not, Peter did it.'

In the remainder of this chapter, I will only focus on uses of *not* and *nicht* in combination with clause-embedding predicates, as only these form embedded polar responses.

5.3.3. Interim Summary

The data above show that the English data form a subset of the German data. German responses with *nicht* are more productive and do not hinge on Neg-raising. These responses are felicitous with most representational predicates. English responses with *not* seem to be most common and acceptable with non-Neg-raising predicates, that are also

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[19] Out of nine native speakers, eight thought the responses in (40) were felicitous. The remaining speaker thought that both options in (40) were mediocre.

[20] Out of nine native speakers of German, eight thought the utterance in (42) was fine; the remaining speaker thought it was mediocre.

representational. Therefore, I will focus on German in the remainder of this chapter. An account of German *nicht* responses, which also encompasses *nicht* responses with non-Neg-raising predicates, should also explain English responses with *not*.

5.4. Previous proposals

In this section, I consider two previously made proposals concerning the status of *not* in responses. In both cases, I first consider the proposal for English and thereafter see whether or not it is applicable to German. In Section 5.4.1, I consider Cushing's (1972) account. In Section 5.4.2, I consider Kramer and Rawlins' (2009) account of answer particles like *yes* and *no*, which they suggest can be extended to responses like *maybe not*. I show how this account could be further extended to responses involving *nicht*.

5.4.1. *Not* as a negative proform (Cushing 1972)

As was discussed in Chapter 4, Cushing (1972) suggests that *not* in embedded polar responses is a negative proform, i.e. the negative counterpart of *so*, instead of a regular negation. As he suggested for *so*, Cushing suggests that *not* can only occur with [−STANCE] predicates, as discussed in Section 5.3.1.1. He argues this is the case because *not* is anaphoric to non-asserted sentences, which he suggests bear the feature [−DEFINITE]. These sentences are the complements of [−STANCE] verbs, which, according to Cushing, indicate that the subject referent of the verb is not taking a stance with respect to the complement. Such predicates thus signal that the subject is not fully committing to the complement. As a consequence, the complement of these predicates is non-asserted, according to Cushing (see also Hooper 1975, as discussed in Section 2.3.2). I discussed some predicates that fall in this category in Section 5.3.1.1, as well as in Chapter 4.

Thus, in Cushing's account, *not* also signals that its referent is not asserted, i.e. it bears the feature [−DEFINITE] and therefore must co-occur with a [−STANCE] predicate.[21] Cushing suggests that speakers use *not* to convey that they expect the referent to be false instead of true (p. 189). One could take this additional meaning to set *not* apart from *no*, which is also a negative proform.

There are several problems with Cushing's account of *not*, which I will evaluate from the perspective of German and English. First, from a theoretical point of view, there

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[21] In addition, Cushing also argues that *not* bears a negative feature, a pronominal feature and a sentence features, such that it is an anaphor for sentences only. According to Cushing, *so* thus differs minimally from *not* in being non-negative.

seems to be no independent evidence to assume that there are actually two words *nicht* or *not*.[22] Second, Cushing wrongly predicts *not* to be a response particle, like *no* (cf. Chapter 4 and Meijer 2018 on *so*).

(43) A: Is John coming to the party?
      B: #Not.

The same holds for German responses with *nicht*:

(44) A: Kommt Jan zur   Party?
          comes Jan to.the party

      B: #Nicht.
          not

One way of countering this argument would be to say that *not* is in fact anaphoric to contentful entities (such as speech act events or belief events), like I will argue for pronouns like *it* and *that* in Chapter 6. Yet, this seems unlikely, as *not* cannot be the subject of sentences, whereas regular pronouns can.

    Third, uses of *not* in combination with adverbs like *definitely* and *of course*, such as in (45), do indicate that the speaker is taking a stance.

(45) A: Is John coming to the party?
      B: {Of course | Definitely} not.

Again, the same holds for similar responses in German, see (46) (repeated from (40)):

(46) A: Kommt Jan zur   Party?
          comes Jan to.the party

      B: {Definitiv | Zum   Glück} nicht.
          definitely   to.the luck   not

In both (45B) and (46B), B is very confident that John/Jan is not coming to the party. Based on this data, it seems unlikely that *not* bears a [−DEFINITE] feature here. Although the present work focuses primarily on responses with *not*/*nicht* that involve propositional attitude verbs, it seems very plausible that responses with adverbs like in (45)-(46) involve the same item. On the assumption that they do, it can be assumed that

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[22] One may argue that the unexpected lack of *do*-support in *not* responses shows independent evidence that *not* is a different kind of negative form. However, recall from Section 5.2 that lack of *do*-support can be explained very well by the diachronic path of English negation. Furthermore, the seemingly ongoing change in the felicity of *not* responses (discussed in Section 5.3.1) further backs this up.

not responses with propositional attitude verbs do not involve a presupposition concerning the stance of the subject either. Also note that the verbs with which *not* occurs in responses are similar to those found in other embedded polar responses. In Chapter 2, I showed these are representational predicates, following, e.g., Anand and Hacquard 2008. The use of such predicates in responses is expected, as they introduce an information state. Therefore, it remains difficult to maintain that *not* bears any presupposition concerning its referent on the basis of its occurrence with these predicates. These predicates are primarily used because they introduce an information state. It seems to me that the use of *not/nicht* is restricted simply because it is an indicator of polarity (cf. Chapter 3 on polar *van*). Such indicators are usually only allowed in response to questions and with predicates that introduce an information state (cf. Scheffler 2008, apud Anand and Hacquard 2014, as discussed in Chapter 2). In this sense, *not* is rather different from for instance *so*, which I argue in Chapter 4 is not a sole indicator of polarity. *So* can also occur with, e.g., *know*, as was discussed in Chapter 4. Uses of *not* in combination with *know* and their German counterparts are of a different meaning: they indicate that the speaker does not know the answer (although this is perceived as old fashioned in English, cf. (13)). *Know so* rather signals that the speaker is certain of the answer, but that not everybody agrees.

A fourth and more serious problem for Cushing's proposal is that he predicts that *not/nicht* in embedded responses do not behave like sentential negation. Instead, Cushing predicts that *not/nicht* in embedded polar responses are more similar to *no* or *nein* 'no'. Klima (1964) developed three tests, that distinguish clausal from constituent negation. Therefore, they also serve to distinguish sentences with clausal negation from those without clausal negation. In the following, I discuss these tests and apply them to responses involving a negative operator.

5.4.1.1. Klima's (1964) tests and responses with *not/nicht*

Klima's tests were designed for English. Therefore, I first consider English and after that, I focus on German, in which responses with the negative operator are more productive.

First, Klima suggests that negative sentences can only take a positive question tag, whereas positive sentences can only take a negative question tag; see (47):

(47) a. Warren criticized his manager, {didn't he | *did he}?
      b. Warren didn't criticize his manager, {*didn't he | did he}?

(Collins and Postal, 2017: 7)

This test is difficult to apply to the present data. First, same polarity tags are also possible, although these have a different meaning (Malamud and Stephenson, 2014). Second, cross-linguistically, question tags do not work as in English (see De Haan 1977 for a discussion) - which makes this test difficult to translate to German.

A second test that Klima provides shows that negative sentences can solely take a *neither*-tag, whereas positive sentences can only take a *so*-tag. Thus, negative sentences cannot take a *so*-tag and positive ones not a *neither*-tag.[23] This is illustrated in (49).

(49) a. That lawyer perjured himself and {so | *neither} did that doctor.
      b. That lawyer didn't perjure himself and {*so | neither} did that doctor.

(Collins and Postal, 2017: 9)

The German or Dutch equivalent of the *neither*-tag test is to add a tag that consists of an additive particle, with or without negation (Kraak, 1966; De Haan, 1997). We see in (50a) that negative sentences in Dutch can be followed by *ook niet* 'also not'. This is not possible for positive sentences; these must be followed by a sole additive particle - see (50b-c).

(50) a. Hij werkt niet en   zij (werkt) ook niet.
          he works not and she works   also not
          'He doesn't work and she doesn't work either.'
      b. *Hij werkt en   zij (werkt) ook niet.
          he works and she works   also not
          Intended: 'He works and she also doesn't.'
      c. Hij werkt en   zij (werkt) ook.
          he works and she works   also
          'He works and she also does.'   (De Haan, 1997: 35-36)

The same holds for German:

(51) a. Er arbeitet nicht und sie (arbeitet) auch nicht.
          he works   not   and she works   also not
          'He doesn't work and she doesn't work either.'

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[23] Note that whether or not a predicate is a Neg-raiser is irrelevant for the *neither*-tag test:

(48) a. Valerie thinks that the minister will not be arrested, and so/*neither does Brian.
      b. Valerie realizes that the minister will not be arrested, and so/*neither does Brian.

(Collins and Postal, 2017: 9)

b. *Er arbeitet und sie (arbeitet) auch nicht.
    he works   and she works   also not
    Intended: 'He works and she also doesn't.'

For Klima's further test - which I do not consider applicable to the domain of embedded polar responses - I refer the reader to Klima (1964).

I applied the final test to German responses with *nicht* and *denken* 'think', *glauben* 'believe' and *hoffen* 'hope' - see (52) and (53). According to the corpus study in Section 5.3.1.3, these are the three predicates occurring most frequently with *nicht*. In addition, I used Klima's test to investigate a non-Neg-raising predicate: *fürchten* 'fear'. We see that the responses with the negative tags *auch nicht* 'also not' are preferred over those with a positive tag in the case of the Neg-raising predicates; in case of non-Neg-raising *fürchten* 'fear' judgments are different.[24] I marked the dispreferred variants as '(#)' because about half of my informants thought these variants were mediocre but not completely out (the other half seemed to dislike them more strongly).

I used quite elaborate contexts to make the scenario's as clear as possible despite involving three characters. The following context and sentences were used for *denken* 'think', *glauben* 'believe' and *fürchten* 'fear'.

(52)   Context: Der Weihnachtsmann war gerade bei der Familie vom kleinen Fritz. Das hat dem kleinen Jungen und seinen Eltern sehr viel Spaß gemacht. Am Abend nach Weihnachten sitzt Fritz mit seinen Eltern vor dem Kamin und fragt: "Kommt der Weihnachtsmann heute Abend wieder?" Der Vater antwortet mit einem kurzen Blick auf die Mutter:
    'Little Fritz and his family were visited by Santa Claus tonight. They really enjoyed the visited. The day after Christmas, Fritz is sitting with his parents in front of the fireplace and ask: "Will Santa Claus come visit us again tonight?" His dad answers with a quick look at his mom:'

    A: Ich glaube nicht, und deine Mutter auch nicht.
          I   believe not   and your mom   also not

---

[24] Concerning the responses with *glauben* 'believe' and *denken* 'think', out of nine native speakers asked, seven preferred the version with *auch nicht* 'also not'. One speaker disliked all sentences quite strongly. The final speaker preferred the *auch* 'also' tag over the *auch nicht* 'also not' tag. As for the responses with *hoffen* 'hope', six out of nine native speakers preferred the version with *auch nicht* 'also not' over the version with *auch* 'also'. For one of them, the difference between the two judgments seemed to be smaller than in the responses with the other predicates. The remaining three native speakers preferred the *auch* 'also' tag over the *auch nicht* 'also not' tag. As for *fürchten* 'fear', four out of eight speakers preferred the *auch* 'also' tag over the *auch nicht* 'also not' tag. Two out of eight thought both were equally bad/good. The remaining two speakers preferred the *auch nicht* 'also not' tag over the *auch* 'also' tag.

B:(#)Ich glaube nicht, und deine Mutter auch.
    I   believe not   and your mom   also

C: Ich denke nicht, und deine Mutter auch nicht.
    I   think not   and your mom   also not

D:(#)Ich denke nicht, und deine Mutter auch.
    I   think not   and your mom   also

E:(#) Ich fürchte nicht, und deine Mutter auch nicht.
    I fear not   and   your mom also   not

F: Ich fürchte nicht, und deine Mutter auch.
    I   fear   not   and your mom   also

The context and the sentences in (53) were used for *hoffen* 'hope'.

(53)   Context: Der kleine Fritz fährt morgen früh mit seinen Eltern in den Skiurlaub.
    Laut Wettervorhersage könnte es morgen schon Schnee auf der Autobahn geben.
    Fritz freut sich sehr darüber, aber seine Eltern, die ja fahren müssen, nicht. Am
    Tag vor der Fahrt hilft Fritz seinen Eltern aufgeregt beim Einpacken und fragt:
    "Werden wir schon auf der Autobahn Schnee sehen?" Der Vater antwortet mit
    einem kurzen Blick auf die Mutter:
    'Little Fritz will go on a skiing break with his parents tomorrow morning. Ac-
    cording to the weather forcast there could be snow on the highway tomorrow.
    Fritz is excited about this, but his parents - who have to drive - are not. The
    day before the holiday Fritz is helping his parents pack an asks: "Will we see
    snow on the highway already?" His dad answers with a quick look at his mom:'

    A: Ich hoffe nicht, und deine Mutter auch nicht.
        I   hope not   and your mom   also not

    B:(#)Ich hoffe nicht, und deine Mutter auch.
        I   hope not   and your mom   also

The judgments for the Neg-raising predicates show that the preferred version involves
auch nicht 'also not', which shows that the preceding response involving *nicht* contains
clausal negation. I take this to be a counterargument against the application of Cushing's
theory to German responses with Neg-raising predicates. For non-Neg-raising predicates
the judgments were the other way around with the majority of the speakers preferring the
auch 'also' tag. Therefore, it seems that these responses should be analyzed differently
from their counterparts involving a Neg-raising predicate.

    Whether or not the same logic transfers to the English case is unclear. A small survey
study suggested that the English judgments for the translations of (52) and (53) are far

from clear, in contrast to the German data.[25] I refrain from drawing conclusions on the basis of the English data.

To conclude the present section, I take Klima's test to form a strong counterargument against the application of Cushing's proposal to German responses with *nicht*. In the next section, I consider an ellipsis account.

5.4.2. *Not* as an ellipsis licensor

Another way of dealing with embedded polar responses with *not* could be to say they involve the elision of a TP. In Chapter 4, Kramer and Rawlins' (2009) account of *maybe so* was briefly discussed. As was mentioned there, they argue that responses like *maybe so* and *maybe not* can be accounted for in terms of their ellipsis account of *yes* and *no*. For the present purposes, it is useful to dive into their approach a bit deeper. Kramer and Rawlins are primarily interested in the phenomenon they call 'negative neutralization'. To see what they have in mind, consider (54). Here, A asks a positive question. B may now respond *maybe so* or *maybe not*. These responses are complementary. (54B) conveys that B thinks that it is possible that John is coming to the party. (54B') conveys that B thinks that it is possible that John is not coming to the party.

(54)   A: Is John coming to the party?
           B: Maybe so. (= Maybe [John is coming to the party])
           B':   Maybe not. (= Maybe [John is **not** coming to the party])

In response to a negative question, however, these responses are no longer complementary - see (55). In this case, both responses convey that B thinks that it is possible that John is not coming to the party. This effect is what Kramer and Rawlins call negative neutralization.

(55)   A: Is John not coming to the party?
           B: Maybe so. (= Maybe [John is **not** coming to the party])
           B':   Maybe not. (= Maybe [John is **not** coming to the party])

To account for the data, Kramer and Rawlins put forth an ellipsis analysis. They suggest that in responses like in (55) the TP is elided (cf. Merchant 2005 on fragment answers).

---

[25] A small survey study with *not*-responses in combination with *think* and *hope* and *neither*/*so*-tags suggested that some people like both tags with *not*-responses, some dislike both and others have a preference for either of the two tag. The pattern thus was too unclear to draw any conclusions. An experimental study may shed light on this.

They suppose that Laka's (1990) Σ licenses ellipsis and bears Merchant's (2001) [*E*]-feature. This feature ensures that its complement is elided and that the ellipsis clause and the antecedent clause mutually entail each other, i.e. that they are semantically equivalent. For the responses in (55), this means that the elided TP must entail the TP in the question and the other way around.

In the following, I first consider Kramer and Rawlins' account of *maybe not*. Second, I sketch an extension of their account of responses with *not/nicht*.

5.4.2.1. Kramer and Rawlins (2009) on *maybe not*

Kramer and Rawlins (2009) take *so* and *not* to be overt expressions of Laka's (1990) Σ (p. 7). Note that these authors in fact spend few words on these markers. However, using their framework on *yes* and *no*, we can extend their brief analysis of *not* to the trees below. Kramer and Rawlins make several assumptions. First, as mentioned, they assume that the antecedent TP (e.g., *John is (not) coming to the party*) and the elided TP must mutually entail each other - that is, that they must be semantically equivalent, following Merchant (2001). For responses with a negative antecedent, they suggest that there must consequently be an interpretable negative feature in the ellipsis site. I will elaborate on this below. Second, they assume that Σ and the negation (and if present the response particle *no*) form a negative chain. According to Kramer and Rawlins, this chain may contain maximally one [iNeg]-feature (and multiple [uNeg]-features).

Let us apply this reasoning to the *not*-answer to the positive question in (56B).

(56) A: Is John coming to the party?
      B: Maybe not.

In Figure 5.1, we see the tree corresponding to (56B). The complement of Σ, overtly expressed by *not*, is elided. The [iNeg]-feature is born by Σ (cf. Kramer and Rawlins' (9)). I assume *not* moved out of the elided TP into Σ. According to the authors, an [uNeg]-feature must be part of the elided TP, such that the antecedent and the elided TP are semantically equivalent. The negative features form a negative chain.

Now, let us turn to a *not*-answer in response to a negative question, like in (57).

(57) A: Is John not coming to the party?
      B: Maybe not.

Again, Kramer and Rawlins predict *not* to license the elision of its complement. However, now that the antecedent includes a negation, the ellipsis site must also include negation

```
                           ΣP
                 AdvP              Σ'
                  │
                 Adv         Σ            TP
                  │          │
                Maybe       not     SpecTP    T'
                          [iNeg,E]
                                      DP          NegP
                                      │
                                      he      SpecNeg    Neg'
                                                  Neg              VP
                                                   │
                                                  not      is coming to the party
                                                 [uNeg]
```
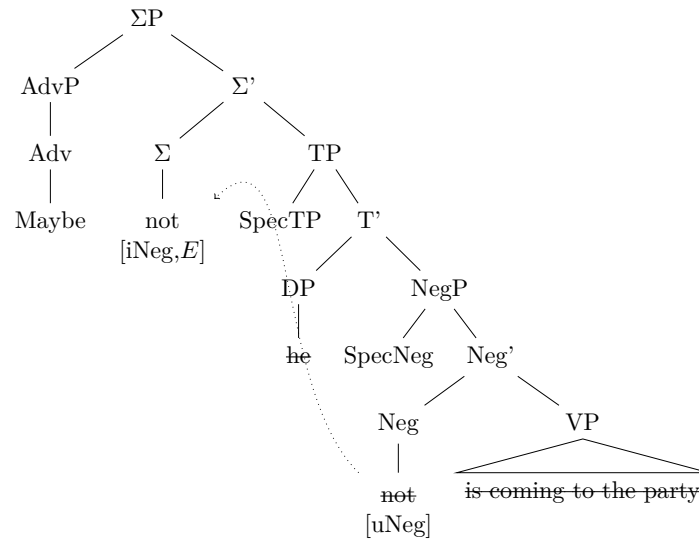
Figure 5.1.: *Not*-response to a positive question (= rejecting)

by virtue of the semantic equivalence of the two (cf. Kramer and Rawlins's (2009) (8)). Therefore, the [iNeg]-feature is in the Neg head. Again, the negative features form a chain.

```
                           ΣP
                 AdvP              ΣP
                  │
                 Adv         Σ            TP
                  │          │
                Maybe       not     SpecTP    T'
                          [uNeg,E]
                                      DP          NegP
                                      │
                                      he      SpecNeg    Neg'
                                                  Neg              VP
                                                   │
                                                  not      is coming to the party
                                                 [iNeg]
```
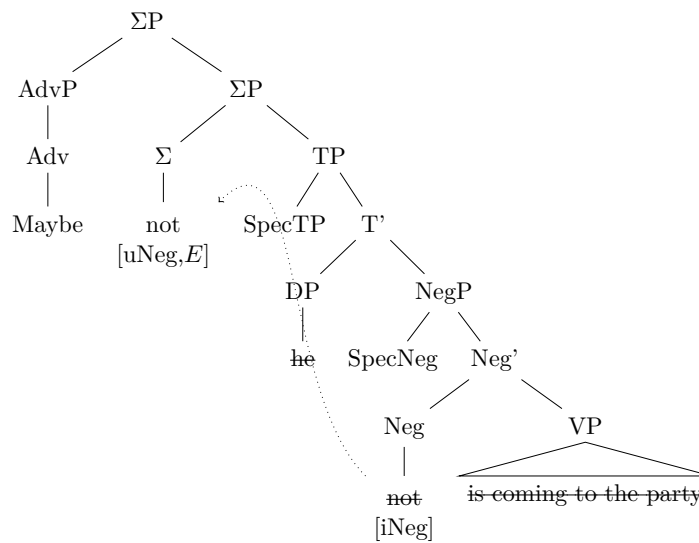
Figure 5.2.: *Not*-response to a negative question (= affirming)

Before turning to problems with this proposal in general, I extend this account to uses of *not* in combination with propositional attitude verbs.

5.4.2.2. Extending Kramer and Rawlins' (2009) account to *think not*

Let us turn to uses of *not* that are central to this chapter. Kramer and Rawlins predict negative neutralization to also occur in uses of *not* and *so* in combination with clause-embedding predicates.[26]

(58)   A: Did Alfonso not go to the party?
       B: I think not. (= I think he didn't.)
       B': I think so. (= I think he didn't.)

Let us break *think not*-responses down to those given in response to negative vs positive questions, starting with the latter case. This is illustrated in (59):

(59)   A: Is John coming to the party?
       B: I think not.

The tree in Figure 5.3 shows the response in (59B), in terms of Kramer and Rawlins' (2009) framework. Again, the TP is elided except for *not*, which moved to Σ. Because the antecedent does not contain an interpretable Neg feature, the elided TP cannot contain one either. Therefore, the negative feature in NegP is uninterpretable. The negative feature in Σ is interpretable. The two form a chain.

Let us now turn to *think not*-responses to negative questions, such as in (60).

(60)   A: Is John not coming to the party?
       B: I think not.

The tree in Figure 5.4 looks rather similar to the tree in Figure 5.3. However, due to the negative antecedent TP, the elided TP must also involve an interpretable Neg-feature. Therefore, [iNeg] is in NegP in Figure 5.4 in contrast to Figure 5.3. The Σ now bears [uNeg].

For simplicity's sake, the trees above all involve English instead of German. However, we could very well draw up a tree that is similar yet involves German, see Figure 5.5. I assumed that German embedded clauses involve TPs as well, but that main clauses are CPs.

