

# Doubly-filled COMPs in Dutch and German

## A Bottom-up Approach

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### Abstract

In many German and Dutch varieties, violations of the doubly-filled COMP filter (DFCF) can be found (inter alia Bayer 1984, Weiß 1998, Barbiers et al. 2005b: 16–17), most notably in the context of embedded *wh*-questions and relative clauses. We address the question as to how embedded clauses with or without DFCF violations are processed by native speakers of different Dutch as well as German dialects/regiolects. Factors manipulated in the 16 experimental conditions were argument vs. adjunct, case marking, animacy, and complexity (pronominal vs. phrasal). Our results have led to the following conclusions: (1) Beside the well-known factor of phrase-structural complexity, also the syntactic function of the *wh*-item (in particular subject/object vs. adverbial) has a robust influence on the overall acceptability of DFCs. This influence, however, may manifest in different directions in both languages. (2) With regard to German, there are clear areal differences with regard to the acceptability of DFCs in that the Bavarian regiolect (with a stronger dialectal background) also shows a much higher acceptance of this phenomenon than the West Central German regiolect we observed. Note that in the traditional base dialects, DFC-structures can be observed all over the German-speaking area (Weiß 1998, 2017), a fact for which we present additional evidence on the basis of an analysis of the Zwirner-corpus.

In theoretical terms, we rely on the basic account by Holler (2001) who assumes an empty complementizer for embedded questions in Standard German that can be spelled out in the dialectal variants. We make some suggestions for a mechanism of this lexicalization process and offer some thoughts on how it can be parameterized.

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## 1. Introduction

In many German dialects, violations of the Doubly-filled COMP Filter (DFCF) can be found (Bayer 1984, Weiß 1998, Weiß 2017, Bayer and Brandner 2010, and others), most notably in the

context of embedded *wh*-questions (13) or relative clauses (14). For the sake of brevity, we will call this phenomenon Doubly-filled COMPs (DFCs) in the following.

- (1) Bavarian (adapted from Bayer 1984: 212, 213)
  - a. I woäß ned wer daß des tōa hod.  
I know not who.NOM that this done has  
‘I don’t know who did that.’
  - b. Die Frau dera wo da Xaver a Bussl g’gem hod.  
the woman whom.DAT PART the Xaver a kiss given has  
‘The woman who Xaver kissed.’

Of course, such violations are not restricted to (dialectal variants of) German, but can be more generally regarded as a Continental West-Germanic property, an aspect we will turn to below.

DFCs offer important insights into (at least) two grammatical domains:

1. How are asymmetries between root and embedded operator clauses encoded (if they are encoded at all)?
2. How deeply are such asymmetries entrenched in the grammatical system?

The first question seems to be a bit bizarre in the face of the obvious differences that can be observed between root and most embedded clauses in asymmetric verb-second languages such as Dutch or German. However, one must bear in mind that word order (and in particular the position of the verb) as a coding device for certain sentence types is not very common crosslinguistically.<sup>1</sup> The classical answer to the second question has been the postulation of the Doubly-filled COMP Filter (DFCF) (Chomsky and Lasnik 1993: 528) which states that the specifier and the head position of the C-node must not be filled simultaneously at S-structure. Of course, violations of this filter have led to interesting typological implications. From a variationist standpoint, there are indications that different parametric options are at work: Varieties that never allow both positions to be filled at the surface (mostly Standard German or Standard Dutch) can be found along those that in principle allow such structures, yet with more fine-grained additional restrictions (to which we will turn below).

Our particular angle is the following: We examine DFC-phenomena in several regiolectal varieties of Dutch and German. Such varieties show clear signs of convergence between traditional base dialects and the respective standard languages (Schmidt and Herrgen 2011; Kehrein 2012), which can even lead to typical regiolectal features (Cornips 2006). To this end, we gathered data from over 1500 speakers all over the Netherlands<sup>2</sup> using an internet-based questionnaire. Additionally, we also included two very broad dialect regions in the German-speaking area (Bavarian, West Central German, mainly represented by Cologne), yet (unfortunately) with significantly fewer informants (around 50). Participants were asked to rate sentences for acceptability/naturalness

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1 Take polar questions (*yes/no*-interrogatives) as an example, which have been studied comparatively well: In the respective sample of the *World Atlas of Language Structures* (WALS), which features 955 languages, only a small minority express this sentence type via word order variation. What is more, with very few exceptions these languages are all restricted to Europe (cf. <http://wals.info/chapter/116> [last accessed on 31 January, 2018]).

