

Modal subordination of propositional anaphora: On the role of tense and the modal particle *ook* in contextual counterfactuals in Dutch¹

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Abstract. This paper examines a variant of modal subordination that involves reference to propositions that have been introduced in the scope of a negative operator. In the dialogues under consideration, this kind of reference is most reliably established if the modal particle (MP) *ook* and past perfect morphology are present in the response, which contains the anaphor (Meijer 2016). We provide experimental evidence that supports this empirical claim and provide a theoretical explanation for the data. We assume that the discourses at issue involve contextual counterfactuals (CFs) whose antecedent may be positive or negative and provides the antecedent for the anaphor. CFs with a negative antecedent ‘doubt’ the truth of the previous utterance, whereas CFs with a positive antecedent do not. As a consequence, the MP, which presupposes that the epistemic modal base already entailed the previously uttered proposition, is incompatible with the former but not the latter type of CF (Meijer 2016). For the tense marking we propose that the effects are due to the local interpretation of the non-*fake* tense in the consequent of the CF (cf. Ippolito 2013).

Keywords: modal subordination, modal particles, propositional anaphora, counterfactuality

1. The phenomenon

Propositions can be targeted by demonstrative pronouns like English *that*, see (1), where the proposition denoted by a declarative clause is the referent that is picked up by *that* in the subsequent sentence. We may say that the first clause introduces a propositional discourse referent (e.g. Asher 1986, 1993; Geurts 1998). That referent is targeted by *that*. Krifka (2013) suggests that clauses with sentential negation introduce two propositional discourse referents: the negative proposition that is denoted by the entire clause, and the positive proposition that is denoted by the syntactic object below the negation. Evidence for this claim comes from data like (2). (2B) and (2B’) are possible discourse continuations of the negative assertion (2A). Both contain the pronoun *that*. In (2B), *that* refers to the negative proposition $\neg\phi$, *two plus two is not five*. In (2B’), *that* refers to the positive proposition ϕ , *two plus two is five*. Note that (2B’) contains the modal verb *would*, whereas (2B) does not contain a modal verb.

(1) [John was out last night] _{ϕ} . Mary knew that _{ϕ} .

(2) A: Two plus two isn’t five. $\equiv \neg\phi$ (Krifka 2013)
B: Everyone knows that _{$\neg\phi$} . B’: That _{ϕ} would be a contradiction.

Reference to antecedents that are in the scope of negation or of intensional operators was first

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described for nominal anaphora by Roberts (1989), see (3a-b) and (4a-b). In the first utterance of these discourses, there is an indefinite that introduces a discourse referent in the scope of an intensional operator (*a book* in (3a)), or in the scope of negation (*a car* in (4a)). In the second utterance, (3b) and (4b), which both contain a modal verb (*will/would*), a pronoun refers back to the discourse referent that was introduced in the first utterance. (3b') and (4b') are minimal variants of (3b) and (4b) without a modal verb. These variants are not felicitous continuations of (3a) and (4a). Thus, in order to establish reference to a discourse referent below an intensional operator or negation in the previous utterance, a modal must be used.

- (3) a. If John bought [a book]_i, he will be home reading it by now. (Roberts 1989:683)
 b. It_i'll be a murder mystery. b'. # It_i is a murder mystery.
- (4) a. John doesn't have [a car]_i. (Roberts 1997:239)
 b. It_i would be in the garage. b'. # It_i is in the garage.

The propositions denoted by the clauses in (3b) and (4b) are said to be *modally subordinated* to the propositions in (3a) and (4a) (Roberts 1989,1997). The modal base of the modal in the second utterance is restricted: in (3) by the proposition in the antecedent of the conditional; in (4), by the accommodated counterfactual proposition *John bought a car*. In the restricted domain of the modal, the familiarity presupposition for the use of the respective pronoun is fulfilled because *a book* and *a car* are given in that domain. Roberts (1997) highlights that domain restriction across utterances can be compared with domain restriction in conditionals, where the antecedent restricts the domain of the consequent. So for instance (4b) can be paraphrased as *if John had a car, it would be in the garage*.

Going back to Krifka's example for anaphoric reference to a proposition under negation, the presence of *would* is not surprising from the perspective of modal subordination involving nominal anaphora. The example is an instance of modal subordination involving a propositional anaphor. However, interestingly, the presence of a modal does not always seem to be necessary to refer to a propositional discourse referent in the scope of negation, see (5). In the continuations (5B/B'), there is no modal verb. Both continuations are felicitous although they differ with respect to the reference of *that*, which seems to be due to the presence vs. absence of a negation. If there is a negation, as in (5B), *that* refers to the positive proposition ϕ , *you won the jackpot*. If there is no negation, *that* refers to the negative proposition $\neg\phi$, *you did not win the jackpot*. Goodhue and Wagner (resubm.) suggest that these different interpretations are due to our world knowledge. Winning the jackpot is unlikely whereas not winning it is likely.

- (5) A: You didn't win the jackpot. $\equiv \neg\phi$ (Goodhue and Wagner resubm.)
 B: I didn't expect that _{ϕ} . B': I expected that _{$\neg\phi$} .

Although a modal does not always seem to be necessary to refer to a proposition under negation, in certain contexts the presence of a modal does not seem to be sufficient. Consider the Dutch discourses in (6) (Meijer 2016). (6A) is a negative assertion. (6B) is a felicitous con-

tinuation, in which the speaker uses a predicate of personal taste to express their opinion about what was stated in the assertion. As the difference between (6B/B') indicates, reference to the positive proposition with the demonstrative pronoun *dat* 'that' only is possible if in addition to a modal verb (here *zouden* 'would'), the MP *ook* (literally 'also') as well as a past participle (*geweest* 'been') are present (Meijer 2016). In (6B), which contains *ook* and the past participle *geweest*, *dat* refers to the positive proposition ϕ , *Jan worked yesterday*. (6B') is infelicitous on the reading that involves reference to the non-negated proposition (Meijer 2016). It is worth pointing out here that (6B') is coherent if *dat* is interpreted as referring to $\neg\phi$. (7) illustrates that German seems to behave similarly regarding the anaphoric possibilities of the pronoun *das* 'that' in the presence vs. absence of the MP *auch* (lit. 'also') and the past participle *gewesen* 'been'.² In this paper, we will use the terms ϕ -reference vs. $\neg\phi$ -reference, in order to distinguish the two interpretations of *dat*, viz. as referring to ϕ vs. $\neg\phi$.