One of the problems pertaining to these structures is that the negation occurs in the embedded clause for all predicates, depending on the polarity of the antecedent

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[26] The native speakers I consulted suggested that the interpretation of the answers in (58) largely depends on the intonation of the answer. For reasons of space, I leave this issue for future research and assume that negative neutralization is indeed possible (albeit possibly with prosodic help) in (58B/B').
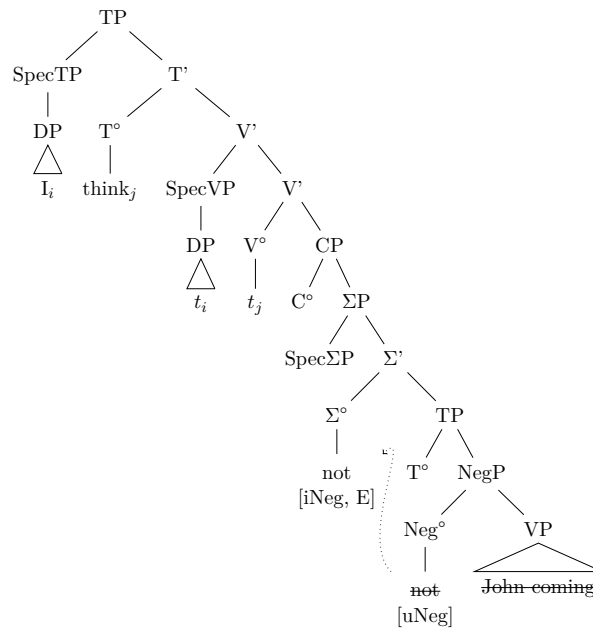
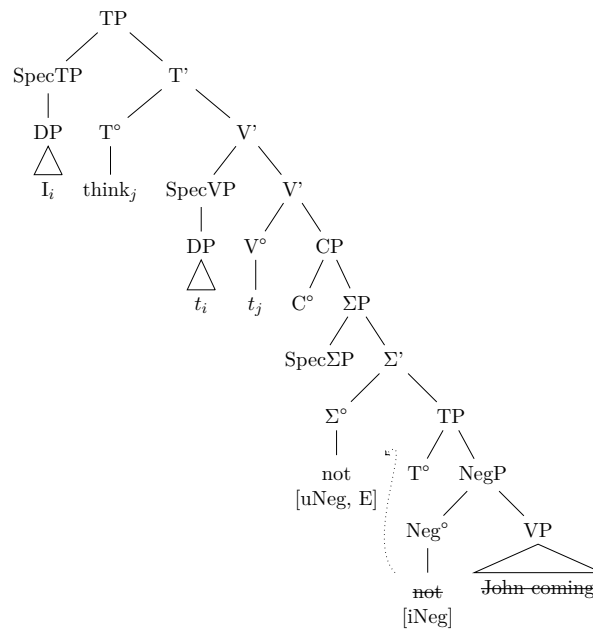Figure 5.3.: *think not* response to a positive question (= rejecting)

Figure 5.4.: *think not* response to a negative question (= affirming)

TP. Nevertheless, we saw in Section 5.4.1 that diagnostics for clausal negation suggest that the negation actually is part of the main clause in German responses with *nicht* and
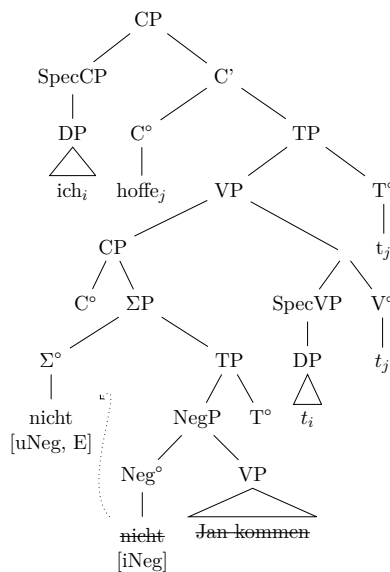
Figure 5.5.: *hope not* response to a negative question in German (= affirming)

Neg-raising predicates and part of the embedded clause in responses with *nicht* and non-Neg-raising predicates. Yet, this is unexpected if - as follows from Kramer and Rawlins' framework - the position of the interpretable Neg feature depends on the antecedent TP, rather than the propositional attitude verb. Therefore, it is difficult to account for the data presented in this chapter in Kramer and Rawlins' framework.

This stipulation with respect to the position of the interpretable Neg feature brings us to a further problem of Kramer and Rawlins' framework: The behavior of the interpretable and uninterpretable Neg features seems to be quite arbitrary. The use of *not*, for instance, in Figure 5.3 is not semantically negative, because it bears an uninterpretable feature. This is necessary for the licensing of the [*E*]-feature (which requires equivalence of the antecedent and ellipsis clause). However, in other cases, *not* is semantically negative, as it bears the interpretable feature. Such behavior of features seems quite stipulative to me. It seems illogical that some negations should be truly negative whereas others are not. Moreover, this makes it difficult to draw predictions from this account.

There are further general problems with Kramer and Rawlins' account of *yes* and *no*, on which the trees above are based. I refer the interested reader to Roelofsen and Farkas (2015) and Krifka (2013) for a discussion.

In this subsection, I have shown how Kramer and Rawlins' account of *yes* and *no* could be extended to responses with *not*, based on their suggestions for *maybe so/not*.

However, I also demonstrated that this account does not fit the finding in Section 5.4.1, that suggests that *nicht* responses involve clausal negation. Furthermore, the account seems rather stipulative with respect to the behavior of Neg-features.

5.4.3. Interim Summary

In this section, I discussed two previous accounts of responses involving *not* and considered whether they can explain the German data. First, I discussed Cushing's (1972) proposal, which suggests that *not* is a negative proform that presupposes that the speaker suspects that its referent is more likely to be false than true. I demonstrated that this presupposition of uncertainty does not seem to fit the behavior of *not/nicht*. Further, I showed that the results of Klima's tests for sentential negation were problematic for Cushing's proposal.

Second, I discussed Kramer and Rawlins' approach to responses like *maybe not/so*. I showed that their approach can in principle be extended to responses with *not* and clause-embedding predicates. Yet, such an elliptical approach cannot account for the finding that responses with *nicht* seem to involve clausal negation when they occur with Neg-raising predicates. Furthermore, I argued that this approach is undesirable due to the stipulative behavior of negative features.

To account for the embedded polar responses with *not*, we need an account that considers *not* a regular negation. Furthermore, it would of course be desirable to have an account that makes few additional assumptions. In the next section, I lay out such a proposal.

5.5. Proposal: Responses with *nicht* involve a null complement anaphor

The account of *nicht* responses with Neg-raising predicates defended in this chapter is very simple. It assumes that in embedded polar responses with *nicht*, the predicate simply combines with a null complement anaphor and then with negation. A very basic sketch is given in Figure 5.6. In case of non-Neg-raising predicates, we will see that some additional assumptions have to be made. Recall from Section 5.4.1 that such predicates do not seem to involve clausal negation (see examples (52)-(53)). I will first consider the proposal for Neg-raising predicates in more detail in Section 5.5.1. After that, I consider non-Neg-raising predicates in Section 5.5.2. In Section 5.5.3, I discuss and explain the set of predicates with which *not/nicht* can form embedded responses, in the light of the
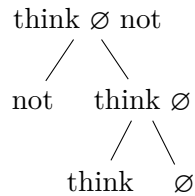
```
                    think ∅ not
                     /    \
                   not    think ∅
                           /   \
                        think    ∅
```

Figure 5.6.: *Think* composing with a NCA and negation

present proposal.

5.5.1. The proposal for Neg-raising predicates

As Figure 5.6 shows, the proposal defended here is very simple. Embedded polar responses with *nicht* are the negative counterparts of responses with a null complement anaphor (NCA), without negation, see (61).

(61) A: Kommt Jan zur   Party?
           comes   Jan to.the party
           'Is John coming to the party?'

      B: Ich denke ∅ (schon).
           I   think   SCHON
           'I think.'

      C: Ich denke ∅ nicht.
           I   think   not
           'I think not.'

The same would hold for English responses with *not*; see (62).

(62) A: Is John coming to the party?

      B: I think ∅.

      C: I think ∅ not.

The computation of (61C) in Elliott's (2017) framework is shown in Figure 5.7 below. In the following, I assume that the NCA is simply a proform that refers to the uniquely salient entity in the context. The formal denotation of the NCA, shown in (63), is similar to other third person proforms like *it* or *that* which refer to content (cf., e.g., Elbourne 2008), yet the NCA competes with these in terms of phonological weight, as will be considered elaborately in Chapter 6. The uniqueness restriction of the pronoun is contextually resolved. Since in our examples the NCA occurs as the direct object

of attitude verbs we know that such a pronoun refers to a unique contentful entity whose content is salient. As a result, we end up with the denotation in (63) (repeated from Chapter 2's (40)). The variable p is interpreted by the assignment function g (see Chapter 2 for a discussion).

(63) $\iota x.\text{CONT}(x) = p$

Note that the tree in Figure 5.7 is very similar to the derivation of responses with polar *van*, see Figure 3.3 in Chapter 3. As discussed there, in Elliott's framework, composition of the internal and external arguments with the predicate occurs through F_{int} and F_{ext} respectively. Different from Figure 3.3, the tree in Figure 5.7 involves negation. I assume that the negative operator applies at the final stage of the derivation and behaves like a regular clausal negation. Note that I have inserted the first person in Figure 5.7 as the subject and have simply referred to it as *ich* 'I'.
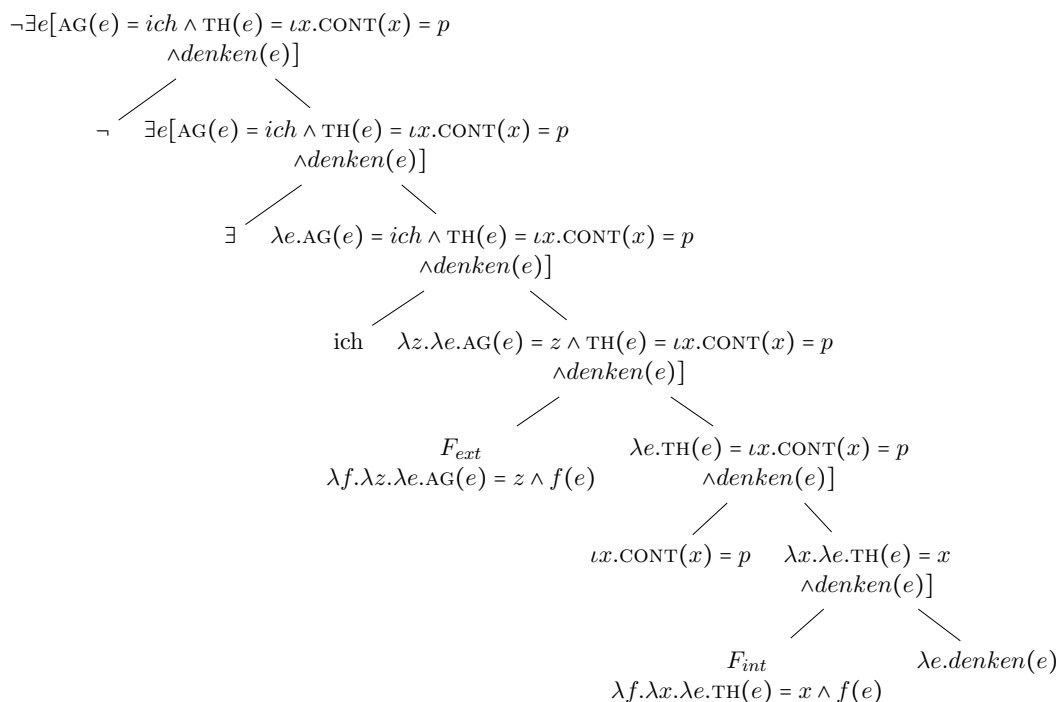

Figure 5.7.: Composition of the NCA as the internal argument of the attitude verb in Elliott's (2017) framework in *Ich denke nicht* 'I think not'.

The advantages of the present proposal in contrast to the others is that it requires no additional assumptions. As shown in (61)-(62), the use of NCA depicted in Figure 5.7 is known from other constructions as well.

The proposal in Figure 5.7 works well for Neg-raising predicates. Due to their Neg-raising property, the fact that negation outscopes the predicate is irrelevant. However, for non-Neg-raising predicates matters are different. In the next section, I consider how this problem can be solved.

5.5.2. The proposal for non-Neg-raising predicates

The composition in Figure 5.7 clearly shows that the negative operator outscopes the predicate. In case of non-Neg-raising predicates, this is problematic. Responses with predicates like *fürchten* 'fear' display the opposite scope, as was pointed out in Section 5.4.1, see (64).

(64)   a.   Ich fürchte nicht.
              I   fear   not
              'I'm afraid not.'

        b.   *$\neg$ > *fürchten*

        c.   *fürchten* > $\neg$

Recall from Section 5.4.1, that responses with non-Neg-raising *fürchten* 'fear' were judged differently on Klima's *auch (nicht)* tag test. In contrast to the Neg-raising predicates, more native speakers of German preferred the *auch* tag in case of *fürchten* 'fear', from which I inferred that in responses with this predicate, the negation is scoping below the predicate. The same is expected to hold for for instance *sagen* 'say' in German, and for *hope* or *afraid* in English. However, as concluded in Section 5.4.1, future experimental studies should verify whether this is indeed the case, especially for English.

On account of the analysis in Figure 5.7, this difference in judgments is not expected, as it predicts the negation to be matrix negation. Yet, the judgments on Klima's test suggest that the negation is not taking the highest scope. A movement operation of the predicate, to a position outscoping negation, would not solve the problem, as the NCA would then have to compose with the negation. Even if we assume that the negative operator would have a suitable semantic type for this composition (cf. Toosarvandani 2013), this operation would still be problematic as the negation of the NCA would refer to the negative complement of the most salient entity. As a consequence, we would refer to everything *but* this entity. However, we want to express that the subject referent thinks that the salient entity is not true or does not hold - and not that s/he thinks something else.

One way to solve the problem is to assume that the NCA first composes with a silent

predicate *true*, see (65).[27]

(66) $[\![\textbf{true}]\!] = \lambda x.true(x)$

This predicate asserts that its argument is true. We can find the overt variants of this predicates, applied to contentful entities, in sentences like (67).

(67)   a.   This is a true story.
         b.   The rumors were true.
         c.   Das ist eine wahre Geschichte.
               that is a   true story

We must assume the predicate *true* is not pronounced in *nicht* responses with non-Neg-raising predicates. We let this predicate compose with the NCA, such that we have a contentful entity x, whose content is described by the salient proposition p and this contentful entity is true. This proposition further composes with a regular negation. The steps are shown in Figure 5.8. The end product in Figure 5.8 is of a propositional

$$\neg true(\iota x.\textsc{cont}(x) = p)$$
$$\diagup \qquad \diagdown$$
$$\neg \qquad true(\iota x.\textsc{cont}(x) = p)$$
$$\diagup \qquad \diagdown$$
$$\lambda x.true(x) \qquad \iota x.\textsc{cont}(x) = p$$
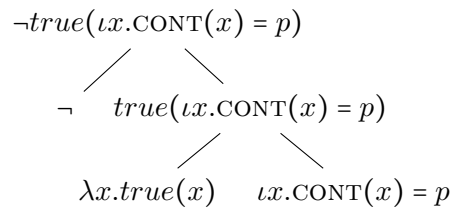
Figure 5.8.: The NCA composing with *true* and negation

type. As a result, we can combine this complex with an attitude verb with the help of Elliott's (2017) $\mathcal{C}$, which takes a proposition as its argument and returns a property of a contentful entity (discussed in Chapter 2). That way, it can compose with an attitude verb.

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[27] Note that it might seem tempting to assume that the negative operator is composes with for instance the predicate *true* in an earlier stage of the composition. After composing with the content predicate, it could combine with the ι-operator. We would end up with (65):

(65) $\iota x[\textsc{cont}(x) = p \wedge \neg true(x)]$

However, in that scenario the falsity (or non-truth) of the contentful property is part of the presuppositional meaning of the entity. Thus, the sentence would only be felicitous of there is a salient proposition, whose content is untrue. This is not compatible with the use of *nicht*-responses, as we want these to *assert* that the salient proposition is untrue.

(68) $\llbracket \mathcal{C} \rrbracket = \lambda w. \lambda p. \lambda x. \text{CONT}_w(x) = p$ (Elliott, 2017: 95)

Admittedly, the use of the predicate *true* and Elliott's (2017) $\mathcal{C}$ amount to a theory that is not as parsimonious as the theory for the Neg-raising predicates in Section 5.5.1. Yet, these tools are found independently of these responses (like the predicate *true*, which is a regular predicate) or have been independently argued for (see Elliott (2017) on $\mathcal{C}$).

Note, however, that responses with *nicht* and Neg-raising predicates may in principle also be analyzed as responses with non-Neg-raising predicates, i.e. involving a silent predicate *true*. Recall from Section 5.4.1 that Neg-raising predicates were preferred with *auch nicht* tags, instead of *auch* tags, see (69). According to Klima (1963), this suggests that *nicht* responses with Neg-raising predicates involve matrix negation. However, also recall that the use of *auch* tags was not considered terribly ungrammatical. Rather, these tags were dispreferred but still acceptable to some speakers.

(69)   Context: Der Weihnachtsmann war gerade bei der Familie vom kleinen Fritz.
          Das hat dem kleinen Jungen und seinen Eltern sehr viel Spaß gemacht. Am
          Abend nach Weihnachten sitzt Fritz mit seinen Eltern vor dem Kamin und fragt:
          "Kommt der Weihnachtsmann heute Abend wieder?" Der Vater antwortet mit
          einem kurzen Blick auf die Mutter:
          'Little Fritz and his family were visited by Santa Claus tonight. They really
          enjoyed the visited. The day after Christmas, Fritz is sitting with his parents in
          front of the fireplace and ask: "Will Santa Claus come visit us again tonight?"
          His dad answers with a quick look at his mom:'

          A: Ich glaube nicht, und deine Mutter auch nicht.
                I   believe not   and your   mom   also not
          B:(#)Ich glaube nicht, und deine Mutter auch.
                I   believe not   and your   mom   also

From the perspective of Klima's (1963) tests for clausal negation, the observation that for some speakers neither of the two tags is completely out is surprising, as Klima predicts only one of the tags to be acceptable. An experimental study should verify whether the two tags are indeed both acceptable to some extent. If this turns out the be the case, note that on the present analysis, we provide two ways speakers may analyze responses with *nicht* and Neg-raising predicates - one way involving matrix negation and one way involving embedded negation. The analysis presented in Section 5.5.1 does provide a more parsimonious and economical analysis for Neg-raising predicates. Therefore, this analysis, which is compatible with *auch nicht* tags, may be preferred. Yet, the availability

of an alternative analysis, which is also compatible with non-Neg-raising predicates, may explain why most speakers did not think that responses with Neg-raising predicates and *auch* tags were terribly bad.

5.5.3. The predicates *nicht* can occur with

In Section 5.3.1.3, I reported the results from a small corpus study. The data is repeated in Table 5.3. We see that *nicht* mainly occurs with doxastic predicates and with some

n hits	Predicates
0 < *n* < 11	*befürchten* 'fear' (1/48.910), *fürchten* 'fear' (5/33.875), *meinen* 'mean/think' (2/513.414), *sagen* 'say' (2/1.596.689), *scheinen* 'seem' (1/186.056), *tippen* 'bet' (1/7.087)
n > 10	*denken* 'think' (122/209.113), *finden* 'find' (14/1.093.729), *glauben* 'believe' (228/182.961), *hoffen* (64/185.674)

Table 5.3.: Occurrences of clause-embedding predicates with *nicht* in Cosmas II' Tagged C corpus, repeated from Table 5.2.

assertive predicates, as was discussed in Section 5.3.1.3. I assume that this is the case because these predicates, as representational ones in Anand and Hacquard's (2013) terminology, introduces an information state. These predicates thus give insight into one's thoughts and therefore can be used to convey answers to questions. This makes them suitable as indicators of polarity (recall the discussion in Section 5.3.1.3 and Chapter 2).

The question arises why representational predicates like *bezweifeln* 'doubt' or *erwarten* 'expect' should be infelicitous in *nicht* responses; and *doubt* in *not* responses.[28] I argue that the infelicity of *erwarten* and *bezweifeln* in *nicht* responses and *doubt* in *not* responses is related to the shared property of these predicates, that they cannot occur with NCA.[29] As was discussed in the introduction of this chapter, *bezweifeln* and *doubt* cannot occur with an NCA. (70) shows that the same holds for German *erwarten*.

(70)   A: Kommt Jan zur Party?
            comes Jan to.the party
            'Is Jan coming to the party?'

        B: #Ich erwarte.
            I   expect

---

[28]Recall from Section 5.3.1.2 that responses with *expect* and *not* were considered uncommon by the Cambridge Dictionary. In that section, I argued this was due to *expect* being a Neg-raising predicate and competition of *not* in co-occurrence with Neg-raisers by *so*.

[29]I thank Sophie Repp and Stephan Hinterwimmer for pointing this out to me.

'I expect.'

The present account, however, hinges on this co-occurrence, as it assumes that *not/nicht* responses involve an NCA as well. Therefore, it is not unexpected that predicates that cannot occur with NCA also cannot occur in *nicht/not* responses.

Table 5.3 also shows that *nicht* does not occur with factive predicates. This finding is not surprising, as I discussed in Section 5.3.1.1 that native speakers consider *nicht* responses with factive predicates ungrammatical. On the basis of the previous chapters, the infelicity is also not unexpected. As presuppositional predicates, we expect factives to behave differently from doxastic predicates that are often used in embedded polar responses. We expect factives to be infelicitous as indicators of polarity. Factive predicates presuppose that their complements are part of the common ground (see, e.g., Kiparsky and Kiparsky 1971; Anand and Hacquard 2014 among many others). These predicates can thus not be used to convey new information. Their use in responses would convey that the listener is already up to date concerning the question asked. However, in case of question-answer pairs, this is clearly not the case. Furthermore, recall from Chapter 2 that the answer to questions is never common ground until the asker signals agreement to the answer. Therefore, there is a clash between the presuppositionality of factives and the common ground status of answers in general (see Section 2.5.2.3 for a discussion).

5.6. Conclusion

In this chapter, I considered embedded polar responses that superficially only seem to involve an agent, a clause-embedding predicate and a negative operator. We saw a difference between such responses in German on the one hand and those in English on the other hand. The responses in English only seemed productive in combination with non-Neg-raising predicates. I argued that this is due to such responses forming an enrichment of the embedded polar response paradigm. *Not* responses with non-Neg-raising predicates are more informative than embedded polar responses with other response items that involve matrix negation. The latter negate that a *hoping* or *saying* event took place.

I also suggested that the felicity of responses with *not* may be influenced by an ongoing grammaticalization process. In Section 5.2.1, I illustrated that responses with *not* display features like verb movement and the lack of *do* support that appear to be remnants of an older stage of English. Therefore, the infelicity of certain predicates in *not* is not unexpected: if a better alternative is available, it seems unnecessary to hold on to

not responses. In addition, I showed that English *not* responses which are felicitous form a subset of German *nicht* responses, which seem to be more productive. For that reason, I focused mainly on German responses with *nicht*, as an account of German *nicht* responses that explains *nicht* responses with Neg-raising and non-Neg-raising predicates should also be able to account for *not* responses with non-Neg-raising predicates.

I argued that German embedded polar responses with *nicht* can be analyzed as involving a null complement anaphor and a regular clausal negation. This analysis is preferable over the other analyses, involving ellipsis or a negative proform, because it requires no additional assumptions. In addition, I showed that a different analysis is required for non-Neg-raising predicates, as acceptability judgments indicate that these involve embedded negation. Note that *nicht/not*-responses differ from responses with *so* or polar *van* in not bearing a presupposition or implicature about the certainty or common ground status of the proposition under reference. Therefore, these responses are Type II responses.

Beside being a parsimonious approach to *nicht* responses, an advantage of the present analysis is that it gives as a hint as to why *not* responses are not found in Dutch, as is illustrated again in (71).

(71)   A: Heeft Jan de kat gevoerd?
            has   Jan the cat fed

       B: *Ik denk niet.
            I   think not

The present analysis suggests that in order to form felicitous *not* responses, a language should also have a NCA at its disposal. For Dutch, this does not seem to be the case:

(72)   A: Heeft Jan de kat gevoerd?
            has   Jan the cat fed

       B: *Ik denk ∅.
            I   think

A cross-linguistic study should investigate whether the pattern found for Dutch, German and English can be extended to other languages as well. The next chapter will focus on a related question, that is posed by Dutch data and was touched upon in this chapter several times: the question why Dutch embedded polar responses with predicates like *denken* 'think' can involve the weak pronoun, whereas their German and English counterparts cannot.