2 Our warm thanks go to the *Meertens Instituut* (Amsterdam) for allowing us to use their informant pool.

on a 4-point scale. Factors manipulated in the 16 experimental conditions were argument vs. adjunct, case marking, animacy, and complexity (pronominal vs. phrasal). Our results yield the following conclusions:

- Beside the well-known factor of phrase-structural complexity, the syntactic function of the wh-item (in particular subject/object vs. adverbial) and in particular semantic factors like animacy also have a robust influence on the overall acceptability of DFCs. This influence, however, may manifest itself in different directions in both languages.
- With regard to German, there are clear areal differences with regard to the acceptability of DFCs in that the Bavarian regiolect (with a stronger dialectal background) also shows a much higher acceptance of this phenomenon than the West Central German regiolect we observed. Note that in the traditional base dialects, DFC-structures can be observed all over the German-speaking area (Weiß 1998, 2017).

In the following, we will restrict ourselves to embedded questions with an additional complementizer (mostly *dass* ‘that’, in Dutch also *of* ‘if’). We are aware that DFCs occur in several other contexts (e. g. relative clauses,<sup>3</sup> which deserve their own thorough investigation, yet such a task is way beyond the scope of the present contribution.

The rest of the paper will be organized as follows: First, we will give a brief overview of some comparative and diachronic aspects of this phenomenon (section 2). We will show that DFCs occur mainly in (Continental) West Germanic and Alpine Romance varieties (e. g. Rhaeto-Romance), with certain overlaps to North Germanic (Norwegian) and South Slavic (Slovenian) that suggest some kind of sprachbund. However, DFCs are also found in certain other languages (e. g. Portuguese, Arabic) so that it is reasonable to assume that this phenomenon is polygenetic and reflects a deeper organization principle in the structure of the left periphery. Turning to diachronic aspects, a parochial look at older stages of German and English reveals that DFCs in this particular context can be found in the middle stages of the respective languages (Middle High German, Middle English) and have been robustly attested ever since. On the basis of our survey of different DFC-varieties, we take a closer look at different factors that have an influence on the presence or absence of an additional complementizer (section 3). Microparametric options that come into play are, among others, the distinction between root vs. embedded clauses, type of wh-expression, etc. Then, we will present the results from our empirical study on German and Dutch and compare the findings for these languages (section 4). As an additional source of comparison (for German), we take into consideration the *Zwirner* corpus, which we also used in section 2 as a means of gaining information about the areal distribution of this phenomenon in the German dialect landscape. The following section is devoted to theoretical aspects, in particular the question as to what a satisfying analysis of DFC phenomena, as encountered in embedded questions, should look like. We start by pointing out the theoretical relevance of this phenomenon and reviewing several previous analyses, most notably the one by Bayer and Brandner (2008, 2010) since it has the most far-reaching implications. On the basis of our findings, we discuss which ingredients are necessary for an empirically adequate version of the DFCF. We state these components in a constraint-based fashion, namely in the framework of *Head-driven*

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<sup>3</sup> For a typological investigation into relative clauses in different German dialects see Fleischer (2004, 2005).

*Phrase Structure Grammar* (HPSG), and offer some additional thoughts on parameterization in terms of Optimality Theory (OT). The final section of our paper summarizes our findings.

## 2. Comparative and diachronic aspects

Even though DFCs are primarily known from varieties of German and Dutch, this phenomenon is not restricted to these two language groups. In fact there is indication that it is quite common within the West Germanic languages, with overlaps to North Germanic, Romance and even South Slavic.

### 2.1. DFCs in the Germanic languages

For the closely related Continental Germanic languages Dutch, Belgian Dutch (Flemish), and Frisian, DFCs are robustly attested, both in relative clauses and embedded questions (see e. g. Barbiers et al. 2005b: 16–17, Barbiers et al. 2005a, Haegeman 1992: 53–59). Thus, the following example, taken from Dutch Low Saxon, can be viewed as representative.

- (2) Hou dat e 't kloar kregen het, wait ik nait (Dutch Low Saxon)  
 How that he it clear got.PTCP has know I not  
 “I don’t know how he managed it.”  
 (Ter Laan 1953: 110)

In Frisian, the situation is somewhat mixed: While DFCs are quite common in West Frisian, they are rare in North Frisian. The examples in (3), which are quoted from Hoekstra (2001a: 783–784), all come from the same source, namely Johannsen (1862).

- (3) North Frisian:
- a. God hi wishat a Könnangh, wat dat'r vöörhää (John 229)  
 God he shows the king what that=he intends  
 “God shows the king what he intends.”
  - b. Her, ik hâ vâ Völlan hiard vâ diddiarem Mân, hû völ Iaragh dat hi  
 Lord I have from many heard from this man how much evil that he  
 din Hallagan den hea uun Jerusalem (John 208)  
 your saints done has in Jerusalem  
 “Lord, I have heard many reports about this man and all the harm he has done to  
 your holy people in Jerusalem.”