- (6) A: Jan heeft gisteren niet gewerkt. $\equiv \neg\phi$
 Jan has yesterday not worked
 'Jan didn't work yesterday.'
- B: Das _{$\phi/\#\neg\phi$} zou ook raar zijn geweest. B': Dat _{$\#\phi/\neg\phi$} zou raar zijn.
 that MOD OOK strange be been that MOD strange be
 'That would have been strange.' 'That would be strange.'
- (7) A: Hans hat gestern nicht gearbeitet. $\equiv \neg\phi$
 Hans has yesterday not worked
- B: Das _{$\phi/\#\neg\phi$} wäre auch komisch gewesen. B': Das _{$\#\phi/\neg\phi$} wäre komisch.
 that BE.SBJV AUCH strange been that BE.SBJV strange

Note that similar to Robert's cases of modal subordination involving nominal anaphora, (6B) and (7B) express conditional readings. Meijer (2016) calls such utterances *contextual counterfactuals*. Speaker B seems to accommodate an antecedent for a counterfactual (CF) conditional whose consequent is uttered overtly: *if Jan had worked yesterday, that would have been strange*. The antecedent of the CF provides the referent ϕ which is picked up by *dat/das* in the consequent. Turning to (6B') and (7B'), we could assume that the accommodated CF plausibly is *if Jan hadn't work yesterday, that would be strange*. Again, the antecedent of the CF provides the referent that is picked up by *dat/das* in the consequent, in this case this is $\neg\phi$. However, there is an important difference between the CFs that are accommodated in the (B)- vs. (B')-versions. In the (B)-versions, the second speaker accepts what the first speaker said as true: In the actual world Jan did not work. It is in the CF worlds that Jan worked. In the (B')-version, in contrast, the second speaker doubts what the first speaker said, i.e. it is not established as common ground that Jan did not work. Rather, the second speaker implicates that Jan did work.

It is important to note at this stage that discourses involving predicates of personal taste only

²Some native speakers of German report that (7B') is not coherent for them even on a $\neg\phi$ -reading. It seems that the midclause insertion of the conjunction *aber* 'but' improves (7B') as in *Das wäre aber komisch*. We assume that the improvement is due to *aber* overtly marking the contrast with the previous utterance - after all, speaker B' calls into doubt the utterance by the first speaker. See below for elaboration.

seem to enable ϕ -reference if the predicate of personal taste is one of surprise or wonderment. Consider the response in (8B), which is minimally different from the one in (6B’): the predicate *normaal* ‘usual’ replaces the predicate *raar* ‘strange’. A proposition whose truth one finds normal, i.e. expects to be true cannot be surprisingly or unexpectedly true. The discourse in (8) is incoherent – with any kind of reference. The same observation holds for German (not illustrated). We will not explore the role of the type of predicate of personal taste in this paper and restrict our discussion to predicates of surprise/wonderment (for details see Meijer 2016).³

- (8) A: Jan heeft gisteren niet gewerkt. B: #Dat $_{\phi/-\phi}$ zou ook normaal zijn geweest.
 Jan has yesterday not worked that MOD OOK usual be been
 ‘Jan didn’t work yesterday.’ ‘That would have been normal.’

In the present paper, we will explore the marking that is required to establish ϕ -reference in discourses involving responses with predicates of personal taste like (6B) and (7B) in more detail. The other cases of reference to a positive proposition in the scope of negation mentioned above are beyond the scope of this paper and must be left for future research. Also, we will be mainly focusing on Dutch. The goal of the paper is twofold. First, we will present quantitative evidence supporting Meijer’s claims about the influence of the presence of the MP *ook* and the past participle *geweest* on establishing ϕ -/ $-\phi$ -reference in responses like (6) (section 2). This quantitative verification is important because the judgments are somewhat subtle and sometimes puzzle native speakers. We will also see, however, that the empirical results offer some intricacies that merit some detailed discussion. Second, we will theoretically evaluate the experimental findings. For *ook* (section 4), we will largely follow Meijer’s suggestion that the particle signals that the knowledge that is available to the speaker, already entailed the truth of the proposition that was asserted by the previous speaker before that assertion was made. Therefore, the accommodation of a CF that calls into question the truth of the utterance of the previous speaker - which is what seems to be happening with $-\phi$ -reference - is incompatible with using the particle *ook* in that CF. With respect to the tense marking, Meijer suggests in her discussion of the occurrence of the past participle and *zouden*, that this combined marking fits a cross-linguistic pattern of establishing counterfactuality with multiple tense markers. However, she does not provide an explanation of the temporal marking in relation to the two anaphoric possibilities. Prima facie there is no obvious reason why the presence of a past participle in the consequent should result in ϕ -reference whereas the absence of that participle should result in $-\phi$ -reference. In section 4 we will propose an explanation for the tense marking in the contextual CFs in (6), building on the proposal for tense in CFs by Ippolito (2013).

³There are instances of ϕ -reference which do not require the presence of *ook*. Consider (i) (Berry Claus, p.c.), where *ook* is not required for *dat* to refer to the proposition *Jan has won the final match*. In fact, if *ook* were present, (iB) would be slightly odd. Note that (i) is not a contextual CF, and cannot be paraphrased as one.

- (i) A: Jan heeft de laatste wedstrijd niet gewonnen. $\equiv -\phi$
 Jan has the final match not won
 ‘Jan hasn’t won the final match.’
 B: Dat $_{\phi}$ zou nodig zijn geweest om deel te nemen aan de finale.
 that MOD required be been to part to take on the finale
 ‘That would have been required for taking part in the final.’

2. Experiment

For the quantitative verification of the empirical observations made in Meijer (2016), we conducted a semantic forced choice experiment. The experiment tested discourses which consisted of a negative assertion uttered by one speaker, and a response by another speaker that involved a predicate of personal taste. There were four types of discourses, which differed in whether or not the response contained the MP *ook* and/or the past participle *geweest*. (9) is a sample item.