6. Pronouns in embedded polar responses: Dutch *het* vs. English *it*

6.1. Introduction

This chapter deals with the use of the weak pronoun *het* 'it' in Dutch embedded responses. An example of such a response is given in (1). In (1B), we see that speaker B may respond to A's question using the weak pronoun *het* 'it' in combination with *denken* 'think' (Hoeksema 2006). I take the weak pronoun to target the proposition introduced by the question, p, or in Krifka's terminology, the propositional discourse referent p_{DR}, i.e. *het* refers to the proposition introduced by the question.

(1)   A: Heeft Jan de kat gevoerd?
           has   Jan the cat fed
           'Did Jan feed the cat?'

       B: Ik denk het {(wel) | niet}.
           I   think it   WEL   not
           'I (don't) think so.'

Recall from Chapter 3 that I assume that the particle *wel* signals positive polarity (cf. Zeijlstra 2004; Hogeweg 2009; Sudhoff 2016a), as the counterpart of the negation *niet*. Depending on the presence of either *wel* or *niet* 'not', the response is interpreted as affirming or rejecting respectively. Without *wel* or *niet*, the response is interpreted as an affirmation.

The example in (2) shows that the weak pronoun may also be used in responses with *geloven* 'believe'.

(2)   A: Heeft Jan de kat gevoerd?
           has   Jan the cat fed
           'Did Jan feed the cat?'

       B: Ik geloof het {wel | niet}.
           I   believe it   WEL   not
           'I (don't) believe so.'

From the perspective of a language like English, this use of the weak pronoun is striking. In English the use of *it* in embedded polar responses is not as felicitious or common in combination with predicates like *think* or *believe*, to respond to a polar question like (3A).[1] The use of *think it* is not just pragmatically infelicitous, but also seems less acceptable than the response with *believe*. The use of *believe it* in (5C) seems to be pragmatically infelicitous in response to the polar question in (5A).[2]

(6)   A: Did John feed the cat?

        B: *I think it.

        C: #I believe it.

An exception to the pattern observed in (6) is shown in (7B). The predicate *doubt* can in fact form an embedded response with *it*,[3] contrary to the pattern observed in (6).[4]

(7)   A: Did John feed the cat?

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[1]I thank Sophie Repp for pointing out to me that *I believe it* does occur as a response in the Corpus of Contemporary American English (COCA), albeit infrequently. In the COCA, the search for questions followed by 'I believe(d) it.' (search: '? I [believe] it .') results in eleven hits, out of which six involve an antecedent containing *believe* and two do not refer to a previously introduced proposition, as shown by the examples below:

(3)   a.   Is that what you believe? I believe it.   (COCA 2000)

        b.   You believe that story is true? I believe it.   (COCA 1999)

The search for questions followed by 'I think/thought it.' (search: 'I [think] it .') resulted in two hits, one of them involving an antededent containing *thought*, see (4):

(4)   a.   Today I am king, and I have one of the loveliest of noblewomen. Who'd have thought it? I thought it.   (COCA 1997)

        b.   If you do not trust these men, why do you accomany them? I think it. Can't prove it.   (COCA 1993)

The respective searches for the counterparts of these searches for *believe* and *think* involving *so* instead of *it* result in 98 (only two of them involving an antecedent containing *believe*) and 1065 hits respectively. Due to these infrquent numbers and, for *believe*, seemingly special cases, I assume responses with *believe it* are disprefered to, e.g., *believe so* in response to regular polar questions.

[2]As Needham (2012) shows, *I believe it* can be used to responsed to the assertion in (5):

(5)   A: I will send you the photos.

        B: I believe it.   (Needham 2012: 75)

[4]The search for occurrences of *I doubt(ed) it*, following a question, in COCA (search: 'I [doubt] it .') results in 452 occurrences.

B: I doubt it.

It appears that German adheres to the same pattern as English, see (8). The weak pronoun *es* seems infelicitous in embedded responses like (8B-C) with the predicates *denken* 'think' and *glauben* 'believe', in comparison to the embedded responses with *bezweifeln* 'doubt'.

(8)   A: Hat Jan die Katze gefuttert?
              has Jan the cat   fed
              'Did Jan feed the cat?'
        B: *Ich denke es.
              I   think it
        C: #Ich glaube es.
              I   believe it
        D: Ich bezweifele es.
              I   doubt   it

So German patterns with English; Dutch deviates from this pattern. In the following, I focus on the comparison between Dutch and English, instead of German. I do so because the use of English proforms referring to propositions has been studied to a greater extent that of German (see, e.g., Webber 1991; Cornish 1992; Hegarty et al. 2002; Gundel et al. 2003; Krifka 2013; Needham 2012; Snider 2017; Wolter 2006), which allows for an easier comparison.

Concerning English proforms and references to propositions, it was pointed out by Webber (1991), that *it* is not often used as a propositional anaphor in comparison to the demonstratives *that* and *this*. This observation forms a stark contrast to the Dutch data in (1)-(2). In these examples, we see that *het* 'it' can be used in regular embedded polar responses and thus can refer to propositions easily. The key question of the present chapter is: why does embedding weak pronouns lead to a felicitous embedded response in Dutch, but not generally in English?

In answering this question, this chapter provides insight into the ability of weak pronouns to occur in embedded polar responses and the influence other items used in embedded polar responses can have on whether or not weak pronouns can occur in such responses. In Section 6.2, I demonstrate that weak pronouns referring to propositions are to a large extent used in a similar way in Dutch and English. In Section 6.3, I consider previous analyses of competition between proforms as well as analyses of weak pronouns and demonstratives in general. In Section 6.4, I present my answer to the

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[4]I thank Michael Deigan for pointing this out to me.

aforementioned question. Prior to presenting my analysis, I consider the Dutch and English embedded polar response paradigms.

In short, I will argue that *het* and *it* are in fact very similar, but differ in their uses due to the different embedded response paradigms of English and Dutch, and crucially, the availability of the null complement anaphor (NCA) in English. The NCA forms a phonologically lighter alternative to *it* for a certain set of predicates, those that may combine with both proforms, and that therefore, the NCA is preferred over *it* when the two compete. I argue that the presence of the NCA in the English response paradigm affects the role of *it*. As we will see, Dutch does not have NCA at its disposal. This absence affects the role of *het* in the embedded polar response paradigm.

6.2. Propositional anaphora: *het/it* vs. *dat/that*

This section explores weak pronouns and demonstratives referring to propositions beyond embedded polar responses. Recall from Chapter 2 that I assume that pronouns like *it* and *that* can be anaphoric to contentful events, i.e. events with content such as speech act events or believe events, instead of propositions. The content of these events, however, is propositional (Kratzer 2006; Hacquard 2006; Elliott 2017). Thus, there is an intrinsic link between propositional and event anaphora, once we allow for contentful events. Therefore, this section considers references to, e.g., speech act events as well. For simplicity's sake, I hold on to the term propositional anaphora for the anaphors under consideration, to separate them from those anaphors traditionally considered event anaphora.[5]

I mainly contrast weak pronouns with demonstratives in this section. There are several reasons for doing so. First, as is generally assumed, the demonstratives seem to be the most direct counterpart of weak pronouns, in terms of type and syntactic category. Second, demonstratives seem to be relatively 'unmarked' (propositional) anaphora, as is also noted by Snider (2017: 64), meaning that these proforms seem to fulfil a more 'default' role than others. We see this assumption implicitly in other work as well, as many 'neutral' examples of propositional anaphors involve *that* (see, e.g., Krifka 2013; Goodhue and Wagner 2018). Note that by demonstratives, I refer to the pronominal items like *that*, *dat* 'that', *das* 'that' and *not* to demonstrative pronouns such as *deze* or

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[5] Of course a complete theory should be able to account for the different kinds of anaphoric potential of the proforms under investigation here. However, as Webber already noted, the anaphor *it* and its demonstrative counterparts seem to behave different in the propositional domain. Therefore, I consider it legitimate to first investigate these uses in more detail.

dieser found in Dutch and German. I refer the reader to, e.g., Hinterwimmer (2015) for an analysis of the latter.

In the following, I discuss the data concerning the weak pronouns *it* and *het* 'it' and the demonstratives *that* and *dat* 'that'. I first consider environments in which *it* and *het* are more acceptable in comparison to the demonstratives. We will see that those are environments in which the propositions referred to are often presupposed. Second, I consider environments in which the demonstratives have been argued to be more acceptable, namely those involving reference to recently occurred contentful events. Thereafter, I consider uses in which the anaphors occur with predicative adjectives; in such uses, both weak pronouns and demonstratives are felicitous.

Since the goal of this thesis is to shed light on the use of proforms in embedded polar responses, I will not consider reference to proposition that scope below, e.g., negation or *tough*-constructions. I refer the reader to Krifka (2013); Meijer (2016); Meijer and Repp (2017); Snider (2017) and Claus et al. (2019) for a discussion concerning such environments.

6.2.1. Propositional anaphora and presupposed propositions

One well-studied environment in which weak pronouns are acceptable as propositional anaphora, in contrast to demonstratives, is the domain of correlate objects of factive predicates.[6] The anaphora are said to co-refer with the proposition in the *that*-clause (cf. Frey 2016), i.e. they refer to some proposition together with the *that*-clause (cf. Chapter 2 and McGrath and Frank 2018 on *that*-clauses referring to or 'designating' propositions). This is illustrated for English and Dutch in (9) and (10) respectively (see Pütz 1986; Sudhoff 2003, 2016a; Frey 2016; Axel-Tober et al. 2016 for studies on the same contrast in German and Bennis 1986; Sudhoff 2016a for data on Dutch).

(9)   Mary regrets {it | ?that}, that she hit John.

(10)   Marie betreurt {het | ?dat}, dat ze   Jan heeft geslagen
          Mary regrets   it   that   that she hit John

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[6] Note that I am assuming here that the anaphora in (9)-(10) refer to the content of (true) propositions (cf., e.g., Snider 2017). Authors such as Sudhoff (2003, 2016a) and Frey (2016) who focus on German, assume that the uses of weak pronouns in cases like (9)-(10) are not anaphoric pronouns, but correlate objects. However, these are anaphoric in some sense as well, as they are often stated to be *co-referential* with *that*-clauses. It is not clear to me whether it is therefore tenable to assume that correlates are in fact different from regular weak pronouns. One might also assume that these anaphors refer to facts, instead of propositions (cf. Hinterwimmer 2010). I follow Bennis (1986) and Snider (2017) in making the strong assumption that these pronouns are anaphoric to (the content of) propositions like weak pronouns in other uses discussed in this chapter.

Two observations must be made about the use of demonstratives in (9)-(10). First, the judgments improve if a prosodic break is built in after the correlate pronoun.[7] Second, if the pronouns are simple objects of factive predicates, without a complementing *that*-clause, the use of the demonstratives improves as well. Both weak pronouns and demonstratives seem to be felicitous in this case, as is shown in (11) and (12). Yet, there still seems to be a slight preference for weak pronouns in these examples.[8]

(11)   Mary hit John. She regrets {it | that}.

(12)   Marie heeft Jan geslagen. Ze betreurt {het | dat}.
        Mary has   Jan hit   she regrets   it   that

The crucial difference between the sentences above is that in (11) and (12), the proforms are anaphoric to the content of speech events, whereas in (9) and (10) the proforms are coreferential with *that*-clauses.

Hegarty, Gundel, and Borthen (2002) and Gundel, Hegarty, and Borthen (2003) already suggested that presupposed propositions can be targeted with *it* and *that* as well. They provide two examples of such cases. First, Hegarty et al. (2002) mention the example with *verify* in (13), assuming that *verify* is factive. However, *verify* is considered an assertive predicate, i.e. a non-factive predicate, by, e.g., Anand and Hacquard (2014), albeit implicitly.[9] Nevertheless, the data in (13) are relevant. I return to (13) in the Section 6.2.3, in which I show that it is the occurrence of the pronouns in combination with a predicative adjective that is relevant here.

(13)   a.   Alex verified that the company destroyed the file.
        b.   {It's | That's} false; the file has been submitted to the district judge.

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[7]I thank Lyn Frazier for pointing this out to me.

[8] Out of eight native speakers of English asked, two thought both proforms were equally good here; three had a slight preference for *it* and the remaining three expressed a stronger preference for *it*. One speaker noted that the use of *that* would improve if the second proposition would be uttered by a different speaker.

[9] Anand and Hacquard (2014) suggest that Pesetsky's *wager* class, which contains *verify*, is identifiable with the class of assertive predicates (see p. 79).

We can verify this by adding matrix negation to a clause with *verify*, as is done in (13a). From (13a), however, we cannot conclude that it will rain tomorrow, as is shown in (13b). The clause that it will rain is thus not entailed, as *verify* does not presuppose the truth of its complement clause unlike factives (cf. Kiparsky and Kiparsky 1971).

(i)   John did not verify that it will rain tomorrow.
    ↛   It will rain tomorrow.

(Hegarty et al., 2002: 178)

Second, Gundel et al. (2003) provide example (14), suggesting that *while* and *although* presuppose their complements (referring to Levinson 1983). They take (14) to show that presuppositional contexts boost the saliency of propositions.

(14)   a.   While/although we told Max that Susan is coming to town, it wasn't on his mind when he called today.

         b.   While/although Jim told him not to raise the issue of benefits at the first interview, Max did it anyway.   (Gundel et al., 2003: 292)

Yet, the predicates *on his mind* and *do* are not among those of which we can be sure take propositions as their argument. In (14), *it* and *that* might very well refer to the non-contentful events of Susan coming to town or raising the issue of benefits at the first interview. Therefore, I ignore (13) and (14) for the time being.[10]

On the basis of (11) and (12), I do agree with Hegarty et al. and Gundel et al. that factive predicates may boost the saliency of their complement. In Section 6.2.2 we see that non-factive predicates behave differently with respect to taking these pronouns as their complement. From the data presented in this subsection, we can thus infer that weak pronouns are preferred over demonstratives as correlate objects of factive predicates, but both types of pronouns are felicitous as regular objects of such predicates. The data are presented in Table 6.1, which will be complemented in the following subsections.

Context	English	Dutch
Correlate objects	*it > that*	*het > dat*
Regular objects of factive predicates	*it = that*	*het = dat*

Table 6.1.: The preferences for demonstratives and weak pronouns in the environments discussed in this subsection.

6.2.2. Propositional anaphora and contentful events

Now, let us turn to pronouns that refer to contentful events, whose content is not presupposed, starting with speech act events. Hegarty et al. (2002) and Gundel et al. (2003) suggested that *it* cannot be used to refer to a speech act, in contrast to *that* (cf. also

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[10]As mentioned in Footnote 5, a complete theory should be able to account for such uses as well. Yet, for the present purposes I will leave these uses out of consideration.

Bentzen and Anderssen 2019 on German *es* 'it'). They provide the example in (15). According to the authors, the use of *it* is infelicitous in (15) and on the available but degraded reading the pronoun can only refer to the event of eating three pieces of cake. The demonstrative, in contrast, can be used felicitously to refer to the event of eating three pieces of cake or the speech act performed by A.

(15) A: I just ate three pieces of cake.
   B: Can you repeat {?it | that}?   (Gundel et al. 2003)

The dialogue in (16) shows the same contrast seems to exist in Dutch. The use of *het* in (16) seems to be dispreferred to *dat* for most speakers. Nevertheless, for some the use of *het* and *dat* is equally good. This suggests that the weak pronoun in (16) is degraded compared to the demonstrative, just like its English counterpart. However, it seems that the use of the weak pronoun in (16) is not completely out.[11] Yet, in order to compare this cross-linguistic data further, an experimental study is obviously required.

(16) A: Ik heb net drie stukken taart gegeten.
     I have just three pieces pie ate
     'I just ate three pieces of cakes.'
   B: Kun je {(?)het | dat} herhalen?
     Can you it that repeat
     'Can you repeat it/that?'

Judgments seem to be different, however, if we assume a scenario in which A has repeated multiple times that s/he has eaten three pieces of cake. In such a case, it would be possible for speaker B to make the assertion in (17):[12]

(17) Ja, ik heb het gehoord.
   Yes, I have it heard
   'I heard it.'

The weak pronoun can thus be used to refer to the speech act event performed by A in (17). In English, such a scenario licenses the use of *it* for some speakers as well.[13]

 Other environments in which reference to speech events with weak pronouns is pos-

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[11] Five out of eight native speakers suggest that the use of *dat* is preferred here. For the remaining three, the use of *het* is equally good.

[12] In this case, five out of eight prefer the use of *het* over *dat*.

[13] Out of eight native speakers of English, two suggest using *it* and *that* is equally good in the English translation of (17); two suggest that they prefer *that*, but do not hate *it* in this scenario. The remaining four do not seem to like *it* here. Possibly, the availability of NCA in responses like *yeah, I heard you* interferes here.

sible are those in which a proposition has already been targeted by a demonstrative. Subsequent reference to the same proposition is felicitous with *it* (see also Bentzen and Anderssen 2019 on German *es* 'it'), as is shown in (18):

(18)   A1:   The best thing for everyone would be if you said your goodbyes quietly,
             privately, and disappeared into the night.
       B1:   Preferably never to return.
       A2:   I didn't say that.
       B2:   But you thought it.   (The Crown, season 01, episode 3)

The data in (17) and (18) show that it is not, in principle, impossible for weak pronouns to refer to speech act events, if these are made more salient. However, in a default context, the use of weak pronouns is dispreferred to demonstratives.

For some speakers, the null complement anaphor can also be used to refer to contentful events. For them, in (19), for instance, the use of the null complement anaphor (NCA) also seems to be felicitous.[14,15]

(19)   A: Is John coming to the party?
       B: Pete asked {that | (?)∅} too.

Note that the NCA is not always a substitute for *that*, when the latter occurs with *ask*. This is illustrated by the example in (20). We cannot leave out *that* in R1's utterance, see R2.[16]

(20)   Context: Ted and Robin need to urgently buy tickets from a flight attendant
       at an airport. The attendant, however, recognizes Robin from a news broadcast
       on a large pizza.

       A: Were those pizzas real? Come on, were they?
       T: Robin.
       R1: One second, Ted. Um, you know, a lot of people ask me that.

                                             (*How I met your mother*, season 2, episode 15)

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[14] Out of eight informants, four preferred the use of *that* over the NCA strongly; three preferred *that* but suggested they accepted the NCA as well; the remaining speaker thought both responses were equally good.

[15] Note that the same does not hold for (15). It seems that *repeat* does not allow for NCA. Following Grimshaw (1979); Depiante (2000), I assume that whether or not a predicate can take NCA is its complement is lexically specified - see also Section 6.4.1.2.

[16] Out of eight native speakers, all preferred the use of *that* over the NCA in (20). One of them suggested that the use of the NCA is possible.

R2:#One second, Ted. Um, you know, a lot of people ask me.

The infelicity of the NCA in (20R2) seems to be due to a speaker - Ted - interfering between the question and the pronoun. Due to this additional utterance, the salience of A's question decreases. Therefore, the demonstrative is preferable over the NCA, as Robin is no longer referring to the most salient utterance at the time of speaking.

(21) shows that the pattern observed for *that* and the NCA in (19) holds for Dutch *het* and *dat* as well. In Dutch, most speakers seem to prefer the demonstrative in (21), but the phonologically lighter form, *het*, is acceptable to some speakers as well.[17] Note that NCA are not available in Dutch, which will be discussed in Section 6.4.1.1 in more detail. Nevertheless, (21) is similar to (19) in showing that both the demonstrative and a phonologically weaker proform can be acceptable.

(21)   A: Komt Jan naar het feestje?
            comes Jan to   the party

       B: Piet vroeg {dat | (?)het} ook.
            Piet asked that   it   too

Generalizing, we see that the preference for demonstratives referring to non-presupposed propositional content is found in both languages and that the competition between the demonstrative and phonologically weaker pronoun is found in both languages as well.

Let us extend the observations made for speech act events to other contentful events. Consider (22), in which speaker A introduces a thinking event. We see that the embedded clause is preferably targeted with *that*.[18]

(22)   A: Pete thinks that John is coming to the party.
       B: I think {that | #it} too.

Note, however, that some speakers dislike *that* here. Nevertheless, they still suggest that *that* is better than *it*. I suppose this dispreference for *that* is due to the fact that in English one could also use *so* and an ellipsis clause in this position. I consider this in Section 6.4.1.2.

(23) shows the data for Dutch. In Dutch, both *het* and *dat* can be used in response to (23A); however, in order to be felicitous, *dat* must occur in SpecCP, see (23C). It seems

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[17] Six out of eight speakers prefer *dat* in (21); one informant prefers *het*; another informant thinks both are fine. Out of the six informants who suggested *dat* was better, two added that their preference is only slight.

[18] Seven out of eight native speakers strongly prefer *that* in (22). One speaker thinks the use of *it* in (22) is okay, but still prefers *that*.

that the latter is the most preferred form for responding to (23A).[19]

(23)   A: Piet denkt dat Jan naar het feestje komt.
            Piet thinks that John to   the party comes

       B: Ik denk {het | #dat} ook.
            I think it   that also

       C: Dat denk ik ook.
            That think I too

So in Dutch, we see that demonstratives are preferred generally in referring to contentful events, in default contexts. Yet, the use of *het* does not seem to be as restricted as the use of *it* seems to be in English. In English, however, the NCA seems to be able to stand in for *that* occasionally. In both languages we thus see the same pattern: the demonstratives are generally preferred, but a phonologically lighter proform may also be used. Table 6.2 summarizes the findings up until this section.

Context	English	Dutch
Correlate objects	*it > that*	*het > dat*
Regular objects of factive predicates	*it = that*	*het = dat*
Referring to speech act events	*it < that*	*het < dat*
Embedded pronoun referring to thinking events	*it < that*	*het = dat* in SpecCP

Table 6.2.: The preferences for demonstratives and weak pronouns

6.2.3. Propositional anaphora and predicative adjectives

An environment in which both weak pronouns and demonstratives can be used are utterances in which the proforms occur with predicative adjectives, such as (24). In (24), the choice between *it* or *that* leads to a difference in meaning (Borthen et al. 1997; Hegarty et al. 2002; Gundel et al. 2003). If speaker B chooses to use *it* in (24B), the listener is invited to infer that s/he was already familiar with the proposition asserted by A (Gundel et al. 2003; see Bentzen and Anderssen 2019 for a similiar view on German *es*). This effect is absent with *that*.

(24)   A: I just read that Bert earns less than Ernie.

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[19] Out of eight informants, five preferred (23C) the most; two preferred use of *het* or *dat* in SpecCP with no difference between the two. The remaining speaker preferred the use of *het* the most.

B: {It | That}'s terrible.[20]   (cf. Borthen et al. 1997)

Hegarty et al. (2002) and Gundel et al. (2003) attribute this effect to the meanings of both *that* and *it*. We come back to this in Section 6.3.3.2, where I discuss Hegarty and Gundel et al.'s theory in detail. For now, note that the same judgments hold for the Dutch counterpart of (24), shown in (25).

(25)   A: Ik las   net dat Bert minder verdient dan Ernie.
               I   read just that Bert less   earns   than Ernie
        B: {Het | dat} is verschrikkelijk.[21]
               it   that is terrible

One question that arises is why both *it* and *that* should be licensed in utterances like (24)-(25). Hegarty et al. (2002) suggest that both *it* and *that* are licensed in such cases if the referent is presupposed or has been mentioned before, on the basis of (26). They argue that (26A2) with *it* is infelicitous if (26A1) has not been uttered (p. 176-177). *That* is licensed either way.

(26)   A1:   I believe that the company destroyed the file, but not everybody does.
        B1:   What does Alex believe?
        A2:   Alex believes [$_F$ that the company destroyed the file].
        B2:   But {it's | that's} false; the file has been submitted to the district judge.
                                                              (Hegarty et al. 2002: 177)

The same reasoning is assumed to apply to their previously mentioned example with *verify*, mentioned in (13) and repeated in (27). The authors assumed that the complement clause was presupposed.