Note that West Frisian uses the complementizer *oft* for both embedded polar and additive questions. This element can be, according to Hoekstra (2001b: 96), analyzed as the amalgamation of *of* ‘whether, if’, and *-t*, the clitic form of the complementizer equivalent to ‘that’. Interestingly, the first element can be deleted optionally as long as a *wh*-item acts as the clitic host for the second element, so that we get doublettes like ... *wa oft it dien hie* ‘who had done it’ and ... *wa’t it dien hie*.

Luxemburgish also shows this phenomenon, as can be verified with the corpus examples in (4). They were provided to us by Caroline Döhmer, together with proper translations. In dialect-syntactic terms, this is to be expected since the neighboring (and closely related) Moselle-Franconian dialects are also known to have DFCs in embedded questions (see section 2.4 for a more thorough discussion). As of now, very little is known about the exact syntactic properties of embedded questions in Luxemburgish; some further information can be expected from the investigation by Döhmer (2017), but as of now, we have no access to this work.

(4) Luxemburgish:

- a. Si hunn eis keng Informatiounen ginn, firwat datt si net kommen.  
they have us no information.PL given why that they not come  
“They gave us no information as to why they would not come.”
- b. Do muss ech wëssen, wouhier dass déi Präisser kommen.  
there must I know where that the prices come  
“For this, I need to know where the prices come from.”

Despite its somewhat exceptional status within the (West-)Germanic languages, even English shows DFC-effects (Zwicky 2002), yet with putative idiosyncratic distributional restrictions, as evidenced by the examples in (5). As Zwicky (2002: 227–230) notes, an additional complementizer does not occur with simplex (i. e. word-sized) *wh*-expressions, contrary to what is known from the other Germanic languages that display this phenomenon. What is more, it is restricted to embedded questions, exclamatives, and certain types of concessive clauses (see Zwicky 2002: 224). These generalizations have recently been put into question by Radford (2013: 28–30) who cites several examples of DFCs with simple *wh*-items and with relative clauses.

- (5) a. I’m not sure *what kind of ban that* FIFA has in mind  
(Bert Millichip, BBC radio 4; quoted from Zwicky 2002: 221)
- b. “I am pleased and frankly surprised at *how soon after the hearing that* the judge approved it,” said Mary Stowell  
(New York Times story, p. B2, 7/25/98; quoted from Zwicky 2002: 222)

Of the major West Germanic languages, only Yiddish does not seem to show this phenomenon (Molly Diesing, p. c.), despite its close relation to, and shared history with, German. In section 3, we will suggest that this fact might be connected with the availability of multiple *wh*-fronting in this language, which has been taken as evidence for Slavonic influence (see Rudin 1988 and Diesing 2003 for some discussion). On the other hand, there is evidence that DFCs reach beyond West Germanic. Hints of this phenomenon can be found in North Germanic languages like Norwegian (Magnus Birkenes, p. c.), yet the exact properties remain unclear (and have to be left to future investigations). A short survey on DFC-phenomena in several North Germanic languages can be found in Larsson (2014) who states the following distributional facts: For Mainland Scandinavian, embedded *wh*-clauses containing a subject gap usually have the relative complementizer *som* (6a), which seems to be only marginally possible outside this context. With other *wh*-dependences, *at* ‘that’ (and respective cognate variants) seems to be possible in

principle, cf. e. g. (6b). The latter phenomenon is attested in Icelandic, many parts of Norway, to a lesser extent also in Swedish and only locally in Danish (Als, Bornholm, Eastern Jutland, and Flyn) (Larsson 2014: 449, 452, 464).

- (6) a. Jeg forfalte Jan hvem som var kommet (Norwegian)  
 I told John who that had come  
 “I told John who had come”  
 (Taraldsen 1978: 631, fn. 14; example quoted by Radford 1988: 501)
- b. Var i tåka på denne toppen og, hvor at utsikten var redusert  
 (I) was in fog on this mountain top also where that outlook=the was limited  
 “I was also on this mountain top in the fog, where the outlook was limited”  
 (<http://fjellforum.net/viewtopic.php?t=9384> [last accessed on 31 January, 2018])

## 2.2. DFCs in other languages

Turning to the Romance languages, it is interesting to note that several of the “alpine” varieties show violations of the DFCF. Perhaps best investigated are several Northern Italian varieties like e. g. Fassanian, Friulian or Venetian. The other prominent group would be Ladinian and/or Rhaeto-Romance<sup>4</sup> (see e. g. Poletto 2000, Hack and Kaiser 2013). For the sake of illustration, we quote the following examples, which are all taken with the respective sources given in Hack and Kaiser (2013: 147–148):