- (9) Willem en Elisabeth laten hun grote tuin herinrichten. Hiervoor hebben ze een tuinman ingehuurd. Ze spreken over de herinrichting van de tuin.
'Willem and Elisabeth are having their large garden redecorated. They hired a gardener to do this. They are talking about the redecoration of their garden.'
- W: De tuinman heeft het gras nog niet gezaaid.
The gardener has the gras still not sown.
'The gardener hasn't sown the lawn yet.'
- E1: [-TENSE,-OOK] Dat zou raar zijn.
that would odd be
- E2: [-TENSE,+OOK] Dat zou ook raar zijn.
that would OOK odd be
- E3: [+TENSE,-OOK] Dat zou raar zijn geweest.
that would odd be been
- E4: [+TENSE,+OOK] Dat zou ook raar zijn geweest.
that would OOK odd be been

The participants in the experiment were asked to choose between one of two possible interpretations for Elisabeth's responses in (10E1-E4), such that the anaphoric pronoun *dat* was interpreted as referring to the negative proposition $\neg\phi$, *the gardener has not sown the lawn yet*, or to the positive proposition ϕ , *the gardener has sown the lawn (already)*⁴, which arguably were introduced in the utterance by Willem. As discussed in the previous section, Meijer (2016) observed that *dat* receives a ϕ -interpretation in the response in discourses like (9) if both *ook* and the past participle *geweest* are present. Therefore we expect that in condition E4, participants should choose the interpretation where *dat* refers to ϕ . In condition E1, in contrast, *dat* should not refer to ϕ because the response neither contains *ook* nor *geweest*. So participants should choose the ϕ -interpretation much less often for E1 than for E4. As for E2 and E3, Meijer (2016) observes that if only *geweest* or only *ook* are present in the response, that response is not fully coherent on the reading involving ϕ -reference. For the forced choice between the ϕ - and the $\neg\phi$ -interpretation, this might either mean that participants choose randomly between

⁴The antecedent clause, uttered by the first speaker, contained the negative polarity item *nog* 'yet'. This item cannot be part of the positive proposition, and most likely is replaced by the positive polarity counterpart *al* 'already' during the referential process (in a way to be explored by future research). This replacement does not seem to cause problems for anaphoric reference to positive/negative propositions: the materials used here have been adapted from earlier acceptability judgment studies on anaphoric reference involving response particles reported in Meijer, Claus, Repp & Krifka (2015) and in Claus, Meijer, Repp & Krifka (accepted), where the replacement did not seem to lead to degradedness.

these two interpretations, or that they still show a preference for one over the other. On the basis of the concrete meaning contributions that we propose for the past perfect morphology (section 3) and that Meijer proposes for *ook* (section 4), we expect for both E2 and for E3 a higher proportion of ϕ -references than for E1. For E2, there should be a very high proportion of ϕ -references - possibly as high as for E4 - because, as we will see below, $\neg\phi$ -reference results in a presupposition failure for *ook*. For E3, the proportion of ϕ -references might be a bit lower because the past tense morphology is ambiguous, see section 3 for details.

2.1. Method

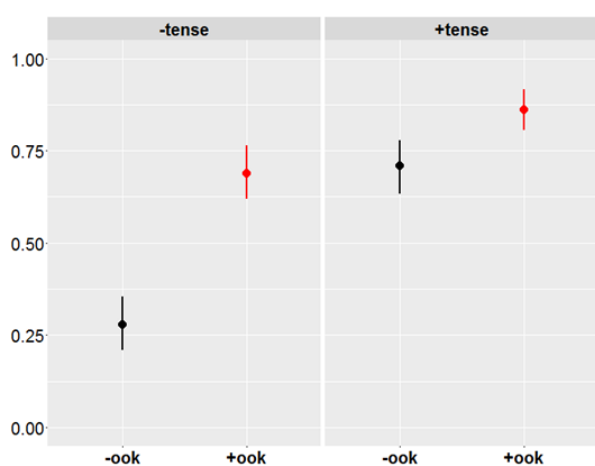
24 native speakers of Dutch were recruited through Prolific Academics (<https://www.prolific.ac>) and received payment for their participation. The experiment had a 2x2 within-subjects design with the factors OOK (+/-*ook*) and TENSE (+/-past participle). There were 24 experimental items and 24 fillers from another experiment. Items were allocated to participants and conditions in a Latin square design. Each item was constructed as illustrated in (9). There was a scene-setting passage that introduced the interlocutors and the topic of the conversation. One of the interlocutors made a negative assertion, the other responded such that the response was one of the four conditions illustrated in (9). The predicates of personal taste used in the materials all expressed surprise. There were twelve such predicates: *gek* ‘crazy’, *raar* ‘odd’, *vreemd* ‘strange’, *uitzonderlijk* ‘extraordinary’, *merkwaardig* ‘remarkable’, *opvallend* ‘notable’, *eigenaardig* ‘peculiar’, *verbazingwekkend* ‘surprising’, *bizar* ‘bizarre’, *opmerkelijk* ‘remarkable’, *maf* ‘crazy’ and *apart* ‘unusual’. Each predicate was used twice. After having read the dialogue in (9), participants were given a choice between two paraphrases which were meant to reveal the ϕ - vs. $\neg\phi$ -interpretation of the response, see (10). The tense marking in the clause preceding the paraphrases matched the tense marking in the response, i.e. for conditions E1 and E2 the marking was *zou* plus infinitive, and for conditions E3 and E4 it was *zou* plus *hebben* ‘have’ plus past participle. The antecedent paraphrases always had past perfect tense marking. We will discuss this tense marking in section 3.

- (10) Elisabeth zou het raar {vinden_{E1/2}/hebben gevonden_{E3/4}},
 ‘Elisabeth would {find_{E1/2}/ have found_{E3/4}} it weird,’
- als the tuinman het gras nog niet had gezaaid. $\neg\phi$
 if the gardener the grass yet not had sown
 ‘if the gardener had not sown the lawn yet.’
 - als the tuinman het gras al had gezaaid. ϕ
 if the gardener the grass already had sown
 ‘if the gardener had sown the lawn already.’

For half of the participants, the first proposition was $\neg\phi$; for the other half, it was ϕ . After participants had chosen one of the paraphrases, the item disappeared from the screen. A verification task followed. Participants read an assertion about the previous test item and judged its truth. Participants that scored at chance level on this task were excluded from the analysis.