(27)   a.   Alex verified that the company destroyed the file.
        b.   {It's | That's} false; the file has been submitted to the district judge.
                                                              (Hegarty et al., 2002: 178)

However, as mentioned above, the assumed factive status of *verify* is not well-established.[22]

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[20]For some speakers, the use of *it* in (24B) improves if the utterance is preceded by *yeah* or followed by a tag question, *isn't it?* I thank Lyn Frazier for drawing my attention to this.

[21]Similarly to (24B), the use of *het* in this utterance improves if preceded by *ja* 'yes', and followed by *hè* (a particle that might be translating with 'right?').

[22] Manfred Krifka pointed out to me that there may be multiple meanings of *verify*, such as (i) making an established proposition known; and (ii) establishing the truth of a proposition. Only (ii) would be factive. It is not clear to me, with which meaning Hegarty et al. tested judgments for (27). However, as other authors (like Anand and Hacquard 2014, see Footnote 9) consider this predicate non-factive,

Therefore, this example actually forms a counterexample to the position of Hegarty et al. (2002), since the complement clause has also not been mentioned before. The native speakers I consulted generally had a preference for *that* over *it* in (27).[23] As such, this example does not seem to disrupt the pattern observed in the previous subsection, that demonstratives are preferred over weak pronouns when referring to recent event introduced by other speakers, like the verifying event in (27).

I assume that both *it* and *that* are licensed in these cases because the NCA is not available (due to the requirement that English clauses have subjects (Chomsky 1981)), and the use of a phonologically lighter proform leads to a difference in meaning, in which the referent can be taken to be more salient for the speaker. *It* and *that* thus provide the speaker with ability to express different meanings in such cases.

Note that the above examples all involve multiple speakers. (28) shows that matters are different for single speaker utterances. In this example, all three proforms are felicitous. The inferences found for weak pronoun in (24B) do not seem to arise as strongly here. We can explain this as follows. As mentioned, (28) is a single speaker utterance; therefore we can take the speaker to be familiar with the antecedent utterance already. I assume this influences the use of the pronouns: the speaker is already familiar with the antecedent proposition anyway and therefore, the effect of *it* shown above is absent here. The speaker can still choose *it* over *that* to indicate that the proposition is more salient to him/her.

(28)   The Ashers were predictably short of groceries the day of the party. Nicholas Asher went out to get some, got lost and arrived back only after the party started. {This | That | It} upset the committee so much that they made sure the Ashers never hosted a party again.

(Wolter 2006: 191, based on Asher 1993)

I return to multiple speaker vs single speaker utterances in more detail in Section 6.3.2.

The main finding from this subsection is that both weak pronouns and demonstratives are felicitous in combination with predicative adjectives, when referring to propositions. Table 6.3 shows the completed overview of the felicity of these pronouns in different configurations.

I assume the non-factive reading is more prominent.

[23]I asked eight speakers, two of them suggested the responses are equally good; six indicated they had a preference for *that*.

Use	English	Dutch
Correlate objects	*it > that*	*het > dat*
Regular objects of factive predicates	*it = that*	*het = dat*
Referring to speech act events	*it < that*	*het < dat*
Embedded pronoun referring to thinking events	*it < that*	*het = dat* in SpecCP
With predicative adjectives	*it = that*	*het = dat*

Table 6.3.: The preferences for demonstratives and weak pronouns

6.2.4. Interim summary

To summarize, in this section, we have seen that weak pronouns, when referring to propositions, behave similarly in Dutch and English to a large extent, despite the differences we saw in the introduction. In more detail, in the case of correlates, weak pronouns are preferred over demonstratives. However, when referring to speech acts, weak pronouns are dispreferred to demonstratives in default contexts. When referring to thinking events, *that* was preferred over *it*, but *het* was as felicitous as *dat* (in SpecCP). As the latter environments are rather similar to embedded polar responses to questions, the felicity of *het*, and infelicity of *it*, is not surprising. In combination with predicative adjectives, we saw that weak pronouns and demonstratives can both occur. In case of multiple speakers, this may lead to a difference in meaning, as use of weak pronouns seems to suggest that the referent was known already.

It is important to note here that we saw that often multiple pronouns were available when referring to propositions. When referring to contentful events, in default contexts, some speakers of English allowed for reference with NCA and *that*. In combination with predicative adjectives or in the topic position, both *it* and *that* were allowed. As mentioned, the NCA cannot occur in this position, due to the requirement that the subject position in English must be occupied by an overt item (Chomsky 1981). In this case, due to the unavailability of the NCA, *it* and *that* thus form the two alternatives. For Dutch, we saw that roughly the same pattern arises. In most cases, there was a preference for either *dat* or *het*. Yet, in these cases the other pronoun would still be more or less acceptable. So despite appearances in the introduction, there are similarities between the Dutch and English proforms. Importantly, it seems that often both phonologically heavier and lighter proforms can be used in similar environments in both languages.

In the following, I discuss several theories of proforms and the competition between them. In analyzing the applicability of these theories to the data presented above, I will

consider whether they can account for (i) the differences between *het* and *it* in embedded polar responses; (ii) the use of the weak pronouns as correlates; (iii) the inference of familiarity weak pronouns might lead to; and (iv) the preference for demonstratives when referring to recent contentful events.

6.3. Previous work on demonstratives and weak pronouns

In this section I consider previous approaches to weak pronouns and demonstratives. In Section 6.3.1, I focus on two accounts of competition between proforms:[24] Ariel's (1990) accessibility theory and Gundel, Hedberg, and Zacharski's (1993) givenness hierarchy. In Section 6.3.2, I discuss accounts of demonstratives. In Section 6.3.3, I discuss theories of weak pronouns.

6.3.1. Accounts of competition between proforms

6.3.1.1. Accessibility (Ariel 1990, 2001)

In Ariel's (1990, 2001) accessibility theory, referential expressions signal how accessible their referents are. If a referent is highly accessible, it is 'highly activated' in the memory. In that case, the referent has probably been mentioned already, or is, for instance, part of the utterance situation (e.g., *you*, *me*, and so on). If a referent is lowly accessible, it is not activated in the memory at all or just slightly activated. In this case, the referent may not have been mentioned before or it was mentioned a longer time ago.

The different degrees of accessibility are linked to the referential devices listed in (29). This scale is relative, ranging from low accessibility to high accessibility markers. This means that a full name and a modifier convey a less accessible referent than a long definite description. A cliticized pronoun on the other hand refers to a more accessible referent than a distal or proximate demonstrative. None of these referential devices are tied to a fixed degree of accessibility.

(29)   full name + modifier > full name > long definite description > short definite description > last name > first name > distal demonstrative+modifier > proximate demonstrative + modifier > distal demonstrative + NP > proximate demonstrative + NP > distal demonstrative (−NP) > proximate demonstrative (−NP) >

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[24]Some might expect a section devoted to Centering Theory (Grosz, Joshi and Weinstein 1995, CT) as well. As interesting as this theory is on its own, I do not consider it directly relevant to the topic of this thesis: propositional anaphora. CT considers discourse cohesion and predicts which entities - which are not introduced as clauses - might be the topic of subsequent utterances.

> stressed pronoun+gesture > stressed pronoun > unstressed pronoun > cliticized
> pronoun > verbal personal inflections > zero   (Ariel 1990: 73)

Ariel lists three 'partially overlapping criteria' for measuring accessibility (2001:32). First, the information conveyed by the referential device plays a role. The high accessibility markers in (29) all convey little to no descriptive information. This is different for the low accessibility markers, like proper names. Second, the less phonological weight a referential device bears, the more accessible its referent is. However, there is a correlation between phonological weight and descriptive content of course. A phonologically heavier referential device is more likely to contain information concerning the referent. Conversely, a phonologically lighter one is more likely to contain fewer information concerning its referent. Third, the more 'rigid' a referential expression is, the more likely a low accessible referent is. With rigidity, Ariel means the 'ability to pick a unique referent, based on the form' (2001:32).[25] I take this to mean that a more complex referential phrase, such as *John's neighbor with the tiny dog*, can only be used to refer to individuals that are John's neighbor and have a tiny dog. This is a rigid expression compared to, e.g., the pronoun *he.* The latter can in principle be used to refer to all male individuals. Therefore, *he* is a less rigid and more flexible referential form. However, note that rigidity is also a matter of information. The complex noun phrase is much more informative than the pronoun. In addition, such phrases also have more phonological weight. Ariel's criteria are thus not isolated ones; rather the criteria interact and overlap. Note that for proforms such as the NCA, *it* and *that*, only the criterion of phonological weight is relevant. The three proforms bear no descriptive information and are equally non-rigid. Therefore, I only consider the criterion of phonological weight in the following.

Looking at the bottom part of the accessibility scale, we see demonstratives, pronouns, clitics and zero items. Ariel argues that items on the right signal a higher degree of accessibility and thus, that these referential devices refer to more activated, or more salient, referents. Let us apply Ariel's theory to the data described in Section 6.2. First, it follows from Ariel's account that *it* and *het* can be used differently. The Dutch weak pronoun is the marker on the right side of the accessibility scale, marking the highest degree of accessibility. English *it* does not always mark the highest degree of accessibility because English has the NCA at its disposal in some constructions. Second, it does not follow naturally from Ariel's account that weak pronouns are licensed as referring to presupposed propositions. Unless, of course, we make the additional assumption

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[25] Ariel's notion of rigidity thus has nothing to do with Kripke's notion of rigid designation (see Kripke 1980 for more information).

that those are always highly accessible or salient (cf. Gundel et al. 2003). Third, the inference of familiarity, or establishedness, that weak pronouns sometimes lead to (recall examples (24) and (25)) does not follow from Ariel's account directly either. However, we might be able to explain this as well on the same additional assumption that known or familiar propositions are automatically more accessible, as was proposed by Gundel et al. (2003). We return to this matter and the role competition between weak pronouns and demonstratives may play in Section 6.3.1.2 and in Section 6.4. Finally, the preferred use of demonstratives for referring to recent contentful events does follow from Ariel's account. We may expect that such events are familiar to the addressee but not yet the most salient, as they are not the topic of discussion (cf. Hegarty, Gundel, and Borthen 2002; Gundel, Hegarty, and Borthen 2003).

One of the general questions that arises from Ariel's work is why phonologically heavier referential devices should refer to less salient referents. Levinson (1987) links the use of phonologically heavier vs. lighter referential devices to Grice's maxim's of Quantity. These are shown in (30) and (31), accompanied by their corresponding speaker's maxim, as put forth by Levinson.

(30)   a.   **Grice's Maxim 1 (Levinson's Q-principle)**:
           'Make your contribution as informative as is required (for the current purposes of the exchange)';   (Grice 1975: 45-46)

        b.   **Speaker's Maxim**: Do not provide a statement that is informationally weaker than your knowledge of the world allows, unless providing a stronger statement would contravene the I-principle.   (Levinson 1987: 401-402)

(31)   a.   **Grice's Maxim 2 (Levinson's I-principle)**:
           'Do not make your contribution more informative than is required';
                                      (Grice 1975: 45-46)

        b.   **Speaker's Maxim**: 'Say as little as necessary', i.e. produce the minimal linguistic information sufficient to achieve your communicational ends (bearing the Q-principle in mind).   (Levinson 1987: 401-402)

These two principles require speakers to provide statements that are on the one hand strong and informative but as minimal as possible on the other hand. Listeners assume speakers to apply these principles and therefore interpret their utterances accordingly. Applied to pronouns, Levinson argues that pronouns are more minimal than complex noun phrases and null pronouns are more minimal than overt pronouns (Levinson, 1987: 402). Therefore, whenever it is informative enough, pronouns are preferred

over, e.g., complex noun phrases. This suggestion is completely in line with Ariel's more comprehensive givenness hierarchy.

Levinson primarily looks at the pattern in (32), which he dubs the *general anaphora pattern* (Levinson 2000). After John has been introduced, the subsequent null proform *must* be interpreted as referring to John, the pronoun *he* is preferably preferred as doing so and the noun phrase is preferably interpreted as referring to someone other than John.[26]

(32)   John$_i$ came in and $\{\varnothing_i \mid$ he$_i \mid$ the man$_j\}$ sat down.   (Levinson, 2000: 268)

The least minimal referential form, *the man* in (32), thus requires us to assume that the speaker is not referring to the maximally salient entity: *John*. Rather, we assume a referent other than John is intended in (32). The use of the noun phrase is necessary to make the contribution more informative. In case the more minimal forms are used, the null proform or *he*, the listener assumes the referent is the maximally salient one: *John*. Therefore, no other referent is introduced. The speaker does not want to be overinformative in these cases, as the use of a noun phrase would signal s/he is referring to a second man. In both cases, the speaker is being as minimal and informative as possible (as prescribed by the maxims, or Levinson's Q and I principle), whilst conveying the intended meaning of the utterance.

We can apply Levinson's line of reasoning to the proforms discussed in this chapter. Speakers generally want to be brief and minimal and therefore are expected to use the most minimal proforms (e.g., null ones or weak pronouns) if possible. If a less minimal proform is used, the speaker must have special reason to do so. I assume, following Levinson's suggestions, that reference to a non-maximally salient referent is one of those reasons.

The present proposal - presented in Section 6.4 - will build on Ariel's and Levinson's insights, concerning the relation between phonologically lightest or null proforms and their phonologically heavier counterparts (see also earlier work by Chafe and Gundel, Hedberg, and Zacharski 1993 in the next subsection).

6.3.1.2. The givenness hierarchy (Gundel et al. 1993)

Gundel, Hedberg, and Zacharski (1993) consider the different kinds of referential devices and the cognitive statuses these encode. The authors assume that entities introduced

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[26] Note that we can also assume for (32) that there is no null proform, but that there is VP conjunction instead.

in the discourse have a certain cognitive status. Referential devices enable speakers to signal this status to the addressee. These statuses and their link to specific referential devices are assumed to help the addressee understand what entity the speaker refers to. Gundel et al. distinguish six such statuses, ranging from *in focus* to *type identifiable*. The former being the 'most restrictive' one and the latter the 'least restrictive' one; see Table 6.4. The more restrictive statuses entail the less restrictive ones. Therefore, all entities that are in focus are also activated; and each entity that is activated is also familiar, and so on. By using one of the specific referential devices, the speaker signals to the addressee what status s/he expects the addressee to attribute to the referent. The statuses are linked to referential expressions written below them in Table 6.4. The authors suggest that the latter are language specific, whereas the hierarchy itself is found cross-linguistically.

Note that the NCA is not among the anaphora considered by Gundel et al. (1993). However, we might assume it takes a place on the left-side of the hierarchy, under *in focus*, like Gundel et al.'s suggest for null proforms in other languages.

in focus	<	activated	<	familiar	<	uniquely identifiable	<	referential	<	type identifiable
{it}		{that, this, this N}		{that N}		{the N}		{indefinite this N}		{a N}

Table 6.4.: The givenness hierarchy (Gundel et al. 1993)

For the discussion of *it/het* and *that/dat*, only the two highest cognitive statuses are relevant: *in focus* and *activated*. According to the authors, an entity is activated for a specific individual, if that individual has a representation of the entity in the short term memory. The entity is furthermore in focus if it is not only in the short term memory, but also in the center of attention (Gundel et al. 1993:279). By using *it*, a speaker thus signals to his/her addressee that the entity referred to is the center of attention. By using *that*, s/he signals that the entity is merely activated, i.e. represented in the short term memory. The differences between the two are illustrated in (33)-(34). In (33), *my neighbor's bull mastiff* is introduced in an argument position. In this case, it can be targeted by *it*. In case of (34), *the bull mastiff* is introduced in a prepositional phrase. After that, it cannot be targeted by *it*.

(33) a. My neighbour's bull mastiff bit a girl on a bike.
      b. {It's | That's} the same dog that bit Mary Ben last summer.

(Gundel et al., 1993: 280)

(34)   a.   Sears delivered new siding to my neighbors with the bull mastiff.

         b.   {#It's | That's} the same dog that bit Mary Ben last summer.

<div align="right">(Gundel et al., 1993: 280)</div>

In both cases *that* can refer to the dog. Gundel et al. suggest that this is because *that* only signals that a referent is activated. The referent might also be in focus, but it need not.

Similar to Levinson (2000), Gundel et al. (1993) suggest that for resolving the competition between the proforms Grice's first Maxim of Quantity is important, see (35) (repeated from (30a)).

(35)   **Grice's Maxim 1 (Levinson's Q-principle)**:
         'Make your contribution as informative as is required (for the current purposes
         of the exchange)';   (Grice 1975: 45-46)

Following (35), the authors suggest for referring to an entity that is in focus the use of a weak (or null) proform is the most appropriate, as this corresponds to the appropriate cognitive status (Gundel et al. 1993: 299). The use of a demonstrative is less informative when referring to an entity that is in focus and therefore dispreferred.

The givenness framework shares properties with Ariel's accessibility theory, but the two also differ. The main commonality is that both theories put the referential devices on a scale that encodes different levels of givenness, or accessibility, or salience. Yet, for Ariel, this scale is not fixed, i.e. there are no fixed degrees of accessibility that could be linked to specific markers. This view allows for a lot of variation between languages (for instance those with or without null forms). One could also argue, in contrast, that Gundel et al.'s system could be tailored to individual languages. However, in that case, the system remains rather descriptive, as markers seem to be allocated to cognitive statuses. A question that arises is how we tease apart referential devices, like *it* and the NCA, that belong to the same cognitive status. Ariel's system, which is similar but lacks cognitive statuses, raises the further question whether such statuses are required at all. In addition, Ariel (2001:63) points out that it is difficult to tease some of these statuses apart. For instance, she suggests the difference between 'uniquely identifiable' and 'referential' is unclear (see Ariel (2001:63) for a discussion). This seems to be problematic indeed. Ariel (1990, 2001) does not run into these problems because she does not distinguish between cognitive categories. For further critique of Gundel et al. (1993), I refer the reader to Ariel (2001).

Despite the problems with this framework, let us see if it can be applied to the data

in Section 6.2. It seems to me that on the basis of the givenness hierarchy alone only part of the data is explained. First, the givenness hierarchy has difficulty explaining the differences between *it* and *het*, because these are supposed to signal their referent has the same cognitive status. Second, the observation that weak pronouns are preferred as correlates and licensed when referring to presupposed propositions do not follow from the framework directly. Third, the inference the weak pronouns may give rise does not follow either. However, as suggested for Ariel's account in the previous section, we may be able to derive these observations by making additional assumptions and through competition between the proforms. I turn to this in the next sections. In Section 6.3.3.2 I discuss an extension of Gundel et al.'s (1993) account, which attempts to explain the data in this framework. Finally, it seems that Gundel et al. (1993) can in fact account for the demonstratives being preferred to refer to recent contentful events. These events are activated, but not in focus. Again, we return to this in detail in Section 6.3.3.2.

A problem for the present account is that the NCA in English is not accounted for. We could hypothesize that the NCA indicates that its referent is in focus, as was mentioned above. However, as was also mentioned already, the question then is what the nature of its competition with *it* is. Gundel et al. suggest for other languages with null proforms that these indicate the same status as weak pronouns (p. 284). Therefore, we would not expect any competition to arise. However, we have seen that the two pronouns cannot be used interchangeably. It is thus desirable to distinguish between the two forms.

We have now seen two frameworks that look at the competition between phonologically heavier and weaker referential devices. In the following, I elaborate upon analyses of the demonstratives and weak pronouns in more detail. When considering these analyses, we will return to the notion of competition and markedness as introduced by Ariel and Gundel et al.

6.3.2. Demonstratives

As for the use of demonstratives, in Section 6.3.2.1, I consider demonstratives referring to concrete entities (in contrast to weak pronouns and definite descriptions), focusing particularly on Wolter's (2006) account. After that, in Section 6.3.2.2, I consider demonstratives referring to propositions. Since it is not possible to use plural demonstratives to refer to propositions (see, e.g., Wolter 2006), I will not consider *these* and *those*.

6.3.2.1. Reference to concrete entities (Wolter 2006, Roberts 2002)

Proximity and distance   As for the demonstratives *dat* and *that*, I broadly speaking follow Wolter's (2006) account of *that*. She suggests that the demonstratives *that* and *this* differ in the sense that *this* marks proximity, whereas *that* is not specified for distance (see also Lyons 1977). Other authors have argued that *this* marks proximity and *that* distance (see, e.g., Elbourne 2008), based on data like (36). Here, *this* and *that* seem to only be felicitous if the referent is close or further away respectively.

(36)   a.   [holding a book]
              I like {this | #that} book.
         b.   [pointing at a painting across the room]
              I like {#this | that} painting.   (cf. Wolter 2006: 102)

The same holds in Dutch:

(37)   a.   [holding a book]
              Ik vind {dit | #dat} een goed boek.
              I   find this   that   a   good book
         b.   [pointing at a painting across the room]
              Ik vind {#dit | dat} een mooi   schilderij.
              I   find this   that a   pretty pointing

Wolter (2006) nevertheless suggests there are two reasons for assuming that *that* is unmarked in contrast to *this*. First, if there is only one painting in the room, one can felicitously use *that* 'even if the speaker is quite close to the painting' (p. 102), as is shown in (38).

(38)   [pointing at the only painting in the room]
         I like that painting.   (ibidem)

Wolter does not provide the counterpart of (38) with *this*, but the implication of course is that *this* is less felicitous in this context. Again, the same holds in Dutch:

(39)   [pointing at the only painting in the room]
         Ik vind dat een mooi   schilderij.
         I   find that a   pretty painting

Second, Wolter suggests that English historically had a three-way demonstrative system, in which proximity and distance could be marked each. *That* was the third, unspecified

proform, which did not mark either proximity or distance. The distal form *yon* was lost; yet the proximity marker *this* remained. Wolter suggests that *that* remained unmarked whereas *this* remained a proximity marker.[27]

The proposed division of labor between *this* and *that* is in line with a particular use of *this*. *This* can, in its deictic uses, refer to an entity prior to its introduction (Fillmore 1997, Huddleston and Pullum 2001, Wolter 2006). This is illustrated in (40).

(40)   a.   I bought {this | #that} book today. [speaker reveals a book]
                                                          (Wolter, 2006: 105)

       b.   This is what I want you to do: Pick up Sue from the airport (she's arriving
            on Qantas flight 122) and take her to the Astoria Hotel in Brunswick
            Street...   (Huddleston et al., 2002: 1509)

In cases like (40), the upcoming referent is familiar to the speaker, but not to the addressee (Fillmore 1997, Wolter 2006). Wolter suggests *this* conveys proximity to the speaker in these uses because the speaker is the one in control of 'the introduction or identification of the referent' (p. 106).

The Oxford Dictionary of English suggests that *yonder*, the locative form of *yon*, was related to the Dutch *ginder*. The Woordenboek der Nederlandse Taal (WNT, the dictionary of the Dutch language) suggests this is an adverb of location, derived from *gene*.[28] The latter form is completely unfamiliar to me, whereas *ginder* (or the other locative form *ginds*) seems to be a dialectal/archaic form. It refers to something that is (relatively) far away. The WNT suggests that *dit* refers to an entity that is either the most recent mentioned, or is mentioned immediately after, or is proximate to the speaker.[29] For *dat*, no such restriction is mentioned.[30] Based on the WNT and the data above, I assume Wolter's proposal for *that*, as an unmarked anaphor, holds for Dutch *dat* as well. Dutch *dit* 'this' can be used like *this* in (40a), see (41):

(41)   Ik heb vandaag {dit | #dat} gekocht.
       I   have today   this   that   bought
       'I have bought this/that today.' (whilst revealing something)

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[27]One could also argue that the loss of *yon* may have also lead to a change in the meaning of *that*. However, such an account would have difficulty explaining the felicity of (38), in scenarios in which the speaker is relatively close to the paining.

[28]See `http://gtb.inl.nl/iWDB/search?actie=article&wdb=WNT&id=M020448&lemmodern=ginder`, visited on 21-02-2018.

[29]See   `http://gtb.inl.nl/iWDB/search?actie=article&wdb=VMNW&id=ID41032&lemmodern=dit& domein=0&conc=true`, visited 25-01-2019.