- (7) a. Domonda=m tuot quai cha tū voust.  
 ask=me all what that you want  
 “Ask my anything you like.”  
 (Vallader; Hutschenreuther 1909: 189)
- b. El damonda contas gadas che nus haveien fatg quella excursiun  
 he asks how many times that we have made this excursion  
 “He’s asking how many times we have made this excursion”  
 (Sursilvan; Spescha 1989: 550)
- c. Non sai là che la mamma à crompat li rosis  
 not know where that the mom has bought the flowers  
 “I don’t know where mom has bought the flowers.”  
 (Western Friulian; Atlante Sintattico d’Italia [ASIt]<sup>5</sup>)

As Hack and Kaiser (2013: 147) report, DFCs and subject-verb inversion in embedded clauses are in complementary distribution in almost all cases, as would be expected from the Germanic perspective. Some apparent exceptions (e. g. in Friulian, but also in Rhaeto-Romance) can be explained differently in that subject clitics came to be grammaticalized in postverbal position and were even extended to root clauses (cf. Hack and Kaiser 2013: 150–151).

A look at the more fine grained distributional facts reveals some similarities, but also important differences to Germanic (see Hack and Kaiser 2013: 149–150): Some varieties show compul-

4 In this contribution, it is not our intent to comment on the so-called “questione Ladina”, i. e. whether Ladinian, Friulian, and Rhaeto Romance form distinct, albeit closely related, branches within the Gallo-Romance group.

5 See <http://asit.maldura.unipd.it/> [last visited on 31 January, 2018].

sory filling of the complementizer position (Ladinian, Friulian) while it is optional in others (Ferraresian). Orthogonally, more subtle restrictions can come into play with certain types of *wh*-expressions or in specific syntactic contexts (depending, for example, on the exact position of the subject): In Sursilvan, for example, DFCs seem to be very uncommon with *cu(ra)* ‘when’ and *co* ‘how’ (Spescha 1989: 559). Remarkably—and this is the key difference to Germanic—DFCs can also occur in root questions in Romance, as the following examples show:

- (8) a. Chi ch a fasi ades? (Forlì)  
 what that Q do now?  
 “What are you doing now?”  
 (Poletto 2000: 44)
- b. Kuj ku tu as dit? (Friulian)  
 what that you have said  
 “What did you say?”  
 (Hack and Kaiser 2013: 152)

According to Poletto and Vanelli (1997: 111–112), there is an implicational relationship between DFCs in the different sentence types—the effect only occurs in those varieties where it is also attested in embedded clauses.<sup>6</sup> Most interestingly, however, in all these cases no subject-verb inversion occurs so that they are also structurally set apart from the DFC examples in embedded clauses we have dealt with so far. Note, in this context, that also in Germanic, DFCs can be found in root contexts, but only in exclamatives and with verb-final order (see section 3).

To our astonishment, we could also find examples for DFCs (in embedded questions) in South Slavic languages like Burgenland Croatian (9a) or Slovenian (9b)—in the latter example also in partial *wh*-movement contexts.<sup>7</sup>

- (9) a. Zna-m, koga da je prehinjio. (Burgenland Croatian)  
 know-1SG who.ACC that is betrayed  
 “I know who he betrayed.”
- b. Kaj praviö, kdo (da) je priöel? (Slovenian)  
 What say, who COMP AUX came?  
 “Who are you saying came?”  
 (after Marušič 2008: 414, ex. (17))

Marušič et al. (2015) discuss examples like (10) as potential counter examples to Merchant’s (2001: 62) *Sluicing-COMP generalization*, which states that only operator material is allowed in CP in sluicing contexts. In Slovenian, certain discourse particles, but also the unmarked complementizer *da* ‘that’ can survive sluicing. Again, we lack any substantial expertise in these languages, but we take the evidence we stumbled upon to be quite convincing that DFCs exist in Slavic languages coterritorial with the respective Germanic varieties.

6 DFC structures in root contexts have been reported for Canadian French (Québécois) (Hack and Kaiser 2013: 143). However, we could find no examples for embedded clauses. If it turns out that this observation is correct, the purported connection between embedded and root clauses would be falsified.

7 We thank Luka Szuczich (HU Berlin) for providing us with the Burgenland Croatian datum, Franc Marušič and Rok Zaucer (University of Nova Gorica) for patiently answering our inquiries, and Anikó Lipták (University of Leiden) for having drawn our attention to this phenomenon in certain Slavic languages.