2.2. Results

Figure 1 and Table 1 show the mean proportions of choice of the positive proposition, i.e. of ϕ -reference, for the four conditions in the experiment. Descriptively, we may say that the individual effects of the *ook* and *geweest* was similar (each producing around 70% ϕ -references), and that the most reliable way of establishing ϕ -reference was a combination of the two markers. If no marker was present, ϕ -reference was chosen not very often. The statistical analysis was carried out with linear mixed-effects models with a binomial logit function. The fixed factors were TENSE and OOK with contrast coding -1 for $-OOK$ and $-TENSE$, and $+1$ for $+OOK$ and $+TENSE$. Participants and items were random factors. The best models (forward selection) contained random participant slopes for OOK and random intercepts for items. The analysis revealed a main effect of TENSE ($b = 2.96$, $SE = 0.40$, $t = 7.4$, $p < .001$) and of OOK ($b = 2.78$, $SE = 0.50$, $t = 5.6$, $p < .001$). ϕ -reference was chosen more often when the past participle was present, and it was chosen more often when the MP was present. There also was an interaction of the two factors ($b = -1.32$, $SE = 0.56$, $t = -24$, $p = .019$). The effect of the participle was smaller when *ook* was present than when it was not present.



condition	proportion	sd
[-TENSE, -OOK]	.278	.449
[-TENSE, +OOK]	.688	.465
[+TENSE, -OOK]	.708	.456
[+TENSE, +OOK]	.861	.347

Table 1. The proportions of choice of the non-negative conditional clause and the standard deviation.

Figure 1. The mean proportion of choice of the non-negative conditional clause.

The experiment has shown that for ϕ -reference, speakers prefer the presence of both the past participle *geweest* and the MP *ook*. However, even if only one of these markers is present ϕ -reference is more likely than if none of these markers is present. In the following we will propose how these results can be accounted for.

3. Tense in contextual counterfactuals

The literature on CFs distinguishes between two major types of CFs: those with simple past morphology, and those with past perfect morphology, see (11a) and (b), respectively. The difference is also sometimes characterized as (11a) containing one *layer* of past morphology – in the antecedent (*be* + PAST) and in the consequent (WOLL + PAST) –, and (11b) containing two layers of past morphology – additional *have* in antecedent and consequent (Iatridou 2000).⁵(12)

⁵We will not distinguish between present CFs and *future less vivid* (FLV) conditional sentences (cf. Iatridou 2000) here. The latter contain a telic rather than stative predicate in the antecedent, which has consequences for the interpretation of the present (future-oriented or not). We will see later that the type of predicate in general seems to play an important role in the temporal interpretation of CFs but we cannot discuss this issue in this paper.

shows that the same marking is present in Dutch. The finite verb *zou* in the consequent is the 3rd person past tense of the auxiliary *zullen* ‘will.INFINITIVE’.⁶ Now crucially, both in English and in Dutch, the ‘actual tense’ in these examples, i.e. their temporal interpretation, seems to be different from what the morphological marking suggests. (11a) and (12a) seem to convey that it is not true that John is here at present and Jane is happy at present, whereas (11b) and (12b) seem to convey that it is not true at some relevant moment in the past that John was here and Jane was happy. So (11a) and (12a) are about worlds ‘contrary to the present’ whereas (11b) and (12b) are about worlds ‘contrary to the past’ (Iatridou 2000). It seems that there is one past too many both in the antecedent and in the consequent of the CFs. This ‘additional’ layer of past has been called *fake past* or *fake tense* (Iatridou 2000 and subsequent literature). The ‘remaining’ tense is the one that fits the actual temporal interpretation, i.e. present tense in (11a) and (12a) and past tense in (11b) and (12b).

- (11) a. If John were here Jane would be happy.
 b. If John had been here Jane would have been happy.
- (12) a. Als Jan hier was, zou Anne gelukkig zijn.
 if Jan here be.PAST will.PAST Anne happy be
 b. Als Jan hier was geweest, zou Anne gelukkig zijn geweest.
 if Jan here be.PAST been will.PAST Anne happy be been

The above observations have spurred various analyses where the fake past is assumed to trigger a CF reading either via a past interpretation or via a modal interpretation (see Schultz 2014 for a brief overview). Proposals also differ with respect to whether the fake tense outscopes the entire conditional or not. We will explore two past-as-past approaches with wide-scope fake tense here, viz. Arregui (2007) and Ippolito (2013) because these approaches address some complications that we will talk about instantly and that are relevant for the discussion of our experimental results. Terminology-wise, we will dub the tense outscoping the conditional *wide-scope* past/tense, and the tense that seems to be interpreted *in* the conditional clauses, i.e. present tense in (11a) and (12a) and past tense in (11b) and (12b), the *local* tense.

Now, an important challenge for the analysis of the local tense is the observation that the intuitions about the temporal interpretation in the above examples, although apparently clear, are deceptive. As was observed in Dudman (1984) and subsequent literature (e.g. Ogihara 1999; Arregui 2007, 2009; Ippolito 2003; 2013), CFs with simple past marking cannot only be about the present but also about the future, and CFs with past perfect marking cannot only be about the past but also about the present and the future, see (13) from Dudman (1984). The data are

⁶*zullen* is traditionally characterized as a future auxiliary. Broekhuis & Verkuyl (2014) argue that *zullen* is purely modal and therefore is different from English WOLL. This debate is not immediately relevant for the present discussion. Furthermore, note that it is also possible to form a past perfect consequent without *zouden* in Dutch. In (i) the consequent contains the same morphology the antecedent. We gloss over this here.

- (i) Als Jan hier was geweest, dan was An gelukkig geweest.
 if Jan here was been then was An happy been

equivalent in Dutch, which for reasons of space we cannot show here.