[30] See `http://gtb.inl.nl/iWDB/search?actie=article&wdb=VMNW&id=ID87922`, visited 25-01-2019.

It thus seems that *dit* also marks proximity, like *this*. Note that the Dutch counterpart of (40b) is more felicitous with *het volgende* 'the following' than with *dit* (occurring in SpecCP or not).

(42) a. Je doet het volgende: haal Sue op van het vliegveld en ...
    You do the following get Sue on from the airport and
    'This is what you do: Pick up Sue from the airport and ...'

  b.(#)Je doet dit: haal Sue op van het vliegveld en ...
    You do this get Sue on from the airport and
    Intended: 'This is what you do: Pick up Sue from the airport and ...'

  c.(#)Dit doe je: haal Sue op van het vliegveld en ...
    This do you get Sue on from the airport and
    Intended: 'This is what you do: Pick up Sue from the airport and ...'

In Section 6.3.2.2 we will see that the use of *dit* as referring to propositions in Dutch is generally less acceptable than the use of *dat*.

According to Wolter, the relative marking of the demonstratives accounts for the distribution seen above. If *this* is used, the referent must be proximate. If *that* is used, it is not specified whether the referent is proximate. However, *if* the referent is proximate, we expect the speaker to use *this*. Thus, the proximity specification of *this* and the competition between the demonstratives explain the pattern observed above.

Wolter's (2006) analysis Wolter (2006) analyzes the determiners *the N* and *that N*, as well as the proforms *it* and *that*. Her analysis of the determiners is applicable to the respective pronouns as well. Wolter couches her analysis in a situation semantics, based on Kratzer (1989, 2004) and Percus (2000). In such a semantics, all nouns and verbs take a situation argument. Similar to nouns and verbs, according to Wolter, we interpret referential forms relative to situations. She suggests that weak pronouns, or definite descriptions, are interpreted relative to some salient situation, whereas demonstratives are interpreted relative to a situation that is specified as a non-default situation.[31] Wolter

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[31] The formal definitions Wolter proposes are shown in (43). As we can see, the core difference between *it* and *that* in her framework, is that *that* presupposes that its referent is *not* part of a default situation. The weak pronoun bears no such presupposition, similar to Wolter's analysis of definite descriptions.

(43) a. ⟦**it**⟧: defined iff most-salient(s_n) is a singleton set. If defined, denotes $\iota x.\ (x)(s_n)$.
  b. ⟦**that**⟧: defined iff most-salient(s_n) is a singleton set and s_n is a non-default situation. If defined, denotes $\iota x.\text{most-salient}(x)(s_n)$.   (Wolter, 2006: 169,174)

Wolter (2006: 56ff) argues that s_n is required to denote a singleton set in order to maintain the uniqueness condition on the referents.

(2006) suggests that the situations which form arguments of the main predicates of propositions are default situations. These are the situations we use to evaluate the truth of a proposition (cf. Stalnaker 1977). Wolter suggest that these are bound at the sentence level (Wolter, 2006). Non-default situations are all other situations. An example is given in (44):

(44) $\llbracket$Mary believes that John left$\rrbracket = \lambda s.\forall s' \in \mathrm{Dox}_m(s).\mathrm{leave}(j)(s')$

(based on Wolter 2006: (19c))

In (44), s is the default situation, which is to be bound in the sentence, whereas s', the situations relative to which Mary's believes are interpreted, is a non-default situation, which is not bound at the sentence level.

Wolter argues that because demonstratives refer to entities in non-default situations, they are more "marked" than weak pronouns, which are not specified for a non-default or default situation (see Footnote 31). Therefore, *that* is used to refer to something that was not uniquely salient with respect to the general context of the utterance before the demonstrative was uttered. This property allows us to use them to shift our attention to non-default situations.

Recall that Wolter's analysis is assumed to apply both to demonstrative determiners and definite descriptions, as well as to demonstratives and weak pronouns. To support her analysis, Wolter provides the examples below. In (45) (involving *that/this N* and *the N*), the speaker is talking in a context with several paintings. In such contexts, the use of the demonstratives is felicitous, but the definite description is not.

(45)   a.   I like that/this painting [pointing at a painting] but not that/this painting [pointing at another painting].
         b.   #I like the painting [pointing at a painting] but not the painting [pointing at another painting].   (Wolter, 2006: 70-71)

In (45a), the speaker uses the demonstratives to zoom in on and contrast two non-default situations which are part of the general context. The demonstrations are assumed to create such non-default situations. The definite descriptions in (45b) cannot do this. Wolter takes this to show that definite descriptions are used relative to the 'entire context of utterance' (p. 71) and not relative to non-default situations.

According to Wolter, the examples in (46) show this extends to propositional anaphors *it/that*. We discuss this in more detail below.

(46)   [TV 1 shows scenes of fighting in Baghdad. TV 2 shows Palestinian and Israeli leaders signing a treaty. Speaker points to TV 1, then to TV 2.]

    a.   THAT/THIS doesn't surprise me, but I find THAT/THIS very surprising.

    b. #IT doesn't surprise me, but I find IT very surprising. (Wolter, 2006: 177)

Note that both (45) and (46) involve demonstrations. (47) shows that the infelicity of the determiners in (45) need not depend on this:

(47)   A woman$_i$ entered from stage left. Another woman$_j$ entered from stage right.

    a. {#The woman | That/This woman$_j$} was carrying a basket of flowers.

(Roberts, 2002)

I consider more examples of reference to propositions with *that/this*, which also lack demonstrations, in the next subsection.

Wolter's account is reminiscent of Roberts' (2002) account of demonstratives. Roberts too argues that demonstratives are extensions of definite descriptions. However, Roberts suggests that demonstratives are accompanied by a demonstration that singles out a unique referent. A demonstration makes a referent maximally salient (Roberts, 2002: 29).[32] Therefore, demonstratives are likely to target entities that were not maximally salient prior to the utterance. We can easily see the parallel with Wolter's account, in which demonstratives zoom in a non-default situation. In both accounts, demonstratives single out entities that are not the maximally salient ones by zooming in on them.

Reasons for using demonstratives, according to Roberts, are (i) to imply a contrast; and (ii) to refer to entities that are weakly familiar (in contrast to those entities that have been mentioned before and therefore are strongly familiar) (Roberts 2002: 36 and references therein). Below, we will see that especially the first notion is relevant for

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[32] One may wonder if it is problematic for Roberts' account that not all demonstratives need to be accompanied by a demonstration, as is shown by Robert's (2002) example in (48). Roberts suggests that demonstrative determiners do not require a demonstration if the referent is sufficiently salient.

(48)   Two friends are sitting in a coffee shop when a man comes in and begins to noisily harass the personnel at the counter. Not wanting to draw attention to herself by staring or pointing, one friend might whisper to the other:
That guy is really obnoxious.   (Roberts, 2002: 33)

The same holds for the phemenon that Roberts calls discourse deixis, illustrated in (49):

(49)   This sentence is short.   (Roberts, 2002: 34)

referring to propositions with demonstratives.

6.3.2.2. Reference to propositions (Wolter 2006, Snider 2017)

We can extend Wolter's view to propositions. According to her, the demonstratives *this* and *that* are preferred over the weak pronoun to indicate a contrast between two propositions. This is illustrated in (50) (repeated from (46)).

(50) [TV 1 shows scenes of fighting in Baghdad. TV 2 shows Palestinian and Israeli leaders signing a treaty. Speaker points to TV 1, then to TV 2.]

    a.   THAT/THIS doesn't surprise me, but I find THAT/THIS very surprising.

    b. #IT doesn't surprise me, but I find IT very surprising.   (Wolter 2006:177)

According to Wolter, (50) shows that *it* requires a unique referent, whereas the demonstratives can be used to contrast two referents. Yet, it is generally assumed that weak pronouns cannot be stressed (see, e.g., Cardinaletti and Starke 1996; Abendroth Scherf 2019, but see Ariel 2001 for a different view). Therefore, the use of *it* in last would be excluded for phonological reasons.[33] In addition, the uses of the pronouns in (50) suggests a clear division between the demonstratives and the weak pronoun. However, recall from Section 6.2.3 that in some cases both *it* and *that* are felicitous. Wolter does not go into these cases. Nor does she discuss the difference in meaning that may arise.

Snider (2017) suggests that the propositional anaphor *this* can be used cataphorically or anaphorically (in the strict sense), whereas *that* is preferred as a true anaphor, based on the data in (51). In (51A) and (51B), we see that *that* is not licensed if the proposition it refers to was not yet mentioned. However, *this* is fine in this case. In (51C) and (51D), we see that both *this* and *that* are licensed if the proposition has been mentioned already. Snider therefore suggests that *this* is the more general proform.

(51) [Discussing who was at the party last week; Erik hasn't yet been mentioned.]

    A: (i)   This is what I was told: Erik was there.

         (ii) #That is what I was told: Erik was there.

    B: (i)   I was told this: Erik was there.

         (ii) #I was told that: Erik was there.

    C: (i)   Erik was there. This is what I was told (by Joanna).

         (ii)   Erik was there. That is what I was told (by Joanna).

    D: (i)   Erik was there. I was told this (by Joanna).

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[33]I thank Sophie Repp for pointing this out to me.

(ii) Erik was there. I was told that (by Joanna).   (Snider, 2017: 24)

However, Snider also mentions that some speakers prefer (51D-ii) over (51D-i) and (51C-ii) over (51C-i) (Snider 2017:25). He attributes this to the competition between the proforms, i.e. because *that* is only a 'strict' anaphor whereas *this* is more generally employable, we expect *that* to be used as an anaphor and *this* as a cataphor in (51). With these additional judgments, it becomes difficult to see whether either *this* or *that* is more or less marked than the other. However, later on, Snider - who investigates the licensing conditions of propositional anaphora (and not on the differences between the anaphors) - in contrast argues that he focuses more on *that* than the other proforms, because 'it seems to be relatively unmarked' in contrast to other anaphors (Snider 2017:64). As discussed in Section 6.3.2.1, following Wolter, I assume that *this* is specified for proximity and therefore more "marked" than *that*.

It is important to note that Snider focuses on single speaker utterances as well (p. 63). Taking into account dialogues, a slightly different pattern arises. Diessel (1999) provides the examples in (52)-(53), which show a somewhat stricter view. We see that *that* can refer to propositions that were recently uttered by other speakers, whereas *this* cannot (in contrast to (51)).

(52)   A: I've heard you will move to Hawaii?
        B: Who told you {that | #this}?   (Diessel 1992:102)

(53)   Listen to {this | #that}: John will move to Hawaii.   (ibidem)

Diessel suggests that *this* can in fact be used anaphorically and cataphorically (as seen in Snider's example above). Yet, it can only refer to utterances by the same speaker (see Lakoff 1974; Chen 1990; Diessel 1999 amongst others). Lakoff's example in (54) illustrates this (apud Chen 1990). Use of *this* in (54b) is only felicitous if the speaker of (54b) also uttered (54a). For the use of *that*, the speaker of (54a) and (54b) need not be the same.

(54)   a.   Dick says that Republicans may have credibility problems.
        b.   {This | That} is an understatement.   (Lakoff 1974:349)

If we assume that *this* is the more general anaphor, the judgments in (54) and the restrictions of *this* are unexpected. In that case, we would expect that *this* could be felicitously uttered by all speakers involved in the conversation. However, if we assume that *this* is specified for proximity and *that* is not specified for distance at all (as suggested

by, e.g., Wolter 2006 and Lyons 1977), the judgments in (54) are expected. Recall also that Wolter (2006) pointed out that *that* used to be the unspecified or "unmarked" demonstrative in older stages of English. At that time *this* was used to mark proximity, whereas *yon* marked distance. These observations make it more attractive to assume that *that* is the unmarked demonstrative of the pair. However, before drawing tentative conclusions, let us explore the Dutch counterpart of the data discussed.

The matter is a bit different in Dutch. In (55), we see the translation of Snider's English examples. (55A) and (55B) show that the cataphoric use of *dat* is dispreferred to the cataphoric use of *dit*.[34] The judgments, therefore, are similar to the English judgments. However, (55C) and (55D) show that *dit* cannot be used anaphorically (in the strict sense), whereas *dat* can.[35] The observation that *dit* is more felicitous as a cataphor fits with Van Craenenbroeck's mention of *dit* as a pronoun able to introduce a quote (Van Craenenbroeck 2002: 56). Thus, there seems to be a stronger divide between the two demonstratives in Dutch than Snider suggested there was for their English counterparts. Yet, only a cross-linguistic experimental study could obviously point out whether there is such a difference indeed.

(55) [Discussing who was at the party last week; Erik hasn't yet been mentioned.]

  A: (i) Dit heb ik gehoord: Erik was aanwezig.
      this have I heard Erik was present

    (ii)(#)Dat heb ik gehoord: Erik was aanwezig.
      that have I heard Erik was present
      'This/that I heard: Erik was present.'

  B: (i) Ik heb dit gehoord: Erik was aanwezig.
      I have this heard Erik was present

    (ii)(#)Ik heb dat gehoord: Erik was aanwezig.
      I have that heard Erik was present

  C: (i) #Erik was aanwezig. Dit heb ik gehoord.
      Erik was present this have I heard

    (ii) Erik was aanwezig. Dat heb ik gehoord.
      Erik was present that have I heard

  D: (i) #Erik was aanwezig. Ik heb dit gehoord.
      Erik was present I have this heard

---

[34] Four out of eight speakers thought that (55A-i) and (55B-i) were felicitous; just two out of eight thought the variants in (55A-ii) and (55B-ii) were.

[35] Out of eight speakers, one thought (55C-i) and (55D-i) were grammatical. Eight speakers thought (55C-ii) was grammatical and seven thought (55D-ii) was.

> (ii)   Erik was aanwezig. Ik heb dat gehoord.
>   Erik was present   I   have that heard

Concerning the use of *dit* in (55), it must be mentioned that four out of eight informants did not like *dit* in any of the examples. I take this to suggest that the use of *dit* referring to propositions is generally less acceptable than the use of *dat.*

However, for those speakers which seem to allow for *dit* as a propositional anaphor the speaker restriction found for English *this* seems to hold as well - albeit to a smaller extent. The relevant example is shown in (56). Most speakers prefer *dat* in (56) if the sentence in (56b) is uttered by a different speaker than (56a).[36] In case both sentences are uttered by the same speaker, the judgments change only slightly toward both of the proforms being equally acceptable.[37]

> (56)   a.   Dick zegt dat republikeinen mogelijk een geloofwaardigheidsprobleem
>   Dick says that republicans   possibly a   credibility.problem
>   hebben.
>   have
>
>   b.   Maar {#dit | dat} is een understatement.
>   but   this   that is a   understatement

I take the judgments concerning (55) and (56) to show that *dat* has no speaker restriction. Further, I assume that *dit* is generally dispreferred as a propositional proform, but has a speaker restriction for those speakers who allow it. Why there should be a difference between *dit* and *this* is unclear to me. However, in general, Wolter's analysis for the English demonstratives in terms of distance marking can be applied to the Dutch demonstratives. In the following, I assume that *dat* and *that* are simply anaphora, that compete with their proximate counterparts *dit* (for some speakers) and *this* in terms of distance. Thus, in case *dat/that* are used, we can infer that the proximity presupposition of *dit/this* did not apply (cf. Heim's 1991 Maximize Presupposition! or Gricean reasoning). The speaker restriction of the proximate demonstratives can be explained in terms of the proximity marking: utterances, or speech events, by the same speaker are always 'closer' to him/her than those uttered by other speakers. This is literally the case, but also in an empathetic way (cf. Lyons 1977 and Roberts 2002 on empathetic proximity).

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[36] Six out of eight speakers preferred *dat* in (56b); one of the two remaining speakers reported she had a slight preference for *dat.*

[37] Three out of eight speakers still preferred *dat*; three had a slight preference for *dat* and the remaining two thought both options were equally acceptable.

In Section 6.3.3 I consider analyses of weak pronouns. There, I also compare the use of weak pronouns to the use of demonstratives and the competition between the two proforms in different environments.

6.3.3. Weak pronouns

In the previous subsection I considered demonstratives as referential devices in comparison to weak pronouns. We saw that demonstratives are preferred over weak pronouns or definite descriptions when the referent is not a uniquely salient entity (recall, e.g., (34)). In the following I focus on the use and meaning of weak pronouns as propositional anaphora. In Section 6.3.3.1, I continue to discuss Wolter's approach. In Section 6.3.3.2, I consider Hegarty et al.'s and Gundel et al.'s analysis of weak pronouns, which was mentioned above.

6.3.3.1. *It* and default situations (Wolter 2006)

As mentioned in Section 6.3.2, Wolter argues that demonstratives refer to unique entities that are part of a non-default situation, whereas weak pronoun refers to unique entities in a situation that is not further specified. The weak pronoun is thus not restricted to certain situations whereas the demonstrative is. Therefore, we expect the weak pronoun to be more flexible in its use.

Above, we saw that when referring to propositions, *that* and *this* can be used contrastively, which is not the case for *it* - see (57) (repeated from (50)). Wolter argues that this is due to the demonstratives zooming in on different subsituations. For the demonstratives in (57a), one can argue that they refer to the propositions relating to what is seen on the two TV screens. Both screens would in this case form different subsituations, non-default ones, of the more general situation.

(57)   [TV 1 shows scenes of fighting in Baghdad. TV 2 shows Palestinian and Israeli leaders signing a treaty. Speaker points to TV 1, then to TV 2.]

    a.   THAT/THIS doesn't surprise me, but I find THAT/THIS very surprising.

    b. #IT doesn't surprise me, but I find IT very surprising.   (Wolter 2006:177)

Wolter also takes (57) to show that *it* cannot be used if there is not one unique and salient target for the anaphor. However, recall from our discussion of (50) that weak pronouns cannot be stressed and therefore one could argue that the contrastive use in (57b) is infelicitous for phonological reasons.

Another context in which weak pronouns are infelicitous according to Wolter is shown in (58); (58b-c) should be read as continuations of (58a).

(58)   a.   Is it really the case that orphan babies left alone in their beds will have the same potential for happiness as those raised by caring parents of ample means?

    b.   {This | That} is precisely what quotes such as those above will be taken to imply.

    c.   #It is precisely what quotes such as those above will be taken to imply.

                    (Wolter 2006: 192, based on Gundel et al. 2003)

For this example, Wolter assumes that the question asked evokes situations corresponding to the possible answers to the question (cf. Farkas and Bruce 2009, see Chapter 2). Wolter suggests that this causes *it* to be infelicitous in (58c): the proposition it would refer to - *that orphan babes left alone in their beds have the same potential happiness as those raised by caring parents of ample means* - is not the unique most salient one. The question introduces both its affirmative and rejecting answers. According to Wolter, we can infer from (58a) that the speaker believes the negative proposition holds, i.e. the rejecting answer to the question. Therefore, Wolter suggests the negative proposition is 'arguably salient' (p. 193), but not the most salient. As a consequence, it can be targeted by the demonstratives.

However, the data in (58) fit the pattern observed in Section 6.2. There, we saw that demonstratives are preferred to refer to the content of recently introduced events, like speech act events or thinking events. Based on this observation, we might thus assume that the demonstratives are preferred in (58), because they simply refer to a recent contentful entity: the *that*-clause or speech event in the question. Moreover, Wolter's explanation predicts that weak pronouns are never felicitous in embedded polar responses. Yet, we saw in the introduction of this chapter that in some responses - like *I doubt it* - *it* is able to occur in an embedded polar response. The presence of two propositional discourse referents corresponding to the answers to the question should thus not be a problem for the use of *it*, in contrast to what Wolter suggests. I suppose that *it* in (58) is infelicitous because it is not the issue raised by the question that is targeted in (58), but a contentful event introduced in the question. This event is not salient enough in (58) to be targeted by *it* (cf. Hegarty, Gundel, and Borthen 2002; Gundel, Hegarty, and Borthen 2003).

Now, let's see how Wolter's account fares in providing an explanation for the obser-

vations made in Section 6.2. First, considering that *het* and *it* would both have the same denotation, Wolter's account cannot immediately explain the differences between the two proforms in terms of embedded polar responses. Second, the use of weak pronouns as correlates does not follow from Wolter's account, unless we assume that factive complements are necessarily more salient than other complements (as dicussed above). It does, however, follow from Wolter's framework that demonstratives are infelicitous as correlates since they refer to entities in non-default situations. It seems undesirable to say that complements of factives are part of non-default situations (I elaborate on this below). Third, in Wolter's account, one could argue that weak pronouns may lead to an inference of familiarity, in contrast to demonstratives, as they are more likely to refer to entities in a default situation, due to their competition with demonstratives. It is likely that entities in the default situation are familiar to the interlocutors. Finally, it does not seem that Wolter can account for the observation that recent speech events are preferably referred to with demonstratives. Consider for instance the example in (59) (repeated from (19) above):

(59) A: Is John coming to the party?
       B: Pete asked {that | (?)∅} too.

The use of *that* in (59) provide some problems for Wolter's formal proposal that I have not mentioned yet. As mentioned above, she suggests that demonstratives refer to entities in non-default situations. However, it is not quite clear whether we would want to say that A's question denotes a speech event that is tied to a non-default situation. In contrast, it seems that at the moment of B's utterance, the interrogative speech event by A is the most salient speech event in the discourse context. Therefore, Wolter would predict *it* to be more felicitous as the object of *ask* than *that* in (59B). After all, the predicate *ask* selects for such an object. However, *it* does not seem to be felicitous in (59B). Nevertheless, examples like (60) (repeated from (24)) show that *it* and *that* can be in complementary distribution when used to refer to propositions.

(60) A: I just read that Bert earns less than Ernie.
       B: {It | That}'s terrible.   (cf. Borthen et al. 1997)

However, as mentioned in Section 6.2.3, in (60), the use of *it* signals that the speaker was familiar with the first proposition already, whereas the use of *that* does not seem to do so. This effect of *it* could in principle be explained by Wolter's suggestion that the two pronouns are in competition. However, in Wolter's framework, the effect would

have to be ascribed to *that* referring to an entity in a non-default situation and thereby its 'zooming in' on one particular part of the discourse context (like Wolter suggests for (57)). Yet, there seems to be no shift of focus in (60B) when *that* is used. Therefore, the notion of non-default situation does not seem helpful for describing the use of demonstratives when referring to propositions.

It should also be mentioned that Wolter's account does not include NCA. In Section 6.2.2, we saw that in some environments (for some speakers), *that* and NCA compete, for instance (59). Based on examples like (59), we can infer that *that* and NCA have some similarities. However, *that* is taken to refer to a non-default situation in Wolter's framework. It seems undesirable to argue the same for the NCA. Based on theories of reference like Ariel's or Gundel et al.'s, we expect the NCA, the weakest pronoun, to do a different job than the demonstrative. If anything, we expect NCA to be more related to weak pronouns, which in Wolter's framework also does not refer to an entity in a non-default situation. However, as *it* is infelicitous in (59), this comparison is difficult to make in Wolter's framework.

To sum up, Wolter's approach, in which *that* is less specified than *this* and both *that* and *this* are 'marked' relative to *it* (and presumably the NCA), seems to provide some grip on the data. I will therefore build on her account in very generally terms, especially when it comes to describing the differences between *this* and *that*; I will not, however, adopt her situation semantics for reasons stated above.

6.3.3.2. *It* referring to 'known' propositions (Hegarty et al. 2002; Gundel et al. 2003; Cornish 1992)

Hegarty, Gundel, and Borthen (2002) and Gundel, Hegarty, and Borthen (2003) provide an account of uses of *it* and the demonstratives *that/this* as propositional anaphora. In doing so, they build on Gundel et al.'s (1993) givenness hierarchy, discussed in Section 6.3.1.2. The authors assume Gundel et al.'s (1993) framework, in which *it* is suggested to signal that the referent is *in focus*, i.e. it has the highest cognitive status possible. *That* signals that its referent is not in focus but *activated*, i.e. the referent is also salient but not in focus. Gundel et al. (2003) suggest that whenever *that* refers to propositions, replacing it with *it* often results in either infelicity or a different meaning. We have seen instances of the former in Section 6.2. The example in (61) illustrates the latter.