- (10) Slišal sem, da je Peter videl nekoga. Koga da? (Slovenian)  
 heard AUX that AUX Peter saw someone. Who that  
 ‘I heard Peter saw someone. Who ⟨did he see⟩?’  
 (Marušič et al. 2015: 48)

The evidence for DFCs we adduced from Slovenian and Burgenland Croatian, from Germanic varieties like Alemannic and Bavarian, and the different Alpine Romance varieties seems to suggest that we are dealing with a common structural property of areally adjacent varieties. These findings are quite unexpected because for the other branches of the Slavonic languages, in particular Eastern and Western Slavic, this phenomenon does not seem to be attested. Note also in this respect that contact with Germanic varieties does not necessarily entail the spreading of DFCs. Sorbian, for example, does not show DFCs in the relevant context despite quite heavy contact (Lenka Scholze, p.c.).

A potential common denominator for this astonishing structural parallel between the languages and varieties reported in this section can be found in Seiler (2004), who brought the term *Alpensprachbund* ‘Alpine sprachbund’ into discussion. His point of departure was the observation that several language groups in the Alpine regions of Central Europe show interesting correspondences in their morphosyntactic outfit. The most striking example for such a relationship is *Prepositional Dative Marking* (PDM), which can be observed in Alpine varieties of Upper German (Alemannic, Bavarian) as well as neighboring Romance varieties, e.g. Friulian. Strikingly, the respective forms can also be related diachronically to dative forms, contrary to the more common accusative forms (*à père* < *ad patrem* ‘to the father’), which would be expected in that they correspond to the common grammaticalization cline after which directionals are reanalyzed as benefactives, viz. indirect objects. The interesting point is that this phenomenon cannot be satisfactorily interpreted as the product of an adstrate relationship, but rather as a common structural innovation (Seiler 2004: 490). This fits with the observation that the area with PDM stretches in both directions across the Germanic-Romance language border.

At the end of his article, Seiler (2004: 491) makes the following remark:

Insbesondere stellt sich bei einer weiteren Ausarbeitung dieses Ansatzes die interessante Frage, welche bislang nicht berücksichtigten Sprachen und Dialekte zusätzliche Evidenz liefern für eine Alpensprachbund-Hypothese, etwa das Lombardische, das Piemontesische oder das Slowenische und seine Dialekte. Dadurch könnte die Dialektologie einen wesentlichen Beitrag leisten zum aktuellen Forschungsgebiet der Arealtypologie (...).

“Upon further elaboration of this approach, the interesting question emerges as to which languages and dialects, which have thus far not been considered, might provide further evidence for the Alpine sprachbund hypothesis, for example Lombardian, Piemontese or Slovenian and its dialects. With this, dialectology could make a significant contribution to the current research area of areal typology.”

We believe that this is also an intriguing perspective on the DFC-phenomena we have been discussing, the overlaps being quite suggestive. Further evidence for a structural property shared

by all three language groups in this area comes from interrogative particles. This phenomenon is robustly attested in Northern Italian varieties (see Hack 2012), a typical example being quoted in (11), as well as Slovenian (Priestly 1993: 430).

- (11) *Compra pa la mutans versura?* (Ladinian: Gröden valley)  
 buy Q the girls fruit  
 “Are the girls buying fruit?”

In the latter case, one might also want to consult the respective chapter in the *World Atlas of Language Structures*, which shows that question particles are not only the most common way of marking polar questions world-wide, but are also very common in Eastern and Southern European languages. Strikingly, (Standard) German and (Standardized) Romance belong to those languages using a rather rare device to mark (polar) questions, namely verb order.<sup>8</sup> But also in Southern Bavarian such question particles can be found—both in polar questions (12a) and constituent questions (12b), a fact that has not been fully acknowledged until now.<sup>9</sup> As Pohl (1989: 64), from which source the examples below are quoted, notes, the question particle *a* is widely attested in Southern Bavarian. Other sources we consulted, first and foremost Weiß (2013) on sentence types in dialects, do not mention this phenomenon in other German dialects, but it may just be that it has slipped dialectological scrutiny until now. Whether or not question particles constitute a common innovation of the Alpine varieties or can be merely viewed as a contact-induced phenomenon, cannot be answered at this point in time.

- (12) Carinthian (South Bavarian):
- a. *a we:r khimp(t)'n dâ*  
 PRT how comes=MP here  
 “Who is coming?”
- b. *a khe:man Se hait?*  
 PRT come you today  
 “Are you coming today?”  
 (Pohl 1989: 65)

A challenge for the Alpine sprachbund hypothesis is the observation that DFCs also seem to occur in certain varieties/registers of French, most notably in *Québécois*, cf. (13). However, there could be an alternative explanation for this phenomenon, namely deletion of *est-ce* (which is historically derived from the copular part of a clefting structure). Thus, an example like (13a) would be shorthand for: *Qui est-ce que tu as vu?*

- (13) a. *Qui que tu as vu?* (Canadian French)  
 who that you have seen  
 “Who did you see?”  
 (Hack and Kaiser 2013: 143, ex. (18a))

<sup>8</sup> See <http://wals.info/chapter/116> [last visited on 31 January, 2018].