- (13)
- a. If Grannie missed the last bus tomorrow, she would walk home.
 - b. If Her Majesty had been here now, she would have been revolted.
 - c. If Grannie had missed the last bus on Friday (next Friday), she would have walked home. (*she is actually dead*)

Importantly for our discussion of ϕ -reference, there are restrictions on the use of the morphological tense marking for certain temporal interpretations. Observe that the set of examples we have looked at so far does not include a CF with simple past marking that has a past interpretation. The following examples illustrate that even with an elaborate context, a simple past marking in antecedent and consequent (14b), only in the consequent (14c), or only in the antecedent (14d), is unacceptable if a past interpretation of both antecedent and consequent is intended (compare (14a)). (14b) and (14c), where the antecedent is marked with simple past, are generally unacceptable with a past interpretation of the antecedent. (14d) is ‘only’ infelicitous with the indicated past interpretation of the consequent. If we replace *last week* in the consequent of (14d) with *now* and imagine that Paul’s failure to turn up has created long-term sadness in Jane (13d) is felicitous. Thus, it is clearly possible to combine a past perfect antecedent with a simple past consequent if the latter contains a non-past interpretation. Again, the data are parallel in Dutch.

- (14)
- Paul had announced for last week that he would be in London. His old friend Jane was looking forward to seeing him. However, Paul didn’t turn up, and Jane wasn’t happy.
- a. If John had visited London last week Jane would have been happy (last week).
 - b. *If Paul visited London last week Jane would be happy (last week).
 - c. *If Paul visited London last week Jane would have been happy (last week).
 - d. #If Paul had visited London last week Jane would be happy (last week).

The restrictions on the tense morphology in an otherwise apparently fairly flexible tense marking system in CFs has received different kinds of analyses in the literature. As mentioned above, both Arregui (2007) and Ippolito (2013) assume that a layer of fake tense outscopes the conditional. The proposals differ with respect to the local tense in the conditional clauses (as well as with respect to the number of wide-scope past operators, see below). We will briefly describe the two proposals here.

Arregui (2007) sees the crucial difference between simple past vs. past perfect morphology as an aspectual rather than a tense difference. She suggests that simple past antecedents with eventive predicates contain a perfective operator, whereas antecedents with the past perfect (or those with a stative predicate) come with a perfect operator. The perfective operator introduces a deictic event pronoun. The deictic nature of that pronoun creates the presupposition that the respective event is true in the actual world, i.e. that it has happened.⁷ For instance, in contexts

⁷See Arregui (2007: 247ff.) for cases where the speaker does not or cannot know whether the event has

like (14), the presupposition *Paul visited London* is clearly violated: Paul was not in London. So a simple past antecedent is expected to be infelicitous. A past perfect antecedent, in contrast, is felicitous because the perfect operator does not come with a deictic event pronoun.

Turning to Ippolito (2013), we need to go in a bit more detail in order to be able to discuss our findings within her theory further below. Similarly to Arregui (2004, 2009), Ippolito assumes that a CF reading arises from the presence of a past operator that takes scope over the entire conditional. This past operator binds the time argument of the accessibility function of the modal WOLL. This function returns the set of worlds that have the same history as the evaluation world up to a time *t*, the *accessibility time*. At *t*, the truth of e.g. John having visited London has not been decided yet and what is called in the philosophical literature *branching* into different futures occurs only afterwards. The wide-scope past operator shifts the accessibility time to the past, which means that the worlds started branching into different futures at a time in the past. In addition to the accessibility time, there is another time that is important in Ippolito's account. This is the reference time, which is the time when presuppositions of the antecedent and the consequent are evaluated: the presuppositions must be entailed by the worlds that are historically accessible from the reference time. Since the set of possible worlds can only become smaller over time, and because the reference time cannot precede the accessibility time, the presuppositions eventually must be satisfied *at* the reference time. The default reference time is the utterance time. For illustration Ippolito discusses the following example. For someone to be in love they must be alive (cf. Musan 1997 for existence presuppositions of this kind). So, a presupposition of the antecedent in *If John were in love with Mary, he would ask her to marry him* is that John is alive in worlds that are historically accessible from the utterance time, and thus by extension at the utterance time. As a consequence, the utterance of this conditional after a statement like *John is dead* is infelicitous. However, if the same conditional appears with past perfect marking it is felicitous in this context. According to Ippolito, this effect is due to the past perfect introducing a second past tense operator that scopes over the entire conditional. The function of this operator is to shift the reference time to the past. As a consequence, the presuppositions of antecedent/consequent are evaluated for worlds that are historically accessible from a reference time that is before the utterance time. With respect to the example we just discussed, this means that the being-alive presupposition must be entailed by historically accessible worlds at that past reference time. Since there is a time in the past where worlds with a living John are still accessible the CF *If John had been in love with Mary, he would have asked to marry him* is felicitous if John is dead at the utterance time.

Now, in addition to the two wide-scope past operators, Ippolito assumes that the antecedent and the consequent each have 'local' deictic tense, which is always evaluated with respect to the utterance time. Such local deictic tenses are also assumed e.g. by Romero (2014). What is special about Ippolito's account is that the present perfect – due to a deficit in English morphology – may either signal the presence of the two wide-scope operators that we discussed, or the presence of the two wide-scope operators *plus* the presence of local past tense. The morphological deficit is that standard English does not have the morphology to express three layers of past. Therefore, Ippolito proposes the following structures for CFs:

happened / will have happened.

- (15) Simple past (a) and past perfect (b&c) CFs (Ippolito 2013:96ff.)
- a. [PAST₁[WOLL [PRESENT_{deictic} ϕ] [PRESENT_{deictic} ψ]]]
 - b. [PAST₁[PAST₂ [WOLL [PRESENT_{deictic} ϕ] [PRESENT_{deictic} ψ]]]]]
 - c. [PAST₁[PAST₂ [WOLL [PAST_{deictic} ϕ] [PAST_{deictic} ψ]]]]]

In (15a) and (b), there is a deictic present tense in the antecedent and in the consequent of the conditional. This structure is not compatible with the examples in (14) above, because these all involve the adverb *last week*. The present tense indicates that we are evaluating an event that would have taken place now which is inconsistent with *last week*. Therefore, we must assume that the examples in (14) have the structure in (15c). A question that arises is how we can account for the felicitous minimal variant of (14)(d) in which we replaced *last week* in the consequent with *now*. According to Ippolito's structures in (15b) and (c), there would still be two past tense operators outscoping the entire conditional, because the antecedent occurs in the past perfect. Yet, intuitively, using a past perfect rather than a simple past in the consequent alters the interpretation of the conditional. At this point, we do not see how Ippolito's account can be altered, such that it can account for such 'mixed' CFs.