(61)   a.   'We believe her, the court does not, and that resolves the matter,' Mr. Montanarelli said today of Ms. Lewinsky's testimony that...

(NY Times, 5/24/00, cited by Gundel et al. 2003:282)

b.   'We believe her, the court does not, and it resolves the matter,' Mr. Montanarelli said today of Ms. Lewinsky's testimony that...

In (61b), *it* seems to refer rather to *the court* than the preceding proposition.

To explain this pattern, as well as Webber's (1991) finding, that demonstratives are used more often to refer to propositions than *it* the authors resort to Asher's (1993) notion of 'world immanence' and the individuation principles for propositions. Asher suggests that propositions have a low world immanence. He argues that eventualities, however, which for instance have a spatiotemporal dimension, have a higher world immanence than propositions. Events are part of our world whereas propositions solely describe our world. They are not *in* the world. Therefore, they are less immanent to it. The so-called individuation properties of events and propositions are also different, as for propositions, in contrast to events, their individuation 'depends strongly' upon their description (Asher, 1993: 2). The individuation of events is less dependent on their description. Asher suggests that facts, for instance, are in between propositions and events in terms of world immanence and individuation principles. These properties are thus part of a spectrum. Hegarty et al. and Gundel et al. note that reference to events with *it* is easier than reference to propositions, see e.g. (62) in which *it* refers to the event of John insulting the ambassador:

(62)   John insulted the ambassador. It happened at noon.   (Gundel et al. 2003:285)

The same holds for nominally introduced abstract entities, such as *a fact* in (63).

(63)   I read about an interesting fact yesterday. It shocked me.

(Gundel et al. 2003:284)

Hegarty et al. and Gundel et al. suggest that the difference between weak pronouns and demonstratives is explained by assuming that individuals with a low world immanence are less likely to become in focus, in contrast to more world immanent individuals. The authors suggest that to be in focus, the individual must be 'directly expressed as part of the conventional semantic content of the utterance' (Gundel et al., 2003: 286). By this the authors seem to mean that entities that bear a thematic role are more likely to be in focus, than for instance the speech act event in which these entities are introduced. Therefore, Hegarty et al. and Gundel et al. suggest that speech acts are not easily targeted with *it* (as discussed in Section 6.2). The infelicity of *it* as a speech act anaphor

is illustrated again in (64).

(64)   A1:   So you fired her?

        B: We're going to do a lot more than just fire her.

        A2:   What does {that | #it} mean? ("The Bold and the Beautiful," Jan. 30, 2001, CBS, cited by Gundel et al. 2003:287)

Applying the line of reasoning of Gundel et al. to (64), we see that at the time of utterance A2, the entities bearing a thematic role in B's utterance are in focus. These are *we* and *her*. The speech act event itsself is not in focus, but it is activitated. Therefore, it can be targeted with *that*, but not with *it*.

However, as was mentioned in Section 6.2.3, a general ban on referring to propositions with *it* does not seem to exist. The data in (65) (repeated from (24)) show that it is unlikely that world immanence is relevant for targetting propositions with *it*.

(65)   A: I just read that Bert earns less than Ernie.

        B: {It | That}'s terrible.   (cf. Borthen et al. 1997)

In addition, if world immanence was relevant for the use of *it*, we expect it to be equally, or even more, difficult to target propositions with NCA, because the NCA is phonologically weaker than *it*. We therefore expect it to signal an at least equally high cognitive status. Yet, we saw that NCA can easily target propositions. Thus, it seems unlikely that world immanence is related to this matter. However, I will following Gundel et al. in assuming that, generally, speech act events and their content are not maximally salient. The entities introduced in clauses describing such events, those bearing a thematic role, are usually the matter of discussion and not the clauses themselves. As such, those entities are more salient by default (an assumption that is also implicitly present in Centering Theory, which only considers subjects and objects as 'centers' in discourse).

The suggestion of Gundel et al., that propositions or speech events are usually not in focus begs the question how they account for those occurrences of *it* as a propositional anaphor like (65B). For (65), they argue that speakers may also use *it* to signal that a proposition was known to them already (cf. Bentzen and Anderssen 2019, who argue that German *es* is similar and signals its referent was part of the common ground already). According to Hegarty et al. and Gundel et al., the use of *it* - which indicates a high cognitive status of the referent - in (66B2) signals that the content of A's assertion was already familiar to B. The authors write: 'B signals the assumption that the fact is in focus for A, or ought to be, consistent with it being accepted background information

for discourse in the relevant social circle; this invites A to infer that B already knew the fact' (Hegarty et al., 2002: 172). In this framework, the use of *that* in (65B) suggests that the referent is only activated. The addressee can thus infer that the referent was not in focus. The authors suggest that from this we can draw another inference, namely that the referent is new to B. Thus, by using *that* in (65B), the speaker signals s/he did not know that Bert earn less than Ernie, whereas by using *it* in (65B), the speaker signals that s/he did.

The contrast in (66) further illustrates this. In (66B1-B2) respectively, we see that *that* is compatible with the speaker being familiar with A's assertion (signaled by *yes* and the awareness of the people) and the speaker not being familiar with A's assertion (signaled by *really?* and the non-awareness of the people[38]). The use of *it*, however, is only felicitous if the speaker signaled that s/he was familiar with A's assertion already.

(66)   A: Janice fired her secretary yesterday.
        B1: Yes. Everyone in the office is aware of that.
        B2: Really? The people in the office weren't aware of that.
        B3: Yes. The people in the office are aware of it.
        B4:#Really? The people in the office weren't aware of it.[39]
                (Gundel et al. 2003:289, adapted example from Kamio and Thomas 1999)

On the basis of such examples, the authors argue that *it* signals that the referent was already familiar to the speaker.[40]

Hegarty et al. and Gundel et al. also suggest that there are ways to boost the saliency of propositions and that thereafter such a proposition can be referred to with *it*. In for instance, (67B), a skeptical look by A during the pause is relevant for the licensing of *it* (Hegarty et al. 2002: 173).

(67)   A: Why didn't you come to the rehearsal yesterday?
        B: I thought I told you. I had to help Peter move. (Pause) It's true!

However, do note that (67B) is a single speaker utterance. As discussed in Section 6.2.3, this may influence the use of the proforms.

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[38]It should be noted that *aware* is factive and thus in each of B's responses in (66) it is presupposed that A's assertion is true.

[39]Gundel et al. 2003 give this example the grammaticality judgement '*'. However, in this thesis, pragmatic infelicity is marked by '#'.

[40] However, the use of the word "familiar" seems unfortunate, considering that it constitutes one of the six cognitive statuses distinguished by Gundel et al. (1993), see Section 6.3.1.2. All entities that are in focus or activated are also supposed to be familiar, as higher cognitive statuses entail the lower ones.

Note that Cornish (1992), who compared the use of *so* and *it*, also suggested that *it* refers to propositions that have a fact-like status in case *it* is the complement of a factive predicate, but refers to 'the salient state of affairs established in the current context' otherwise (Cornish 1992:172). He does not further suggest what it means to be an 'established state of affairs'. It could mean that the proposition is taken to be true, but it could also mean that its content is established, i.e. familiar to the interlocutors. We can ascribe the same possible interpretations to Hegarty et al.'s notion of a 'known' proposition. One possible explanation of *it* referring to 'established' or 'known' propositions, could be to say that *it* is anaphoric to a previously made assertion, like Bogal-Allbritten and Moulton (2016) suggest for nominalized clauses in Korean. However, the use of *it* seems to be somewhat different, as non-linguistic factors may also influence it; this was shown in, e.g., (67). In addition, we saw that *that* is in fact preferred for referring to recent speech events. This would be unexpected if we assume that *it* presupposes that its referent was asserted already.

The idea that *it* refers to a proposition that the speaker was familiar with already seems intuitively right for the examples mentioned above. However, according to Gundel et al. (2003) and Hegarty et al. (2002) the meaning difference in the examples above arises from the meanings of *it* and *that* and their cognitive statuses. There are two problems with this account. First, we would expect the same inference to arise for uses of the NCA, as we expect NCA to have a similar or higher cognitive status. However, the use of NCA in for instance responses like *I think* or *I guessed* does not imply familiarity with the referent of the NCA. Second, uses of *it* that do not lead to such inferences are difficult to account for. In (7B), we saw that it is felicitous to respond *I doubt it* to a question; the relevant example is repeated in (68). B's response in (68) indicates that s/he thinks that John did not feed the cat. S/he need not know that John did not do so.

(68)   A: Did John feed the cat?
        B: I doubt it.

Uses of *it* like in (68B) pose a problem for accounts that hard-wire the inference of familiarity that *it* might give rise to into its meaning.

Further unexpected behavior of *it* and *that* on this account is provided by the pair of responses in (69).[41] The example is based on Needham's (2012) example, who provides the two line discourse in (69A-B) (without further context).

(69)   A: I will send you the photos.

B: I believe it.   (Needham 2012: 75)

C: I believe that.

Needham (2012) suggests that the response in (69B) indicates that B is committed to the truth of the proposition that A will send the photos, due to the use of *it* (p. 74-75). However, unexpectedly on Needham's account, the same effect of committing to a proposition arises with *that*, shown in (69C).[42] Thus, (69C) shows that we cannot attribute the effect familiarity that arose in (69B) to *it*. Therefore, in (69B-C), we cannot distinguish between *it* and *that* in terms of knowing or suspecting that a proposition is true. The contribution of *believe* does seem to be relevant here. I turn to this in Section 6.4.2.1.

A crucial property of the two predicates under consideration - *believe* and *doubt* - is that they cannot embed NCA. Example (70) shows this for *doubt*;[43] (71) shows this for *believe* (Grimshaw 1979, Depiante 2000):

(70)   A: Did John feed the cat?

        B: #I doubt ∅.

(71)   A: Did John feed the cat?

        B: #I believe ∅.

In Section 6.4.1.2, I consider the interaction between NCA and *it* in more detail.

Hegarty et al. (2002) and Gundel et al. (2003) suggest that their framework should hold for weak pronouns cross-linguistically. However, we can easily see that it would be difficult to account for *het* in Dutch, for the same reasons that the examples with *doubt* and *believe* are difficult to account for in their framework. Nevertheless, the insights the

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[41]On the basis of responses like (69B), Needham (2012) goes as far to suggest that speaker B is committing to the proposition referred to by *it*, i.e. this proposition is part of the commitment slate of the speaker. However, such an account can be falsified by examples such as (i).

(i)   People hurt you - through no fault of your own - and you seem to think [you're damaged in a way that can't be fixed]$_p$. But I don't believe that$_p$ for a second. I don't think anybody but you believes it$_p$.   (*Everything to me*, book 6, Theresa Hill)

   In (69), the speaker introduces the proposition *you're damaged in a way that can't be fixed*. This proposition is targeted by *that* in the next proposition and subsequently targeted by *it*. It is clear that the speaker does not believe this proposition. Therefore, it poses a counterargument for Needham's suggestion.

[42]Out of eight native speakers, four even suggest that (69C) seems to express slightly more commitment than (69B), although the judgments seem to be subtle.

[43]Out of eight native speakers, seven considered (70B) ungrammatical. One thought (70B) was fine, but preferred (68B).

authors provide about the competition between *it* and *that* are relevant for the present purposes.

6.3.4. Interim Summary

In this section I explored previous accounts of the proforms *it* and *that*. Although some accounts face several problems, they also provide insights on which the present proposal will build. Ariel's and Levinson's idea that phonologically weaker proforms signal a more accessible or more salient referent in comparison to phonologically stronger proforms is one of the important aspects that will return in the next section. This aspect is also - albeit sometimes implicitly - present in Gundel et al. (1993); Hegarty et al. (2002) and Gundel et al. (2003). In addition, I assume with Hegarty et al. (2002) and Gundel et al. (2003) that speech events and their content are generally not maximally salient because usually not the clauses or their content themselves but the subjects and objects occurring in them are the matter of discussion. However, I do assume that this is different in case of questions. Recall from Chapter 2 that if a question is asked, the addressee is invited explicitly to take a stance with respect to the issue on the Table (Farkas and Bruce, 2009). Therefore, this issue is highly salient and there is pressure to resolve it. This property makes reference to propositions when answering questions different from other instances of reference to propositions.

6.4. Proposal: It is all about alternatives

In this section, I lay out the present proposal. As mentioned above, I mostly build on the work of Ariel (1990, 2001), Levinson (1987, 2000) and Wolter (2006). In order to be able to consider the differences between *het* and *it* in embedded polar responses, a full description of the Dutch and English response paradigms is pivotal. Therefore, I describe these first in Section 6.4.1. Thereafter, I present my analysis of weak pronouns and the competition between the various proforms in Section 6.4.2.

6.4.1. The embedded polar response paradigms

6.4.1.1. Dutch

Besides responding with *het*, Dutch can form embedded responses with polar *van* and the positive polar particle *wel* or the negative operator *niet* 'not' (Hoeksema 2006), as

was discussed in detail in Chapter 3. Both options are shown in (72).[44] This example further illustrates that one may also combine *het* and polar *van*. This combination is judged to be grammatical by native speakers but seems to be infrequent.

(72) A: Heeft Jan de kat gevoerd?
          has   Jan the cat fed

      B1: Ik denk het {wel | niet}.
          I think it   WEL   not

      B2: Ik denk van {wel | niet}.
          I think of WEL   not

      B3: Ik denk het van {wel | niet}.
          I think it of   WEL   not

In Chapter 3, I showed that embedded polar responses with polar *van* seem to be more specialized than those with *het*. I argued that responses with polar *van* and *het* differ in two aspects: the contexts they can be used in and the predicates with which they may occur. I briefly touch upon these properties below.

***Het* vs *van*: restrictions of contexts** In Chapter 3, I showed that responses with polar *van* are contextually more restricted because they can signal uncertainty and thereby introduce a hedge. One of the contexts in which this becomes clear is shown in (73). Here, A asks B whether s/he wants more coffee. B's response with *van* is dispreferred to the response with *het*.[45] If the question concerned something more 'objective', like whether it would rain tomorrow, there is no clear preference for either response.

(73) A: Wil je   nog koffie?
          want you still coffee

      B1: ?Ik denk van {wel | niet}.
           I think of WEL   not

      B2: Ik denk het {wel | niet}.
          I think it   WEL   not

In Chapter 3, I assumed that the pattern in (73) arises because for answering A's question, only B's opinion is relevant and there is no obvious need for him/her to introduce a

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[44] As was also suggested in Section 6.1 the examples in (72) are also felicitous in combination with *geloven* 'believe' . For simplicity's sake, I only focus on *denken* 'think' here.

[45] Only one out of nine speakers asked disagreed with the judgments in (73) and in fact preferred the use of polar *van* here. The remaining eight preferred the response with *het*. Some speakers seem to generally prefer responses with *het* over those with *van*, except for contexts in which disagreement is marked. I discussed this in detail in Section 3.2.1.

hedge like *van*. For now, it is important to see that there is a differences between the two responses and that the variant with *het* provides a more 'neutral' way of responding, as it does not involve a hedge. I refer the reader back to Section 3.2.1 for the full discussion.

Het vs van: predicates   In Section 3.2.1, I also showed that there are differences concerning the predicates that can form embedded polar responses with *het* or polar *van*. This was pointed out by Hoeksema (2006), who states that for instance *zeggen* 'say' can occur with polar *van* as an embedded response, but not with *het*. I illustrate this in (74).

(74)   A: Heeft Jan de hond uitgelaten?
              has   Jan de dog   let.out
              'Did Jan take out the dog?'

         B: #Piet zei   het niet.
              Piet said it   not
              'Piet did not say it.'

         C: Piet zei   van niet.
              Piet said of   not
              'Piet said he didn't.'

In (74C), we see that use of *van niet* renders a felicitous response to A's question. This is not the case for (74B), in which *het* is used. This utterance just means that Piet did not say a certain something. The same pattern is found for *beweren* 'claim'. The use of *dat* 'that' in SpecCP, shown in (75D), seems to slightly improve the utterance for some speakers.

(75)   A: Heeft Jan de hond uitgelaten?
              has   Jan de dog   let.out
              'Did Jan take out the dog?'

         B: #Piet beweert het niet.
              Piet claims   it   not
              'Piet did not claim it.'

         C: Piet beweert van niet.
              Piet claims   of   not
              'Piet claims he didn't.'

         D:(#)Dat beweert Piet niet.
              that claims   Piet not
              'Piet doesn't claim that.'

If we change A's question to (76A) the judgments change. In this case, the use of both

het and polar *van* is licensed, but they differ in meaning. (76B) means that Piet did not say that Jan took the dog out, but Kees did. (76C) means that Piet said that Jan did not take out the dog. So in (76C), it is asserted that Piet said something, whereas (76B) could be true without Piet saying anything at all.

(76)   A: Wie heeft gezegd dat Jan de hond heeft uitgelaten?
              who has   said   that Jan the dog   has   let.out
              'Who said that Jan took the dog out?'

          B: Piet zei   het niet, maar Kees wel.
                Piet said it   not   but   Kees WEL
                'Piet did not say it, but Kees did.'

          C: Piet zei   van niet.
                Piet said of   not
                'Piet said he didn't.'

Note that the judgments for the responses with *het* found in (74) are quite similar in affirming responses. For most speakers, affirming responses with *beweren* 'claim' and *het* still are infelicitous (albeit slightly better than the rejecting counterparts); responses with demonstratives in SpecCP seem to be somewhat better in affirmative responses.

(77)   A: Heeft Jan de hond uitgelaten?
              has   Jan de dog   let.out
              'Did Jan take out the dog?'

        B: #Piet beweert het wel.
              Piet claims   it   WEL
              Intended: 'Piet claims it.'

        C: Piet beweert van wel.
              Piet claims   of   WEL
              'Piet claims he did.'

      D:(#)Dat   beweert Piet wel.
              That claims   Piet WEL
              'Piet claims he did.'

For affirmative responses with *zeggen* 'say' and *het*, the slight increase in the reported acceptability was not found. In responses with *zeggen* 'say', the informants only seemed to like polar *van*. However, only an experimental study could find out whether there really is a difference between the acceptability of *beweren* 'claim' and *zeggen* 'say' in affirmative responses. The inacceptability of these predicates in combination with *het* in embedded polar responses is, however, clear.

    One may hypothesize that the pattern observed is due to *zeggen* 'say' and *beweren*

'claim' both being non-Neg-raising predicates. Recall from Section 2.3.3 that these predicates scope below negation and therefore responses with, e.g., *zeggen* 'say' and matrix negation convey that nothing was said (as shown in (74B) and (75B)). Therefore, the responses are uninformative. I take Neg-raising to be one of the factors ruling out rejecting responses with *het* and assertive predicates. However, Neg-raising cannot be the only relevant factor, as that would predict these predicates to be felicitous in affirmative responses with *het.* Yet, (77) shows that this is not the case.

There are potential explanations for the pattern observed above in terms of general and existing pragmatic machinery (for instance concerning at-issueness or telicity). However, such an explanation would incorrectly predict that responses with assertive predicates and weak pronouns in other languages are also infelicitous. Yet, examples from German, like (78), show that this is not the case. (78B) involves a response with the assertive predicate *behaupten* 'claim' and the weak pronoun. This response is felicitous according to some speakers.

(78)   A: Hat Jan die Katze gefüttert?
              has Jan the cat   fed

        B: Fee behauptet es.
              Fee claims   it

The felicity of (78B) suggests that the phenomenon at issue here is restricted to Dutch. Therefore, it requires an explanation in non-general terms. In the following, I briefly outline a potential explanation, based on competition between *het* and the evidential use of polar *van.*

Let us start by considering evidentials. Rooryck (2001) argues that evidentials give information about both 'source and reliability of the information' in their scope (p. 125). On the basis of these criteria, Simons (2007) suggests that the responses in (79B-C) are evidentials. In these responses, the embedded clauses provide the responses to the question who was Louise with last night. That is, the embedded clause is what is 'at-issue' and not the saying or suggesting event by Henry. Beside answering the question with the embedded clause, the speaker furthermore indicates that Henry's utterance is the evidence for his/her assertion (cf. Rooryck 2001; Simons 2007).

(79)   A: Who was Louise with last night?
        B: Henry said that she was with Bill.
        C: Henry suggested that she was with Bill.   (Simons, 2007: 1036)

I argue that embedded polar responses involving assertives, like (80B-C), are evidentials as well. These give information about the source and the reliability of the information itself. In the case of (80C), the speaker indicates Piet has said that Jan did not take out the dog. Piet's utterance is the source of the response. (80C) implicates that the speaker has no further, or more relevant, information about Jan taking out the dog, beside Piet's utterance.

(80) A: Heeft Jan de hond uitgelaten?
          has   Jan de dog   let.out
          'Did Jan take out the dog?'

      B: #Piet zei   het niet.
          Piet said it   not
          'Piet did not say it.'

      C: Piet zei   van niet.
          Piet said of   not
          'Piet said he didn't.'

As I argued in Chapter 3, polar *van* marks similarity. Thus, for (80C), I argue that polar *van* signals that Piet said something that was similar to the rejecting response to the question, i.e. that Jan did not take out the dog. In this case, polar *van* thus introduces a hedge. It creates distance between the saying event and the claim by the speaker him/herself of (80C). Due to this hedging property, polar *van* is very suitable for evidential uses. As mentioned, these report on the source of information and the reliability of this information. Evidentials are thus particularly useful in situations in which the speaker is not fully committed to the proposition that is at-issue, i.e. whether or not Jan took out the dog. These are precisely the situations in which we saw that polar/non-polar *van* can be used as well (see Chapter 3). Now, concerning the difference in felicity of (80B) and (80C), I hypothesize that *het* 'it' is blocked by polar *van* in evidential constructions like (80B-C) because polar *van* is much more suitable for evidential uses, due to its similative semantics. I argue that polar *van* blocks the use of *het* in these responses. Beaver (2004) and Krifka (2013) have assumed similar pragmatic blocking mechanisms in the anaphoric domain. I leave the question, how this blocking mechanism should be implemented in the domain of embedded polar responses, for future research.

Note that I only provided third person uses in the examples above. *Beweren* 'claim' cannot occur with *het* in a response if the first person is used either, see (81B). Further, if the first person is used, the counterpart with polar *van* is also infelicitous, see (81C).

(81) A: Heeft Jan de hond uitgelaten?
          has   Jan de dog   let.out
          'Did Jan take out the dog?'

      B: #Ik beweer het wel.
          I   claim it   WEL

      C: #Ik beweer van wel.
          I   claim of   WEL

I argue that (81B-C) are out due to *beweren* 'claim' being an assertive and not a doxastic predicate. As discussed in Section 2.3.2, following Anand and Hacquard (2014), doxastic predicates, like *think*, give access to information less accessible than public commitments like assertions: the subject referent's private mental state. These states are not generally available to interlocutors, in contrast to assertions. The use of an assertive predicate, like *beweren* 'claim', in embedded polar responses suggests that the more informative alternative, a doxastic predicate, does not apply and thus cannot be used. The use of the less informative predicate *beweren* 'claim' in (80) therefore suggests that the speaker does not have access to his/her own mental state, which obviously is odd.

Two other sets of predicates discussed in Chapter 2, doxastics and suppositionals, can occur with both *het* and *van*. For some speakers, suppositionals like *verwachten* 'expect' and *vermoeden* 'suspect' are preferred in combination with polar *van*,[46] see (82)-(83). These speakers disprefer the use of *het* with suppositionals, although it is not clear how strong this preference is.

(82) A: Heeft Piet de hond uitgelaten?
          has   Piet de dog   let.out
          'Did Piet take out the dog?'