<sup>9</sup> We would like to thank Jürg Fleischer for drawing our attention to the Southern Bavarian data.

- b. Où que tu vas?  
 where that you go  
 “Where do you go”  
 (quoted from Schönenberger 2010: 35)

An explanation along those lines has also been proposed for Brazilian Portuguese<sup>10</sup> where *é que* ‘is that’ can be shortened to *que*, thus inducing an apparent DFCE-violation (14a). Note that in Portuguese, unlike French, the cleft can optionally agree with the *wh*-sentence in temporal reference (14b). However, Miotto and Figueiredo Silva (1995) have shown that these two patterns cannot be directly associated so that DFCEs are a construction in its own right, at least in Brazilian Portuguese: “The most natural *wh*-question in BP [= Brazilian Portuguese; O.S., A.D., J.P.] shows a Doubly-Filled Comp” (Miotto and Lobo 2016: 278).

- (14) a. O que que Joana comeu? (Brazilian Portuguese)  
 What that Joana ate  
 “What did Joana eat?”  
 b. O que que è/foi que Joana comeu?  
 What that is/was that Joana ate  
 “What is it that Joana ate”  
 (Miotto and Lobo 2016: 278)

Pending further research on the genesis of this phenomenon in the Romance varieties of the Americas, it is safe to say that DFCEs are most prominent in Alpine Romance. This might suggest a contact-induced spread of this phenomenon. However, the assumption that DFCEs are some sort of sprachbund phenomenon is further challenged by the fact that such effects are also reported for several other languages, most notably from Arabic and modern Hebrew (Ivrit), both belonging to the Semitic group (cf. Penner and T. Bader 1995 and the literature quoted there). Thus, it might be the case that it is a polygenetic property of certain *wh*-dependencies which stems from different diachronic sources and shows diverse patterns of areal diffusion. Its prominence can be taken as a clue of a more general syntactic process, e. g. avoid verb movement in certain syntactic contexts (cf. Grimshaw 1997, who suggests an OT-constraint in this direction, NOLEXMVT).

### 2.3. A short note on diachronic aspects

For lack of any substantial research on DFCEs in older stages of the languages in focus, we can only offer some remarks and sketchy observations. Starting with English, perhaps the best documented (West) Germanic language, the earliest examples for DFCEs in embedded questions (and relative clauses) date back to the Middle English period (ca. 1150–1500), in the context of relative clauses even back to the Old English period, see e. g. the examples and sources quoted in Lightfoot (1979: 322) or Radford (1988: 486). On the grounds of the apparent distributional

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<sup>10</sup> We are very grateful to Georg Kaiser (Konstanz) for drawing our attention to the Portuguese data and valuable input on DFCEs in Romance.

differences between the two respective stages, Zwicky (2002: 234) claims that there is no diachronic continuity between Middle English and Modern English because DFCs in the latter are restricted to wh-items accompanied by an overt lexical head (N or A) whereas the older stages typically involve simplex wh-items. He even goes so far as to state that “modern English WH+that clauses are quite unlike their apparent forebears from 500–1000 years ago, and quite unlike their easy-to-find look-alikes in other languages, Indo-European or otherwise” (Zwicky 2002: 232). To our minds, this conclusion is unwarranted, for at least two reasons: First, it seems to be based on very few examples and thus may lack a proper empirical foundation. Second, differences in the acceptability of the complementizer due to the morphosyntactic form and function of the wh-items involved are common and well-known from the other DFC languages. In fact, they can be viewed as a microparametric option, as we shall argue in section 3.

As for older stages of (High) German, the situation presents itself as follows (see also Behaghel 1928: 149–151 for a collection of High and Low German examples of DFCs from different eras):<sup>11</sup> The earliest examples we could get a hold of come from the Middle High German period, which might be accidental given the limitations of the textual evidence from Old High German. Even though this phenomenon is not mentioned in the *Mittelhochdeutsche Grammatik* (‘Middle High German Grammar’; cf. Paul et al. 2007), the descriptive gold standard for that matter, we came across relevant examples in the *Mittelhochdeutsche Begriffsdatenbank* (‘Conceptual database of Middle High German’) hosted by the University of Salzburg.<sup>12</sup> Despite the fact that this repository also includes texts whose oldest extant manuscripts are much younger,<sup>13</sup> it has the benefit that it is at least partially annotated (POS-tagged), so that more precise searches are possible. With the query <IPA>&w\*, daz we soon got hold of relevant examples, see (15), however not from the “canonical” texts (e. g. the *Nibelungenlied* or courtly romances in general), which are known for their highly artistic (and perhaps somewhat “artificial”) language. Even though this is a very preliminary result, we want to add that we could only find examples of adverbial wh-expressions or wh-determiners.