With this much in hand, let us now turn to our cases of ϕ -reference / $\neg\phi$ -reference in the experiment presented in section 2. Recall that the utterance of the first speaker in our discourses is a negative assertion stating that a certain event (e.g. one of the gardener sowing the lawn) has not taken place. We are assuming that this assertion is one about the past, which is the default interpretation of the present perfect in Dutch (Verkuyl and Broekhuis 2013).⁸ Next, recall that we are assuming that the second speaker, who uses a contextual CF to evaluate the utterance of the first speaker, plausibly accommodates either the past perfect CF in (16B ϕ) or the one in (16B $\neg\phi$).

- (16) A: The gardener hasn't sown the lawn yet.
 B: Dat zou (ook) raar zijn (geweest), ...
 that will.PAST OOK odd be been
- ϕ ...als de tuinman het gras al had gezaaid.
 ...if the gardener the grass already have.PAST sow.PERF
- $\neg\phi$...als de tuinman het gras nog niet had gezaaid.
 ...if the gardener the grass not yet have.PAST sow.PERF
 'It would {be / have been} strange if the gardener had(n't) sown the lawn {yet / already}'

Starting with the tense in the antecedent, recall from the introductory section that when accommodating a CF like the one in (16B ϕ) the second speaker accepts what the first speaker said as true. In the actual world, the gardener hasn't sown the lawn, in the CF worlds he has sown

⁸There are differences between the Dutch present perfect and the English simple past but note that the Dutch present perfect can be used in sentences that contain a temporal modifier like *yesterday*, which is not possible with the English present perfect: **John has gone to the cinema yesterday* vs. *John went to the cinema yesterday*. A thorough discussion of this issue is beyond the scope of this paper; we refer the reader to De Vuyst (1985).

the lawn. In Ippolito's terms, the CF worlds are historically accessible only from a reference time in the past, at which it was still possible for the gardener to sow the lawn. Therefore, there must be two past operators scoping over the conditional. As a consequence, the conditional antecedent in (16B ϕ) must be marked with the past perfect. This is the tense morphology that we used in the paraphrases in the experiment for ϕ -reference. On Arregui's account we expect past perfect marking as well because that marking comes with no presupposition concerning the actual existence of the event at issue - which is what is required in the above context: the context says that the event did not take place. Further below - when we discuss the tense marking in the consequent, which we argue can be captured best in Ippolito's account - we will suggest that the local deictic tense in the antecedent of (16B ϕ) is past tense as well.

As for (16B $\neg\phi$), we said in the introductory section that the second speaker doubts what the first speaker said, viz. that the gardener hasn't sown the lawn. The second speaker implicates that the gardener has sown the lawn. What is interesting about this kind of CF is that intuitively, the present perfect marking in the antecedent of the conditional also seems to be allowed. That is the sentence that is uttered by the first speaker can form the antecedent of the contextual CF. In English, this would look as follows: *A: John did not work. B: If John didn't work...* Note that the preferred interpretation of the antecedent seems to be that of an antecedent in an indicative conditional. Thus, such a marking somehow reduces the 'degree' of counterfactuality of the sentence. An antecedent with past perfect marking seems to be better suited to express stronger counterfactuality (cf. Iatridou 2000; Ippolito 2013). For the present purposes we need to lay that issue aside. In the experiment, we chose past perfect marking for the antecedent of the paraphrases that we gave to the participants both for ϕ -reference and for $\neg\phi$ -reference because this choice enabled us to compare minimal pairs in the investigation of the tense marking in the consequent.

Turning to the tense in the consequent, the experiment revealed that morphological marking with the past perfect increased the chances that the demonstrative pronoun in the response was interpreted as having ϕ -reference. As we saw above, the consequent of a CF with a past perfect antecedent in principle can occur with simple past marking or with past perfect marking, if the antecedent is overt. So in principle the choice of tense for the consequent is open.⁹

Let us see how the accounts by Arregui (2007) and Ippolito (2013) can be applied to our

⁹Also observe that the choice between present perfect and past perfect does not seem to influence nominal reference under modal subordination, at least in examples like (iA) and (iA'). The indefinite *een dier* 'an animal', which occurs under negation in the first utterance, is felicitously picked up by the pronoun *het* 'it' in the second utterance, independently of the morphological marking in that utterance, which corresponds to the consequent in an accommodated CF.

- (i) Context: Paul gaat af en toe vroeg in de ochtend jagen. Rond het middaguur vraagt Anna, die Paul die dag nog niet gezien heeft, zich af of hij vanochtend heeft gejaagd. 'Every now and then Paul goes hunting early in the morning. Around noon, Anna, who hasn't seen Paul today yet, is wondering if he was out hunting this morning.'

A: Paul heeft geen dier_i geschoten. Het_i zou daar in de hoek {liggen/hebben gelegen}.
 Paul has NEG+a animal shot it would there in the corner lie /have lain
 'Paul has not shot an animal. It would {be/have been} lying in the corner over there.'

findings about the consequent. Arregui (2007) designed her proposal for the antecedent in CFs but observes in a footnote (pp. 224, n. 2) that the tense restrictions that she discusses for antecedents are essentially the same for consequents. She suggests that the latter also fit the proposal she makes but does not discuss any details. As we briefly mentioned above, a crucial question within Arregui's aspectual account is whether the consequent is eventive or stative. For eventives, the tense matters because they combine with the deictic event pronoun that is introduced by the perfective aspect. For statives, the tense does not matter because there is no event pronoun. The evaluating consequents in our examples, see (20), are stative. So tense should not matter. However, our experimental results seem to suggest it does. This is problematic for Arregui's account and we do not see a straightforward way of fixing the problem.