      B:(%)Ik verwacht het niet.
          I   supsect it   not

      C: Ik verwacht van niet.
          I expect   of not

      D:(%)Ik vermoed het niet.
          I   supsect it not

      E: Ik vermoed van niet.
          I   suspect of   not

---

[46] For two out of eight native speakers, the response with *het* is the most preferred one. For two others, the response with *van* is. For the remaining four, the response involving a demonstrative in SpecCP in (83B) is the best. As a comparison, if the predicate in the answer was *denken* 'think', eight out of eight preferred *het* over the other two response options. Five out of eight liked responses with *van* second best; the remaining three liked responses with *dat* in SpecCP second best.

The responses with *het* in (82) improve if *dat* 'that' is used instead of *het*.[47] In this case, the demonstrative must be occur in SpecCP, see (83).

(83) A: Heeft Piet de hond uitgelaten?
          has   Piet de dog   let.out
          'Did Piet take out the dog?'

      B: Dat   verwacht ik {wel | niet}.
          That suspect   I   WEL   not

      C: #Ik verwacht dat   {wel | niet}.
          I   suspect   that WEL   not

As the judgments concerning (82) seem to solely indicate a preference for one response over the other, rather than unacceptability of one, I leave this issue for future research. It should first be established whether the use of *het* with suppositionals indeed is less acceptable than the use of polar *van* across different contexts, for more speakers. This can only be done by investigating a much larger sample of speakers in an experimental setting.

Alternatives to *het* and *van* Responses with *denken* 'think' and *dat* in SpecCP are possible in embedded responses too;[48] see (84):

(84) A: Heeft Jan de kat gevoerd?
          has   Jan the cat fed

      B: Dat denk ik niet.
          that think I   not
          'I think not.'

For some speakers, however, this response seemed marked or 'less neutral'. Presumably, the intonation used in such responses plays an important role here. In Section 6.3.2 we saw that demonstratives are associated with contrast. Therefore, if used, demonstratives imply the entity under reference is singled out from a set of alternatives. I assume that due to this property the response in (84B) may be a bit 'forceful' for some speakers. The fronted demonstrative puts extra focus on the proposition that Jan fed the cat, especially in contrast to one of its alternatives: the much weaker pronoun *het*. The use

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[47]I thank Hedde Zeijlstra for pointing this out to me.

[48] I asked native speakers what the most neutral embedded polar response with the predicate *denken* is; eight out of eight native speakers suggested response with *het* are best for such purposes; five out of eight rated responses with *van* second best; the remaining three rated the responses with *dat* in SpecCP second best.

of the demonstrative thus leads to additional emphasis that some speakers may consider less felicitous. For those who do like such responses, it might be an extra clear response, precisely due to this emphasis. Because of this, the referent is singled out more clearly (in contrast to potential referents *not* targeted). Again, the intonation presumably has a lot of influence on such interpretations. This factor should be tested in an experimental setting.

In addition, the preference for *dat* in SpecCP, over polar *van* expressed by some native speakers (see Footnote 48), might be related to the use of *van* itself. As I considered in Section 3.3 of Chapter 3, this word annoys some native speakers of Dutch. It seems that this has to do with hedgy meaning of *van*, which can make its meaning vague. Some speakers may therefore dislike *van* in embedded polar responses as well.

Beside these responses, no other items, like for instance response particles, are allowed in embedded polar responses in Dutch. In (85) we see that the embedding of response particles *ja* 'yes' and *nee* 'no' is not felicitous, even if polar *van* is present (Hoeksema 2006).[49] Neither is the use of *dat* possible in situ.

(85)   A: Heeft Jan de kat gevoerd?
                has   Jan the cat fed

         B: Ik denk (van) { *ja | *nee | #dat}.
                I   think of   yes   no   that

Hoeksema (2006, p.c.) suggest that the embedding of *ja* 'yes' and *nee* 'nee' was possible in an earlier stage of Dutch, with or without *van*. I discussed these uses briefly in Chapter 3. It is possible that the syntactic status of the Dutch response particles are the culprit of them not being embeddable anymore. One could hypothesize that the response particles were, for instance, reanalyzed over time as bearing assertive features such that they could not be embedded anymore (cf. Krifka 2013 on *yes* and *no*). As (86B) shows, the particles can occur as responses to questions. They are also fine when they precede embedded responses, see (86C) and (86D).

(86)   A: Heeft Jan de kat gevoerd?
                has   Jan the cat fed

         B: {Ja | Nee}.
                yes   no

         C: Ja, ik denk het wel.
                yes I think it   WEL

---

[49] In some southern dialects, embedding *ja* with polar *van* is possible (Van Craenenbroeck 2002). In the present study, however, I focus on standard Dutch.

'Yes, I think so.'

D: Nee, ik denk het niet.
       no   I think it   not
       'No, I don't think so.'

However, *ja* and *nee* may also follow the embedded responses, as is shown in (87). There is no prosodic break between the embedded responses and the particles. In this case, the positive particles *ja* and *wel* as well as the negative *nee* and *niet* have to occur together.

(87)   A: Ik denk het niet nee.
               I think it   not no

        B: Ik denk het wel   ja.
               I think it   WEL yes

        C: #Ik denk het niet ja.
               I think it   not yes

        D: #Ik denk het wel   nee.
               I think it   WEL no

The use of the responses in (87) should be tested in different contexts in future research, possibly including prosodic factors.

Let us turn to other items that cannot occur in Dutch embedded responses. (88) shows that embedding NCA is not felicitous in Dutch embedded responses, with or without *van*.

(88)   A: Heeft Jan de kat gevoerd?
               has   Jan the cat fed

        B: *Ik denk (van) ∅.
               I   think of

One could argue that in combination with *weten* 'know' and negation, NCA can be the object of *weten* 'know' in response to a question, see (89). This response is tied to a lower register. Without negation, the response is ungrammatical.

(89)   A: Komt Jan?
               comes Jan
               'Is Jan coming?'

        B: Ik weet *(niet).
               I   know not
               'I (don't) know.'

However, the same response cannot be used to react to assertions, as is shown in (90).

(90) A: Jan komt   vanavond.
           Jan comes tonight
           'Jan is coming tonight'
      B: *Ik {weet | wist} (niet).
           I   know   knew not
           Intended: 'I know.'/'I didn't know.'

The infelicity of (90B) can be taken as a hint that something else is going on in (90). It is plausible that (89B) involves an elided clause of the form *whether Jan is coming.* In this scenario, the response does not involve an NCA but simply conveys: *I don't know whether Jan is coming.*

To sum up, there are several ways of forming embedded polar responses with *denken* 'think' in Dutch: one with *het*, one with polar *van* and one with *dat* in SpecCP. The two latter can be considered less neutral in comparison to responses with *het*.

6.4.1.2. English

(91) shows some embedded polar responses in English.

(91) A: Did Jan feed the cat?
      B: I think {so | he did | he didn't}.
      C: I don't think {so | he did}.

In (91B)-(91C), we see the use of the proform *so* and the ellipsis clause *he did(n't)* in affirmative and rejecting responses respectively. For *so*, it has been noted that it is mostly used in response to questions (see Gast and König 2008; Needham 2012; Meijer 2018 and Chapter 4). Furthermore, it has been claimed that *so* signals that the speaker is not willing to commit to the truth of the proposition that *so* refers to (see, e.g., Cushing 1972; Cornish 1992; Needham 2012, but see Meijer 2018 and Chapter 4 for a different view).

As for the ellipsis clause, I will tentatively assume here that this clause is a non-presuppositional alternative to *so*, assuming that *so* bears a presupposition concerning the status of the proposition referred to with respect to the common ground, as I discussed in Chapter 4; see also Needham (2012); Meijer (2018). To see this, consider the dialogue in (92). In (92K), the speaker responds with the semi-factive propositional attitude verb *know* and the ellipsis clause *you are.*

(92) D: I'm so sorry. For that day and every day before it.

  K: I know you are, Danny. And I forgive you.

(One Tree Hill, season 9, episode 11)

Of course the ellipsis clause in (92K) is presuppositional in the sense that it presupposes a suitable referent can be retrieved from the context. However, the observation that the ellipsis site in (92K) can form the argument of *know* forms a stark contrast to *so.* As we saw in Chapter 4, the combination of *know* and *so* is only licensed in very specific contexts, (92) not being one of them.

In (93), we see that English may also embed NCA and *not* in embedded polar responses, as was also discussed in Chapter 5.

(93) A: Did Jan feed the cat?

  B: I think {∅ | not}.

Depiante (2000) proposed that NCA are free variables, like she assumes for other pronouns as well, which refer to salient propositions. I follow her and others in assuming that NCA are like pronouns (but recall from Chapter 2 that I am assuming a different denotation). Further, I assume that NCA signal that their referent is more salient and accessible in comparison to phonologically heavier pronouns (cf. Ariel 2001 and Section 6.3.1).

As we discussed above and in Chapter 5, not all predicates can occur with NCA. (94) shows that *believe* and *figure out* cannot occur with NCA in response to questions (Grimshaw, 1979), whereas *find out* (Grimshaw, 1979) and *think* can.[50]

(95) A: Did John feed the cat?

  B: I think ∅.

  C: #I believe ∅.

---

[50] Note that Grimshaw (1979) actually suggests that *think* cannot occur with NCA. However, in case of *think*, she does not consider embedded polar responses, but rather responses to assertions:

(94) A: John is telling lies again.
  B: *I think ∅. (Grimshaw, 1979)

Recall from Section 6.2.2 that demonstratives are generally preferred to weak pronouns or NCA when referring to contentful events like the speech event in (94A). This preference could explain the infelicity of the NCA in (94B). In addition, affirmatives move like B's in (94) are often infelicitous in response to assertions, in contrast to rejecting moves - I refer the reader to Snider (2017) for a discussion of such moves. For the present purposes it is important that the infelicity of (94B) is not unexpected for reasons independent of *think*.

(96)   A: John did not feed the cat after all.

       B: Yeah, I found ∅ out.

       C: *Yeah, I figured ∅ out.

The examples in (97) further show several verbs that may occur with NCA, see (97B), and some that may not, see (97C).

(97)   A: Guess what, John is telling lies again.

      B1:   Oh, Bill didn't tell me.

      B2:   Yeah, I'd guessed.

      B3:   Oh, I wasn't sure before.

      B4:   Why didn't they say?

      C1:   *Oh, John wouldn't divulge.

      C2:   *Oh, John wouldn't disclose.

      C3:   *Yeah, I'd already discovered.

      C4:   *Yeah, I'd predicted.   (based on Grimshaw 1979: 292)

Due to the semantic similarities between, e.g., *find out* and *figure out* (in (96)), Grimshaw (1979) suggests that whether or not a predicate can occur with NCA is lexically determined. Depiante (2000) takes the same stance.

Beside the NCA, in English one can form embedded polar responses with *not*, as was discussed in Chapter 5; see (93B). In Chapter 5, I discussed some theories on responses with *not*. Cushing (1972) analyzes *not* as a negative proform and the negative counterpart of *so*. Kramer and Rawlins (2009) implicitly assume that the two are counterparts as well - albeit as ellipsis licensors instead of proforms. However, recall from Chapter 5, that I argued that one might also analyze *not* in (93B) as an adverbial negation in combination with an NCA.[51] I refer the reader back to Chapter 5 for the complete discussion.

In combination with *doubt*, the weak pronoun can also be used in English embedded polar responses. As was discussed in Section 6.1, *doubt* therefore behaves differently than predicates like *think* or *believe*. To explore whether this is an idiosyncratic property of *doubt* or related to its meaning, I looked into synonyms of *doubt*, as defined by Spooner in his Dictionary of Synonyms and Antonyms (2005), to see if these predicates could also occur with *it* in embedded polar responses. The synonyms found are shown in (98):

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[51]The question then arises, why we do not see *do*-support in such responses, which usually arises in such constructions: *I don't think ...* Hedde Zeijlstra pointed out to me that there might be syntactic reasons for this. I considered this question in more detail in Chapter 5.

(98)   be dubious, be skeptical about, disbelieve, distrust, fear, feel uncertain about,
         have doubts about, have misgivings about, have reservations about, hesitate,
         lack confidence, mistrust, query, question, suspect   (Spooner, 2005: 123)

A quick search in the Contemporary Corpus for American English (COCA, Davies 2008-)[52] showed that none of these predicates occur with *it* in this corpus as a response to a question. The forms in (99B-G) illustrate what the hypothetical answers would have looked like.

(99)   A: Did John feed the cat?
         B: #It is dubious.
         C: #I am skeptical about it.
         D: #I {disbelieve | distrust | fear | hesitate | query | question | suspect} it.
         E: #I feel uncertain about it.
         F: #I have {doubts | misgivings | reservations} about it.
         G: #I lack confidence about it.

On the basis of these results, I conclude that the fact that *doubt* can occur with *it* in polar embedded responses is in fact an idiosyncratic property of this predicate, that is not related to its meaning. This unexpected behavior of *doubt* is, however, not entirely unexpected considering that *doubt* also behaves unexpectedly in not co-occuring with *so* or *not*, despite having doxastic properties; I refer the reader to Chapter 4 and Chapter 5 for the respective discussions.

   Finally, consider the response particles in (100):

(100)   A: Did Jan feed the cat?
         B: %I think {yes | no}.

Krifka (2013) and Authier (2013) suggested that *yes* and *no* cannot occur in embedded polar responses. However, some native speakers of English pointed out to me that to them these uses seem fine. A brief search in COCA shows that *yes* and *no* can indeed be found in embedded polar responses in combination with *think*, see (101)-(102):

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[52] I looked for predicates in the first person followed by *it* and a period, e.g., *It feel uncertain about it.* or *I disbelieve it.*, to restrict the search results to sentences that end with *it* (in order to avoid complement sentences starting with *it*). For *be dubious* and *be skeptical about*, I looked for contracted and non-contracted forms, i.e. *it is dubious./it's dubious* and *I am skeptical about it./I'm skeptical about it.*. The corpus is available at `https://www.english-corpora.org/coca/`.

(101)   Were there cartoons on the TV in the days of black-and-white? I think yes.

(COCA 2012)

(102)   Is it too late now for the president to regain control of this? I think no.

(COCA 2010)

Yet, there were only very few occurrences. I searched for uses of *I think* followed by one word only.[53] There were 2749 occurrences in total. Five of these were *I think no.* and 24 *I think yes.* Since responses with *think yes* and *think no* can be found in the corpus, but occur only very few times, I leave the embedding of *yes* and *no* out of consideration. The acceptability of these responses, which might be restricted to certain dialects and/or registers, falls outside of the scope of the present work.

To sum up, we see that English speakers have multiple items at their disposal that may be used in embedded polar responses. With or without negation, *so* and ellipsis clauses can be used. In addition, the NCA provides another way of forming embedded polar responses, as does *not*.

6.4.1.3. Comparing Dutch to English

As we saw in the previous subsections, one of the big differences between the Dutch and English embedded polar response paradigms is that there are more alternatives available in the English paradigm. The English paradigm contains not only more alternatives, one of these alternatives is the phonologically weakest form: a null proform. Just the availability of such a weak or light proform in English makes it very likely that the weak pronoun can take on a different role. Based on previous work by, e.g., Ariel (1990) and Gundel et al. (1993), we expect competition to arise between the proforms. As there is a lesser marked alternative to *it*, it is not unsurprising that speakers need specific reasons for using *it*. However, note that this line of reasoning only holds for predicates that can both take *it* and the NCA as their argument. There is competition between *it* and the NCA only when occurring with these predicates. For predicates that cannot occur with the NCA, we expect *it* to still function like a regular weak pronoun.

Table 6.5 shows the different items available in the English embedded polar response paradigm and two of the predicates with which they may occur. The table shows that there are at least three types of predicates in English: (i) predicates like *guess* and *think*, which may occur in embedded polar responses with four different items; (ii) predicates like *believe* and *hope*, which may occur with three different items and (iii) predicates like

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[53] Similar to the search for synonyms of *doubt* in combination with *it*, I looked for uses of *I think*, followed by one random word, followed by a period. This way, complement sentences were filtered out easily.

doubt, which may only occur with two items in embedded polar responses. As discussed in the previous subsection, *doubt* seems to be the only predicate belonging to the latter category. The observations that *doubt* cannot occur with *so* nor with *not* were discussed in Chapter 4 and Chapter 5 respectively. Table 6.5 shows *not* in combination with *think* or *believe* results in the judgement '(%)' since these responses are not felicitous in all present day contexts or registers for all speakers, as was considered in Chapter 5. In contrast, its use with *guess* and *hope* is unproblematic (cf. Chapter 5).

Language	Predicate	Embedded response item
English	*guess, think*	so he did (%)not ∅
	believe, hope	so he did (%)not
	doubt	he did it
Dutch	*denken* 'think', *hopen* 'hope'	het wel/niet van wel/niet dat, in SpecCP
	beweren 'claim', *zeggen* 'say'	van wel/niet

Table 6.5.: The embedded polar response paradigms of English and Dutch

As Table 6.5 shows, in Dutch, there are fewer items that may occur in polar embedded responses. The weak pronoun *het* is the phonologically lightest one. I will argue that *het* therefore plays a similar role in the Dutch paradigm as the NCA in the English paradigm. However, recall that we saw in Section 6.2 that *het* also behaves similar to *it*. The question that arises is whether there are two *het*'s (one like NCA and one like *it*) or whether there is just one proform *het*, whose two uses can be captured in one meaning. In Section 6.4.2, I will defend the latter position.

6.4.2. Proposal: *it* equals *het*, which equals the NCA

In this section, I return to the main question of this chapter: why it is that Dutch *het* can be used in embedded polar responses, whereas English *it* generally cannot. In Section 6.2, we saw that the weak pronouns can be used in similar ways in other

environments. Both *het* and *it* could be used as correlate objects of factive predicates. In addition, both weak pronouns were dispreferred to demonstratives when referring to, e.g., speech events. Furthermore, both weak pronouns and demonstratives could be used to respond to assertions with predicative adjectives (e.g., in *It's/That's terrible!*). We thus need to account for the observations that *het* and *it* can behave similarly, but not when it comes to responding to questions.

In the following, I further explore the role of *it* and its competition with *that* and the NCA respectively. Thereafter, I turn to Dutch *het*.

6.4.2.1. The role of *it*

In Section 6.2 and Section 6.3.3, we saw that when *it* refers to a proposition, it can signal that the speaker was already familiar with the proposition. We also saw that there are instances in which *it* does not signal this. I argue that this effect is due to the competition that may arise between *it* and *that* (cf. Hegarty et al. 2002; Gundel et al. 2003). In the following, I first consider the competition between *it* and *that*. Thereafter, I consider the division of work between the NCA and *it*.

Competition between *it* and *that*   In the preceding section, I argued that demonstratives *that* and *dat* are "unmarked" anaphors in comparison to *this* and *dit*, which mark proximity, following Wolter (2006). I assume that solely the relative phonological weight of the demonstratives in contrast to the weak pronouns (and NCA) suffices to signal that the referents of demonstratives are less salient than the referents of weak pronouns (and NCA) (following Levinson 1987; Ariel 1990, 2001; Gundel et al. 1993). Therefore, the phonologically lighter proforms, such as *it*, *het* and the NCA, are picked over demonstratives in case their referent is more salient. The same kind of competition is expected to play a role in the competition between *it* and the NCA (following Ariel 1990, 2001).

I assume that *dat/that* are the most neutral pronouns for referring to recent speech or belief events. I take this to be due to the familiarity of speech events on the one hand (participants in discourse can be assumed to have heard recent utterances) and that speech events are generally not being talked *about* (cf. Hegarty et al. 2002; Gundel et al. 2003) on the other hand. By assuming the latter, I follow Hegarty et al. and Gundel et al. who suggest that we usually do not talk about speech acts but about the entities introduced in them (cf. also Centering Theory). Note that I assume that matters are different for polar questions, as mentioned in Section 6.3.3.2. I consider this in the next subsection.

As neutral anaphora, demonstratives can be used to refer to a recently uttered proposition. Therefore, *that* is unmarked in, e.g., (103) (repeated from (24)).

(103)   A: I just read that Bert earns less than Ernie.
         B: {It | That}'s terrible.   (cf. Gundel et al. 2003)

In responses like (103B), the only competitor of *that* is *it*. NCA cannot occur in the subject position, because the subject position in English cannot be null (Chomsky 1981). In addition, *so* cannot be used as a subject either, see (104).

(104)   a.   {*So | it} is widely believed.
         b.   {*So | it} seems.   (based on Hankamer and Sag 1976: 417)

I argue that the additional meaning, that *it* may signal that its referent was known already, arises only because of its competition with *that*. *That* is a relatively phonologically light anaphor, that can simply refer to a recently uttered proposition. Therefore, we expect speakers to use *that* in these cases. If *it* is used instead, the referent must be more salient or more accessible to the speaker (Ariel 2001). This explanation is largely similar to Hegarty et al.'s and Gundel et al.'s. They, however, suggest that the inference of familiarity arises from the meanings of *it* and *that*, i.e. the cognitive states tied to these proforms. I suggest that it is solely the competition and the neutrality of *that*, that gives rise to this inference in case *it* is used.

In the case of correlates of factive predicates, we saw that *it* is felicitous whereas *that* is not. An example is given in (105). The fact that *regret* is factive seems to play a crucial role in (105), as was pointed out by Kiparsky and Kiparsky (1971); Pütz (1986); Bennis (1986); Sudhoff (2003) and many others.

(105)   Mary regrets {it | ?that}, that she hit John.

Although I consider correlates important to the present study, they are not the main focus. I will, however, give a brief sketch of a potential analysis, based on the assumptions made in this study. I first briefly consider the semantics of correlates, before going into the question why weak pronouns are felicitous in correlate constructions. Thereafter, I consider the question why demonstratives are not.

I assume that in correlate constructions *that*-clauses modify the correlate semantically, i.e. *that*-clauses specify the content of the correlate as they do in other constructions (see Chapter 2). This makes correlate constructions similar to modified NPs, like in (106)-(107), which were discussed in Chapter 2.

(106)   a.   The book that Mary read

          b.   That book that Mary read

          c.   A book that Mary read

(107)   a.   The idea that John is the murderer

          b.   John believes the rumor that Paul is the murderer.

For the correlate construction in (108), I thus argue that the *that*-clause thus specifies the content of the argument of regret, just like the *that*-clauses in (106) and (107) specify the contents of the entities mentioned in those examples. The complex phrase *it, that she hit John*, as a whole, refers to the proposition that Mary hit John. Thus, the correlate, modified by the *that*-clause, forms the argument of the predicate.[54]

(108)   Mary regrets it, that she hit John.

Now, I argue that weak pronouns are particularly suitable for correlate constructions, for the following reason. As was previously discussed, weak pronouns refer to maximally salient entities. At the same time, following Gundel et al. (2003), I assume that complements of factive predicates are more salient than complements of non-factive predicates. Therefore, the co-occurrence of weak pronouns and factive predicates in correlate constructions only seems natural.

     It is important to see that on this account correlates are rather different from regular instances of reference to propositions, like the example shown in (109). In this example, *this* refers to the soon to be introduced proposition that I hit John.

(109)   I regret this: I hit John.

Correlates, instead, do not refer on their own in my analysis. Together with the *that*-clauses they occur with they *co*-refer to a proposition.

     The question now is why should demonstratives not be able to occur in correlate constructions, as is shown in (110).

(110)   ?I regret that, that I hit John.

The demonstrative is felicitous in (110) if a prosodic break is added:

(111)   I regret that. (Pause) That I hit John.

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[54] I am only considering the semantic side of the argument structure/complementation here and do not wish to commit to a syntactic analysis.