(15) Middle High German:

- a. Lancelot fraget sie    warumb das sie    weynden  
Lancelot asked them why    that they cried  
“Lancelot asked them why they were crying.”  
(Prosalancelot 1, p. 628, l. 26)
- b. Er sprach zu in:    ir    habt vernomen / Wie daz mein vater erslagen ist.  
He spoke to them you have heard    how that my father slain is  
“He spoke to them: ‘You have heard how my father was slain.’”  
(Wernigeroder Alexander, l. 604–605)

From the Early New High German period onwards, there is sporadic, yet solid evidence for this construction, for example in the works of the famous poet Martin Opitz (see also Paul 1920: 250);

11 If not for the suggestion of Helmut Weiß, we would have overlooked this obvious source.

12 This data base can be accessed via the URL <http://mhdadb.sbg.ac.at/> [last accessed on 31 January, 2018]. Another MHG example of this construction is quoted in Bayer (2004: 61).

13 See Fleischer and Schallert (2011: ch. 4) for a general discussion on problems related to the actual written record of older stages of German.

(16) is particularly interesting because it features two early instances of root wh-exclamatives.<sup>14</sup>

(16) Early New High German:

a. Wo das er ligt und geht, ist gantz ihm zuegethan  
where that he lies and goes is completely him obliged  
“Where he lies and goes is completely up to him”  
(Opitz [1624], p. 184, l. 360)

b. Wie daß doch er / mein Werther! schreiben kan  
how that MP he my Werther write can  
“How artfully does he, my Werther, write!”  
(Maria Katharina Stockfleth: *Die Kunst- und Tugend-gezierte Macarie*. First printing: 1669–1673)

Turning to Low German, the general situation seems to correspond to the one in High German: The oldest examples we encountered come from the Middle Low German period, around the middle of the 15th century and from the Westphalian area.<sup>15</sup> As the examples below show, both simplex (17a) and complex (17b) wh-expressions can be found, but any further statements about the empirical situation in these varieties must be left to future research.

(17) a. und oick hebn se sick lichte en weynich bedacht, wu dat se dat anklyven  
and also have they REFL perhaps a little pondered how that they that accomplish  
wolden (Middle Low German)  
would  
“and also they may have perhaps spent a little thought on how they would accomplish that”  
(Joh. Veghe, ed. Josten 1883, p. 2, l. 30.)

b. Vn(de) hijr by moghe ghi kort vynde(n) wat boeke ofte wat materien  
and here with may you short.ADV find what books or what materials  
dat ghi heb(-)ben wilt.  
that you have want  
“and with this, you may soon find what books or what materials you want to have”  
(Spiegel der leyen; Münster, 1444; 4v)

To conclude our short diachronic overview on DFC, we can also observe this phenomenon in Middle Dutch and in both contexts where it is also reported for Modern Dutch, i. e. in relative clauses and embedded questions (data from Stoett 1977 [1889]: 225, § 318 where this phenomenon is explicitly addressed):

(18) Middle Dutch:

14 This example is taken from the historical corpora of the *Reference Corpus of German* (DeReKo); see <http://www.ids-mannheim.de/cosmas2/> [last accessed on 31 January, 2018].

15 Thanks to Anne Breitbarth (Ghent) and Svetlana Petrova (Wuppertal) for sharing the quoted examples with us. A fully-fledged investigation on DFCs in Older Low German will undoubtedly benefit from the *Corpus of Historical Low German* that is currently being set up at the University of Ghent. See the project website at <http://research.flw.ugent.be/en/projects/chlg> [last accessed on 31 January, 2018] for further information.

- a. Dat ghi moghet sien ende horen, wanen dat ghi sijt gheboren  
that you may see and hear, whence that you are born  
“that you can see and hear who your forefathers were”
- b. Der vrouwen vrageden si welke noot dat=se brochte daer ter stede  
the woman asked them which necessity that=them brought there to=the city  
“The woman asked them which necessity brought them to this city.”

As these examples suggest, there seem to be no apparent restrictions on the *wh*-items involved, yet once again figuring out the details has to be left to future research.