As we saw above, Ippolito (2013) assumes that there local tense in the antecedent and in the consequent of conditionals that receives a deictic interpretation. However, she also points out that it is not quite clear how the tense marking in the consequent can be related to the wide scope past operator(s), whose presence is signaled by the past perfect morphology in the antecedent, and which, as we saw above, we must assume is present in our discourses. Ippolito discusses a potential sequence-of-tense analysis (also cf. Romero 2014) for past perfect marking in the antecedent and the consequent. However, as we mentioned above, she does not consider 'mixed' CFs, i.e. CFs with a past perfect antecedent and with a simple past consequent in English (which would correspond to the present perfect in Dutch). To explain the results that we obtained in the experiment within Ippolito's proposal we will capitalize on the idea that the local tenses are interpreted deictically. Let us start with the preferred preference of the past participle for ϕ -reference. Recall that our contextual CFs are responses to a negated assertion about the past. This assertion thus introduces a salient time in the past. It is a plausible to assume that a subsequent contextual CF will say something about this salient time. Thus, we assume that the consequent conveys that the speaker thinks that the worlds that are picked up by the propositional anaphor contain spatio-temporal regions that are specified for that salient time in the past, are strange - or rather *were* strange, because they are in the past. It is not very plausible to assume that the strangeness only applies at the time of speaking, which is what the absence of the past participle would signal.

Turning to the $\neg\phi$ -reference, it seems that we may say exactly the same: the contextual CF is a response to a negative assertion about the past. As a consequence we might expect the presence of a past participle. However, recall that the CFs that are arguably accommodated in the two cases are different. In the case of $\neg\phi$ -reference, the speaker doubts the truth of the previous utterance. So, the evaluative comment refers to the truth of the utterance just made rather than to past CF worlds on whose counterfactuality both speakers agree as in the case of ϕ -reference. Since the truth of the utterance is at issue at the utterance time, the consequent preferably is marked without the past participle.

Linking these suggestions to Ippolito's structures for CFs in (15), we might say that ϕ -reference has the structure in (15)(c). Both the antecedent and the consequent contain a local deictic past, with the entire conditional being in the scope of the two past operators that we argued for above. $\neg\phi$ -reference cannot straightforwardly be matched to Ippolito's structures because

there seem to be different tenses in antecedent and consequent. Also, recall that the details of the interpretation of such doubting CFs still pose a number of questions that need to be addressed in future research.

With respect to the experimental results, the above suggestions explain why the presence of the past participle increases the proportions of ϕ -reference. Still, recall that in condition E3, which contained a past participle but not the MP, there still was a non-negligible proportion of $-\phi$ -choices. We may assume that speakers adopted a structure like (15)(b) when they made this choice. According to Ippolito past perfect marking is compatible with a local present tense interpretation: the past perfect may signal the presence of only the two wide scope past operators. An alternative, or additional explanation for the results for E3 might be that the contextual CFs with ϕ -reference have a kind of default marking, which includes the MP *ook*. The experimental results suggest that this might indeed be the case because ϕ -choices were most frequent if both the participle and the particle were present (condition E4). Hence, if one of the ‘typical’ markers is missing, slight incoherence might arise, which most likely influences the way participants interpreted the response. This issue needs to be investigated in future research in an acceptability study. Finally, recall that the proportion of ϕ -choices was non-negligible when the past participle (and the MP *ook*) was absent (condition E1). Again, it is possible that some speakers do not find such utterances coherent (as is the case for German, see footnote 2). As a consequence they might have found it difficult to determine the meaning of the response. This issue also needs to be investigated in an acceptability study.

4. The MP *ook*

In this section we will discuss the finding that the presence of the MP *ook* increased the proportion of ϕ -references. We will generally follow the proposal by Meijer (2016) but deviate in some of the details. Meijer builds her analysis – which she provides for *ook* and its German cousin *auch* – on previous accounts of the German particle because descriptions of Dutch *ook* are scarce. We will employ the same strategy in our initial characterization of the particle but then focus on *ook*.¹⁰(17) shows an example of the MP *ook*. Speaker A notes that Peter

¹⁰Note that *ook* (as well as *auch*) is ambiguous between a MP and an additive focus particle reading. As a focus particle *ook* comes in two variants: unstressed and stressed. If it is unstressed it associates with a focus in its c-command domain, see (i). If it is stressed it associates with a focus that is outside its c-command domain, see (ii). Both variants come with the presupposition that there is an alternative in the context for which the predicate that holds for the focus constituent also holds for the alternative. Thus, in (i) and (ii) there must be someone in addition to Marie that Peter called. There are subtle differences between the two versions of the particle, see e.g. Krifka (1998) and Reis and Rosengren (1997) for analyses of stressed German *auch*.

- | | | | |
|-----|--|------|--|
| (i) | Peter heeft ook MARIE gebeld.
Peter has OOK Marie called
'Peter has also called Mary.' | (ii) | Peter heeft MARIE OOK gebeld.
Peter has Marie OOK called
'Peter has also called Mary.' |
|-----|--|------|--|

Focus particle(s) and the MP can be distinguished from each other by their prosody (the MP cannot be stressed) and their syntactic distribution. Most importantly for the present purposes, the focus particles but not the MP come with the above-mentioned presupposition. Our experimental materials (recall (9) in section 2) were such that that presupposition was not satisfied in the context. Neither did the scene-setting passage provide a focus alternative to *dat* – which would have been required for the stressed variant of *ook* –, nor did it provide a focus alternative to *(to be) strange* – which would have been required for the unstressed variant of *ook*. Furthermore, it is difficult to accommodate the presupposition of additive focus particles (Kripke 2009). Hence, we assume that it is highly unlikely that the participants in the experiment interpreted the word *ook* as a focus particle.

looks bad. Speaker B’s response is to be read as conveying that Peter’s looking bad was not unexpected to him, since Peter has been ill for a long time (cf. Karagjosova 2003 for *auch*).

- (17) A: Peter ziet er slecht uit. B: Hij is ook lang ziek geweest.
 Peter looks there bad out he is OOK long ill been
 ‘Peter looks bad.’ ‘Well, he has been ill for a long time.’