Recall from our previous discussion that I assume that demonstratives target entities that are not maximally salient (due to competition with the weak pronoun). I also assumed that demonstratives target entities that are part of the (linguistic) context and thus retrievable for the addressee. In addition, recall that factives presuppose their complement. The combination of a factive predicate and a demonstrative thus presupposes the referent of the demonstrative is familiar and present in the context. I argue that this property is incompatible with the use of *that*-clauses. *That*-clauses identify the content of entities they modify, like those in (106) and (107). This property implies that the content is not retrievable by itself. However, I assumed that the referent of a demonstrative, and thus its content, is retrievable for the addressee, from the context. Therefore, it is unnecessary to further identify it by using a *that*-clause. If done so anyway, the sentence is infelicitous. In the case of weak pronouns in correlates, the factive predicate still signals that its argument is familiar to the speaker. Yet, the argument need not have een mentioned already (or be mentioned soon) in the present discourse and therefore, the *that*-clause may identify the content of the object. This way, it is explained why weak pronouns can occur in correlate constructions and demonstratives cannot.

One of the questions arises is why the use of the demonstrative improves in (111), where a prosodic break is added. I assume that in these cases the speaker adds the *that*-clause in order to clarify the referent of the demonstrative. In this case, we are thus not dealing with a correlate, but with afterthought (see Averintseva-Klisch 2008 and references therein). Averintseva-Klisch (2008) argues that afterthought provides a way for the speaker to repair 'a reference he believes to be unclear for the hearer' (p. 236). An example of afterthought in the nominal domain is given in (112). Averintseva-Klisch argues that in case of afterthought, a clarifying sentence like *I mean* can be added. This is shown for example (112) in (113a). (113b) shows that the same phrase, *Ich meine* 'I mean', cannot be added in right dislocation structures.

(112)   Anna und Brigitte kommen morgen. Ich mag sie$_i$ nicht, die Brigitte$_i$.
        Anna and Brigitte come   tomorrow I   like her/them not   the Brigitte

(113)   a.   Anna und Brigitte kommen morgen. Ich mag sie$_i$ nicht, ich
             Anna and Brigitte come   tomorrow I   like her/them not   I
             meine, die Brigitte$_i$.
             mean   the Brigitte

        b.   'Der Taifun!'   rief   Lukas dem Kapitän zu. 'Da   ist er!' Ja, da
             'The thyphoon!' called Lukas to.the captain to   there is he   yes there
             war er$_i$, (*ich meine) der Taifun$_i$.
             were he   i   mean   the thyphoon

We can add the same clarifying phrase in our example with *that*:

(114)   I regret that. (Pause) I mean, that I hit John.

Competition between *it* and NCA   For the competition between *it* and NCA, my assumptions on discourses, saliency of entities and the affect of polar questions on these matters are relevant. Recall from Section 6.3.3.2 that I assume that by default the entities bearing a thematic role are salient and not the clauses, assertions or speech act events in which they are introduced (cf. Gundel et al. 2003). For polar questions, I assume that matters are different, as was addressed in Chapter 2 already. I assume that the issues raised by simple polar questions, p?, have a different effect on the conversation than those raised by simple assertions, p, as interlocutors are invited to consider the status of the former with respect to the common ground, whereas they are invited to accept the latter as being part of the common ground (see also Farkas and Bruce 2009; Krifka 2017). Simple polar questions thus steer the conversation toward a figurative T-junction, on which the issue p must be resolved. Therefore, in such cases the issue introduced is highly salient. As a consequence, it can be targeted with phonologically weak pronouns in embedded polar responses, which aim to resolve such questions.

Let us now return to the competition between *it* and NCA. As mentioned, I assume that the sole difference between *it* and the NCA is that *it* is overt and thus carries at least some phonological weight. *It* thus signals that its referent is highly salient, but not maximally salient if the NCA could have also been used. By Gricean reasoning, we might say that if a speaker could have also used a null form instead, s/he must have special reasons to use *it*. The question now is, what such special reasons could be. To see this, consider the minimal pair in (115); (b) and (c) are to be read as alternative continuations of the first utterance. The continuation with *it*, (115a), suggests that the speaker does not understand how the situation of letting 'this lobby' and D.C. having to do with each other came about. The continuation with the NCA, (115b), means that the speaker literally does not understand the previously uttered sentence.

(115)   Why are we letting this lobby have anything to do with D.C.?

    a.   I don't understand it!   (CNN 08/03/2018[55])

    b.   I don't understand!

The NCA in (115b) seems to refer quite simply to the prior proposition. *It* in (115a)

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[55]See   `https://edition.cnn.com/videos/politics/2018/03/08/fred-guttenberg-father-victim-nra\-video-time-running-out-senate-hearing-bts.cnn`

seems to refer to the general situation that is addressed by the speaker's question. In that case the speaker is not asking for an actual explanation. By using *it*, the speaker signals that the overarching issue is very salient to him/her and the inference is that s/he has had this issue under consideration for longer than just the previous moment. The addressing of the general issue by *it* therefore has an emphatic effect in (115). Note that in (115) the speaker could have also used *that*. Similar to the use of the NCA, the use of *that* would have lacked the emphatic effect of *it* and therefore led to a more neutral continuation. However, the use of *it* or the NCA both indicate that the referents of these proforms are more salient according to the speaker.

In Section 6.4.1.2, we saw that not all predicates in English can embed NCA. As mentioned, Grimshaw (1979) and Depiante (2000) have suggested that whether predicates can occur with NCA is an idiosyncratic lexical property of the verbs. I follow these authors in making this assumption. As was mentioned, one of the predicates that cannot occur with NCA is *believe*. In (116B), we see an example of *it* occurring with *believe*.

(116)   A: Final question on a different topic, on taxes. Eleven of your Republican colleagues in California voted for the House tax cut bill, in which deductibility of state and local taxes is no longer allowed. They were told, at least one of them was told, well, [that will get fixed later, and Californians, who have high taxes, will be able to deduct them]$_p$. What is your – do you believe that$_p$?

         B: No, I don't believe it$_p$. (...)   (COCA SPOK 2017)

In (116), the proposition *p* is already under discussion at the time of B's responses. This increases the salience of this referent. With A's use of *that*, s/he increases the salience of *p*. This licenses the use of *it* (or, if possible, NCA) in subsequent reference to *p*. I take (116) to show that *it* can still function as a regular unmarked pronoun, if it co-occurs with a predicate that cannot select NCA. For this set of predicates, *it* simply is the phonologically weakest pronoun. For predicates that can occur with NCA, *it* provides a relatively phonologically weak alternative, that is not weaker than the NCA. Therefore, *it* is often dispreferred to NCA when it comes to such predicates, as the NCA is weaker. The speaker would need special reasons for using *it*, like the emphatic use in (115).

Why can't we respond *I believe it*?   The data above raise the following question: why does *believe*, which does not allow for NCA, seem infrequent and dispreferred with *it* in embedded responses, although it can occur with *it*. Since *believe* cannot occur with

NCA, the fact that *I believe it* is an infrequent and dispreferred response may seem like a counter example to the present theory. However, in the following, I show that this is due to the meaning of *believe.*

Wolter (2008) suggests in a talk handout that the lexical semantics of *believe* does not only convey that the complement is compatible with the speakers doxastic state, but also that the speaker is willing to accept the truth of the proposition: the affective implication. Her definition of *believe* is shown in (117).

(117) α *believes* φ

    a.   Epistemic Implication: φ is true in α's belief worlds.
$$\forall w' \in \mathrm{Dox}_{\alpha,w} : \phi(w') = 1$$

    b.   Affective Implication: α is willing to accept φ.   (Wolter, 2008: 10)

Her reasoning is based on the observation that *I known φ but I do not believe φ* is not a contradiction. If we swap *believe* for *think*, the utterance does become a contradiction. This is shown in (118).

(118)   a.   I know that it's already 2008, but I don't believe it.
        b.   #I know that it's already 2008, but I don't think it.   (Wolter, 2008: 2)

Furthermore, *believe* can be modified by adverbs that provide 'information about the emotional state of the subject' (ibidem); this is not the case for *think*. The contrast in (119) illustrates this.

(119)   a.   Sam {passionately | strongly | happily | reluctantly | faithfully | seriously} believes that the subprime mortgage crisis will cause a recession.
        b.   #Sam {passionately | strongly | happily | reluctantly | faithfully | seriously} thinks that the subprime mortgage crisis will cause a recession.

                                             (Wolter, 2008: 4)

In addition, *believe* can create biased questions, which seem to be infelicitous with *think*:

(120)   a.   Can you believe that it's already 2008?
        b.   #Can you think that it's already 2008?   (ibidem)

The examples above suggest that the affective reading of *believe* arises only if the epistemic reading is blocked. However, Wolter suggests that this is not the case. In for instance (121), the epistemic reading is available, as well as the affective reading. She

does not suggest how either of the readings in (121a) or (121b) can be triggered by for instance a certain intonation of (121).

(121)   Can you believe that Jones murdered Smith?

      a.   Affective reading: Speaker takes for granted that Jones murdered Smith, questions addressee's attitude towards this fact.

      b.   Epistemic reading: Speaker asks whether the proposition Jones murdered Smith is compatible with the addressee's current beliefs.   (ibidem)

On the basis of (121), Wolter argues that the affective and epistemic readings are both part of the meaning of *believe*. (121) shows that it is not the case that the affective reading only arises if the epistemic reading is unavailable or the other way around, as both readings are available.

Recall that responses to assertions like *I believe it/that* in (69) - discussed in Section 6.3.3.2 - seemed to indicate commitment on part of the speaker, irrespective of the pronoun; the responses are repeated in (122). With Wolter's (2008) suggestion for the semantics of *believe*, it seems very natural that such responses would indicate that the speaker is willing to accept the proposition referred to as true, because that is what the meaning of *believe* entails.

(122)   A: I will send you the photos.
          B: I believe {it | that}.

The implication is thus independent from the individual meaning of the proforms.

Let us return to the infelicity of polar embedded responses with *believe* and *it*. I assume that these responses are disprerred because the affective reading is preferred over the epistemic one. As such, the epistemic reading is blocked. In addition, I assume that the affective use of *believe it* is infelicitous in response to a question. In the following, I first consider the latter assumption. Thereafter, I consider the former.

Why should an affective implication be infelicitous in response to a question, but not to an assertion like (122)? I assume the answer is simple. We can accept answers to questions, like we can accept assertions. These utterances communicate propositions which can be true or false. A speaker that asserts a sentence or provides an answer to a question commits him/her self to the truth of this proposition and proposes that it becomes common ground. I assume that the fact that the denotation of sentences like these have a truth value and that they are proposed to be part of the common ground is crucial for other speakers being able to accept them as being true. Questions are rather

different. They do not have a truth value and denote a set of propositions rather than one proposition (see, e.g., Hamblin 1973; Groenendijk and Stokhof 1984; Section 2.4). Therefore, if a speaker asks a question, s/he is not putting forth a proposition as being true. As a consequence, there is nothing for the interlocutor to accept about the question or the potential answers to it, except for perhaps the discourse move itself. Therefore, I assume we cannot accept the content of questions. Consequently, the use of *believe* with an affective implication is out in response to questions.

An important question now is why should the affective reading prevail in responses like *I believe it.* Based on the analysis of *believe* in (117), it seems unnecessary for the affective implication to arise in such responses at all. Furthermore, we known that *believe* can occur without this implication in responses with, e.g., *so.* The epistemic reading is thus licensed in such contexts. However, based on this line of reasoning, we also would not have predicted the affective reading to arise in (122). So what causes *believe* in combination with the proforms *it* and *that* to have affective reading in the examples above? One hypothesis is that this reading may be forced for phonological reasons.[56] Different stress patterns of for instance (121) may trigger the one reading or the other. It could be the case that the stress pattern leading to the affective reading is the only one compatible with the use of weak pronouns (which cannot receive stress) in combination with *believe.* Therefore, the epistemic reading could be out. Note that the demonstrative, which can receive stress, cannot be felicitously used to respond to a question in general (cf. Section 6.2). This response is thus out for different reasons previously discussed. The matter under discussion here obviously requires more research, possibly involving phonological experiments, to draw any further conclusions.

6.4.2.2. The role of *het*

In Section 6.2, we saw that the same competition takes place between *it* and *that* and *het* and *dat.* Therefore the explanation given above for the inference of familiarity *it* may lead to, the use of weak pronouns as correlates and the preference for demonstratives when referring to contentful events applies to *het* and *dat* as much as it does to *that* and *it.* Differing from English, however, the competition between weak pronouns and NCA is absent in Dutch, because there are no NCA (see Section 6.4.1.1).

To consider how Dutch deals with contexts in which English uses the NCA, let us zoom in on the Dutch translation of (115), shown in (123). Again, (123b) is a continuation of (123a). The presence of the modal particle *hoor* (lit. 'hear') makes the continuation

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[56]I thank Sophie Repp for this suggestion.

more emphatic. This particle indicates that the speaker is not looking for confirmation of any kind regarding the proposition in its scope (cf. Kirsner and Van Heuven 1996). Therefore, the reading found in (115) in the continuation with *it* is similar to the one with *hoor* in (123b). In both cases the speaker is not implicitly asking for an explanation. Rather, the speaker is making a point that the referent of the weak pronoun is incomprehensible.

(123)   a.   Waarom staan we toe dat deze lobby iets   te maken heeft met
             why   stand we to   that this lobby something to make   has   with
             D.C.?
             D.C.

        b.   Ik begrijp   het niet (hoor).
             I   understand it   not HOOR

Without the modal particle, the continuation is ambiguous between asserting that the speaker does not understand the previous sentence and addressing the general issue, as described above. Thus, *het* can convey the same meanings as seen above in the English examples with the NCA or *it*. The presence of the modal particle *hoor* makes the 'emphatic' reading of (123b) more readily available, but *hoor* is not necessary for this reading. Based on this example and those examples we have seen in Section 6.2, we could say that *het* can be used like *it* and like the NCA, depending on the predicate it occurs with and the environment it occurs in.

I take *het* to function in the Dutch paradigm as *it* and the NCA do in the English paradigm. Since both *it* and the NCA can only occur with a distinct subset of the English clause-embedding predicates each of them only covers a part of the paradigm in the role of the weakest pronoun. In the case of predicates that can occur with both, they have a distinct role and stand in competition. In Dutch, *het* is the single weakest proform in the Dutch response paradigm. Therefore, it is required to do the same job on its own.

6.5. Conclusion

In the present chapter, I considered Dutch embedded polar responses with *het* and posed the question why English embedded polar responses only rarely contain *it*. This observation becomes more puzzling considering that weak pronouns and demonstratives in these languages behave rather similarly when referring to propositions in other environments.

I argued that *het* can be used in embedded responses because it is the phonologically

weakest pronoun. As a result, its use leads to a neutral embedded polar response, which targets the issue under discussion. In addition, Dutch does not seem to have specialized forms for embedded polar responses, like English *so*. It does have polar *van* at its disposal. However, as was shown in Chapter 3 and Section 6.4.1.1, this construction introduces a hedge. Therefore, I argued, embedded responses with polar *van* are more subjective and form a Type I response. Embedded polar responses with *het*, on the other hand, do not have a subjective flavour. They are, therefore, Type II responses. Recall that *dat* in SpecCP is also felicitous as an embedded response. These responses lack a subjective meaning, which conveys uncertainty. Therefore, they are Type II responses as well.

As for *it*, I suggested it can only occur in embedded responses if the (representational) attitude verb it occurs with (i) cannot occur with NCA; and (ii) does not have additional restrictions keeping it from a felicitous use. The second point, (ii), was violated by *believe*, as discussed in Section 6.4.2.1. Concerning *believe*, I followed Wolter's (2008) analysis, in which *believe* involves an affective implication. Due to this implication, *believe* is associated with the implication that the speaker is willing to accept the complement as true. However, I suggested, this acceptance is only possible if the complement is proposed to become common ground, i.e. is on the Table, or already part of the common ground. It therefore cannot be applied to questions.

Recall from Chapter 5 and the introduction of this chapter, that German responses adhere to the same pattern as English ones; see (124). The predicates *denken* 'think' and *glauben* 'believe' can both occur with NCA and a modal particle, but do not seem to be felicitous with the weak pronoun *es*; *bezweifeln* 'doubt' can only occur with *es*.

(124)   A: Hat Jan die Katze schon   gefuttert?
                has Jan the cat   already fed

        B: Ich glaube {∅ | *es} schon.
                I   believe   it   SCHON

        C: Ich denke {∅ | *es} schon.
                I   think   it   SCHON

        D: Ich bezweifle {*∅ | es}.
                I   doubt   it

A question that arises is why *doubt* should be an exception in occurring with weak pronouns, but not with NCA, in embedded polar responses in both German and English. I cannot provide a conclusive answer to this question. Recall from Chapter 4 and Chapter 5 that *doubt* could not occur with *so* or *not* despite being doxastic. It does seem to

be the case that cross-linguistically *doubt* behaves unexpectedly in other ways too (see Anand and Hacquard 2013 and the discussion in Chapters 4 and 5), making it likely that being able to occur with weak pronouns in embedded polar responses, and not with *so* and *not*, is an idiosyncratic property of *doubt*.

7. Conclusion

In this dissertation, I investigated the embedded polar response paradigms of Dutch and English. One of the main conclusions of this dissertation is that there is no uniform class of anaphoric items used in embedded polar responses. In the past chapters, we saw that these anaphors are very different from one another in terms of their semantic contribution and their pragmatic role in their paradigms. Despite these differences, there are also similarities between the different responses considered in this dissertation. I consider the two categories, Type I and Type II responses, again below.

I argued that the first category consists of responses involving items like Dutch polar *van* and English *so*. I argued that these responses signal that the proposition under reference has not been settled yet - because either the speaker is uncertain about it his/herself or other interlocutors disagree about the status of the proposition. As a consequence, both polar *van* and *so* cannot generally occur with factive predicates. Note that polar *van* and *so* signal their Type I meanings in different ways. The 'uncertainty' signalled by polar *van* is due to the similative meaning that I argued in Chapter 3 is hardwired into its semantics. Polar *van* signals that the proposition under reference is similar to a salient proposition in the discourse. It is implied that the two propositions are not identical. Therefore, polar *van* can function as a hedge. I argued that polar *van* is just a special instance of non-polar *van*, which compares entities and is used as a similative marker outside of the domain of embedded polar responses. In contrast, I argued that *so* bears a presupposition with respect to the common ground status of its referent. More specifically, I argued that *so* presupposes that its referent is still under discussion, i.e. on the Table in terms of Farkas and Bruce (2009). In addition, I showed that *so* is in fact an adverb. These two properties set *so* apart from the other anaphors considered in this thesis, although it is often considered an exemplary propositional anaphor. In the first part of this dissertation we thus saw that embedded polar responses with polar *van* and *so* thus have rather similar functions, but a very different underlying semantics and pragmatics.

I argued that the second category, Type II responses, consists of embedded polar responses that lack a presupposition or implication that signals uncertainty or non-

settledness. I showed that this category involves embedded polar responses containing for instance weak pronouns, like *het* or *it*, or the null proform. As a consequence, these kinds of responses compete with Type I responses. Whenever a speaker wishes to express that the proposition under reference is not yet settled, s/he will choose a Type I response over a Type II response. That is, an English speaker would prefer a response involving *so* over a response involving a null proform in such a scenario. The Dutch counterpart would involve polar *van* instead of *het*.

Furthermore, in Chapter 5 and Chapter 6, I argued that there are differences between English and German, on the one hand, and Dutch, on the other, where it comes to Type II responses. Both English and German are able to form embedded polar responses with predicates like *think* or *guess* and the null complement anaphor (NCA) and are unable to form such responses with weak pronouns. For Dutch, this works the other way around: it can form embedded polar responses with, e.g., *denken* 'think' and *het* 'it', but not with an NCA. Moreover, English and German may use propositional attitude verbs in combination with the negative adverbs *nicht* and *not* in embedded polar responses, whereas Dutch cannot. In Chapter 5, I showed that such responses with negative operators are most parsimoniously analyzed as involving NCA, just like their non-negative counterparts. On the basis of the languages under consideration I argued there seems to exist a correlation between (i) being able to form embedded polar responses with NCA and a negative adverb and (ii) being unable to form one with a weak pronoun and a predicate like *think*.

In Chapter 6, I investigated Dutch embedded polar responses with weak pronouns in more detail. The main question of this chapter was why Dutch features such responses whereas English does not. I argued that this is the case, because *het* is the phonologically weakest proform available in Dutch. Dutch does not feature an NCA. The competitors of *het* are, e.g., the phonologically heavier demonstratives *dat* 'that' and *dit* 'this'. These proforms, on their turn, compete with one another in terms of proximity. Since the demonstratives are phonologically heavier than the weak proform, they are dispreferred for embedded polar responses, which target the most salient proposition in the discourse at the moment of answering. In addition, *het* competes with polar *van*. As mentioned above, polar *van* is chosen over *het* if the speaker wishes to express a more subjective meaning. The different types of competition at play are repeated below in Figure 7.1 for English (repeated from Chapter 1). Figure 7.1 shows competition in terms of subjectivity, phonological strength and proximity. The same competition applies to the Dutch forms.

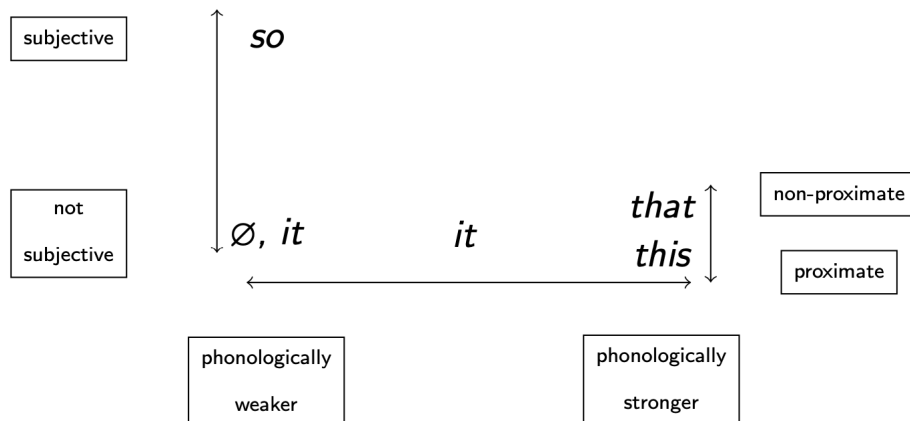Together, this dissertation shows that we cannot simply compare the licensing of one

Figure 7.1.: Competition between proforms in English embedded polar responses regarding subjectivity (y-axis) and phonological strength (x-axis)

propositional anaphor with another without taking into consideration the individual meanings and uses of these proforms. In discussing different kinds of responses across languages, I have also provided insight into the different discourse moves that constitute answers to polar questions. I have also shown that responses with for instance polar *van* in Dutch or *so* in English convey more and different information than those with for instance *het* in Dutch or NCA in English. The former bear more information than just the information that the proposition under reference is compatible or not with the attitude holder's information state, as they also provide information on the unsettledness or uncertainty of the proposition under reference.

In addition, the present work sheds more light on propositional attitude verbs. It shows that Anand and Hacquard's distinction between doxastic and assertive predicates is highly relevant when considering embedded polar responses (cf. Scheffler 2008) and that these predicates behave differently when occurring with different items in embedded polar responses. We saw that the use of polar *van* in Dutch and *so* in English is more flexible than that of other anaphors. Again, this can be attributed to the 'special' meaning of these anaphors and their evidential uses. This illustrates once more that the items used in embedded polar responses are not a uniform set.

I consider the present work pioneering in the sense that there is much more to discover about embedded polar responses that would be of great interest to the work on propositional anaphora as well as on the pragmatics of responses. The next steps would be to embed the analysis proposed in this thesis in a dynamic semantics. Furthermore, some of the judgments relevant for the present argumentation were quite subtle. Exper-

imental investigations, like acceptability judgment studies involving intonation, could provide more certainty there and should be studied in future research. In addition, more cross-linguistic investigations are required to verify whether the correlations found in the present work, in which Dutch patterns differently from German and English, persist in other languages as well. Furthermore, the embedded polar responses discussed in this work should be studied in response to more complex antecedents as well, such as questions involving matrix clause negation or a bias towards on of the potential answers.

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