Auch has been claimed to indicate that a previously asserted proposition was expected to be true already (Thurmair 1989, Karagjosova 2003). As a consequence, with an *auch*-utterance, a speaker confirms the proposition asserted prior to the *auch*-utterance. Karajogosova (2003) notes that *auch*-utterances can be ‘corrective’, in the sense that speakers can use them to indicate to their interlocutor that the previous utterance did not even contain new information. Furthermore, she suggests that *auch* signals that the speaker has made some sort of inference, based on what s/he already knew (for instance, from Peter being ill for a long time, we can infer that he looks bad). She notes that *auch*-utterances often can be translated with *because*-constructions (e.g. *Peter looks bad because he has been ill for a long time* for (17B)). However, note that it is not actually possible to paraphrase contextual CFs using *because*, as the use of *auch* does not seem to be causal here. In line with this intuition, Bergmann and Repp (2015) provide experimental evidence suggesting that *auch* is not causal in the same way that the e.g. German markers *denn* ‘because’ and *eben* ‘obviously’ are. A recall experiment showed that *denn* and *eben* helped recalling information. This effect was not found for *auch*. Yet, the recall of information has been claimed to be aided by the presence of causal markers (e.g. Caron, Micko and Thüring 1988).

Meijer (2016) largely follows the theories by Thurmair (1989) and Karagjosva (2003), but offers a formal analysis of *auch* and *ook* as epistemic markers. Roughly, Meijer suggests that *auch/ook* presupposes that the proposition asserted in the previous utterance (proposition ϕ_{-1}) was already entailed by the epistemic modal base before it was asserted, as shown in (18). The epistemic modal base $f(w)$ contains the propositions that describe the knowledge that has been established in a world w (Kratzer 1981).

- (18) $\llbracket \text{ook}(\phi) \rrbracket^{c,w} = \phi$; defined if $\cap f(w) \subseteq \phi_{-1}$ before ϕ_{-1} was uttered

Applying (18) to (17), we can say that the knowledge available to B enabled him to infer that Peter was looking bad, before A asserted this. Specifically, B’s world knowledge that *if one is ill for a long time, one looks bad* and the knowledge that Peter has been ill for a long time most likely are decisive here. Note that the dialog in (17) is still fine if A knows nothing about Peter’s medical history, but does know that he looks bad. The fact that for A, the proposition that Peter looks bad does not have to be inferable in the way that *ook* signals that it is for B, shows us that it need not be the context set that is the contextually salient body of knowledge, but it could also be the knowledge of the speaker.¹¹ However, in what Karagjosova calls the

¹¹We are aware that some authors have argued against such an analysis of modal verbs (e.g. Von Stechow and

‘corrective’ use of *auch*, it seems that the particle indicates that the speaker who is making the *auch*-utterance indicates to his/her interlocutor that s/he should have known already that this proposition was inferable. In such scenarios, it might be the context set that is the relevant body of information.

Meijer’s (2016) specific proposal for *auch* and *ook* is slightly different from what we are assuming here. It is couched in the framework by Von Stechow and Gillies (2010) on *must*, where a distinction is made between two sets of propositions that are relevant for epistemic/evidential modality. The first set is the kernel. This set consists of propositions that the speaker takes to be true (propositions denoting world knowledge, direct observations and trustworthy knowledge). The second set is the intersection of the kernel: the modal base it determines. For *must*, roughly, the authors argue that it presupposes that its prejacent is entailed by the modal base that the kernel determines but that it is *not* in the Kernel. Meijer (2016) tentatively suggests that the MPs signal that the prejacent was entailed by the modal base, but remains agnostic about the presupposition *auch/ook* bear with respect to the kernel. For *ook*, Meijer points out that the kernel does not seem to play a role, since (17B) is felicitous, even if both speakers have seen that Peter looks bad and are aware of their mutual knowledge. For some speakers of German, the use of *auch* in such scenarios is marked, which suggests that for these speakers, the prejacent of *auch* cannot be in the kernel. Meijer (2016) therefore remains agnostic with respect to the role of the kernel in uses of *auch*. Since the kernel does not seem relevant for *ook*, we will stick to (18) and leave research into the use of *auch* in scenarios in which the prejacent is in the kernel for future research.¹²

Let us return to the use of *ook* in contextual CFs and to our experimental results. From the above suggestion for *ook*, it follows that if *ook* is used in response to a negative assertion the utterance that *ook* occurs in is interpreted as affirming this negative assertion. Such an affirmation is present in the CFs with ϕ -reference but not in the CFs with $\neg\phi$ -reference. Recall that in the latter the second speaker doubts what the first speaker said, viz. that $\neg\phi$ is true. Hence, we predict that *ook* should not be felicitous with $\neg\phi$ -reference. With respect to our experiment, this means that conditions with *ook* (E2, E4) should elicit a low proportion of $\neg\phi$ -choices. This is what we found. However, recall that there still was a non-negligible proportion of choices for $\neg\phi$ for contextual CFs that contain *ook*, but not *geweest* (E2). As we pointed out above, the most common, or preferred, way of establishing ϕ -reference in contextual CFs is by including both the MP and the past participle. As we mentioned in the discussion on *geweest*, it could be that the lack of one of these markers made the response incoherent for some of the participants. Future research should investigate this matter in an acceptability judgment study.

5. Conclusion

In this paper we have argued that two important factors for establishing reference to a proposition in the scope of a negation in a previous utterance are the tense marking and the presence or absence of the MP *ook* (cf. Meijer 2016). We have provided experimental evidence for a

Gillies 2008) and we do not wish to enter this debate on modality. However, for the use of *ook* the data strongly suggest that it is the knowledge of the speaker that is relevant for a felicitous use of the MP.

¹²It seems that (18) holds too for those speakers of German who think that the German equivalent of (17) is fine even if both speakers are aware of their mutual knowledge of A’s assertion before A made this assertion.

certain class of evaluative utterances that supports this empirical claim. With Meijer (2016) we have assumed that these evaluative utterances are contextual CFs for which an antecedent is accommodated on the basis of the previous utterance. The antecedent that is accommodated either contains a negation or not, and it serves as the antecedent for the propositional anaphor in the consequent, i.e. decides whether the anaphor refers to the proposition in the scope of the negation ϕ or the negated proposition $\neg\phi$. With Meijer (2016) we have argued that *ook* presupposes that the previous utterance could be inferred from previous knowledge and thus must be true. Since this presupposition is only satisfied in CFs with ϕ -reference, the presence of *ook* is only compatible with such a reading. Furthermore, we have argued that ϕ -reference is preferably marked with a past participle in the consequent because a local deictic past tense – which plausibly is the temporal interpretation of the consequent – requires past perfect tense morphology (Ippolito 2013). $\neg\phi$ -reference in contrast, is compatible with a local deictic present tense in the consequent.

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