## 2.4. The areal distribution of DFCs in Dutch and German

As we saw in the preceding section, DFCs are robustly attested since the Middle High German as well as the Middle Low German period, and this situation is also reflected in the contemporary dialects. Even though DFCs, in particular in the context of embedded questions, are mainly associated with Upper German dialects like Bavarian or Alemannic, this phenomenon can also be observed in the other major dialect groups, i. e. Central and Low German (see also the data quoted in Weiß 1998: 33 and Weiß 2017):

- (19) a. Kenn-Se-ma sã-che, w. Uhr daß-ma (als-ma) howwe?  
Can=you=me say how clock that=we (as=we) have  
“Could you tell me, how late it is?”  
(Southern Hessian; Maurer et al. 2002–2010: 546)
- b. ar leßt frouch, wieviel äss ma Stück künntn gerkiech  
he lets ask how.many that we pieces could.3PL-SBJV get  
“He asks how many pieces we could get.”<sup>16</sup>  
(Thuringian; Lösch et al. 1990: 1188)
- (20) German Low Saxon:
  - a. säch mik êstema, worume dat ’e kômm bist.  
tell me first why that you come are  
“First, tell me why you have come.”  
(Volquard Gonnens et al. 1993: 137)
  - b. (eines) was uns nich klor: Worüm dat dat Fleesch mank de Gänsklüt so  
one was us not clear why that the flesh makes the goose.dumplings so  
ror?  
red  
“One thing wasn’t clear to us: Why would the meat make the goose dumplings so red?”  
(Gansleweit et al. 2001: 934)

However, the existing sources we consulted almost always only give qualitative evidence and do not contain any further information, e. g. about specific distributional restrictions or the inter-

<sup>16</sup> This example is particularly interesting because it involves a *wh*-island constraint violation (the left branch condition is not fulfilled).

action with other constructions (first and foremost cases where no complementizer emerges).<sup>17</sup> What is more, no conclusion as to the exact areal distribution of this phenomenon can be drawn — at least not without much additional effort. In the hope of obtaining a more detailed picture of this dimension of DFCs in German, we made use of the Zwirner Corpus, a digitized collection of transcribed audio recordings compiled (and maintained) by the *Institut für Deutsche Sprache* (IDS) in Mannheim (see Fiehler and Wagener 2005 for some background information about the make up of this corpus), which can be accessed online via the DGD platform.<sup>18</sup> The original recordings as well as the transcripts stem from a big enquête that was conducted in the 1950s and 1960s under the supervision of Eberhard Zwirner (see Zwirner and Bethge 1958 and Bethge 1976 for some background information). This collection comprises ca. 5000 recordings from 1000 locations (cf. Schmidt and Herrgen 2011: 118) in former West Germany (Federal Republic of Germany), covering all major dialect regions of German with a grid of 16 km length. At each location, different age groups were usually included in the survey (speakers > 60 years of age, middle generation, younger speakers around the age of 20) (Zwirner and Bethge 1958: 16–17). Since we are only interested in the diatopic dimensions of DFCs at the moment, we will abstract away from this inherent multidimensionality.

With the aid of the concordance tool *AntConc*<sup>19</sup>, we extracted all relevant examples for DFCs in the Zwirner corpus. For this task, the *Institut für Deutsche Sprache* provided us with an offline-version of the corpus (in .xml/.html-format).<sup>20</sup> Since all available transcripts use Standard German as reference, there is no risk of overlooking forms with idiosyncratic or unexpected phonological shapes, which makes operating the Zwirner corpus quite easy, as all relevant forms are lemmatized, so to speak.<sup>21</sup> After annotating the coordinates of the respective locations we were able to map our results with the mapping tool of the online platform *Regionalsprache.de*.<sup>22</sup> The product of our labors can be seen in Figure 1. DFCs are robustly attested in all German dialects, and there seems to be no areal skewing with regard to the type of the wh-elements involved.

As shown by Table 1, out of a total of 128 relevant examples found in the corpus, 32 examples contained the distributional wh-item *wie viel* ‘how many’, which may be used as a wh-proform (21a) or as a determiner (21b); 46 examples feature the modal wh-item *wie* ‘how’, once again as a wh-proform (22a) or as a degree modifier (22b)—note that *wie* and *wie viel* were lumped together in the map above; 23 examples belonged to the *warum* ‘why’ type that can only occur as a pro form (22c).

17 See Fleischer (2002: 36–41) for an overview on different existing dialectological sources and their advantages and disadvantages.

18 See [http://dgd.ids-mannheim.de/dgd/pragdb.dgd\\_extern.welcome](http://dgd.ids-mannheim.de/dgd/pragdb.dgd_extern.welcome) [last accessed on 31 January, 2018]. The acronym DGD stands for *Datenbank Gesprochenes Deutsch* ‘database of spoken German’.

19 This software package can be downloaded from the following URL: <http://www.laurenceanthony.net/software.html> [last accessed on 1 February, 2018].

20 DFCs can also easily be found with the means provided by the DGD, in particular with the use of the NEAR-Operator and the wildcard-functionalities. A search string like e.g. `NEAR((warum,dass),1,false)` returns all examples for *warum dass* ‘why that’.

21 Even though the transcriptions use standard German, dialectal peculiarities in word order or morphological outfit (e.g. case syncretisms) are more or less faithfully rendered.

22 See <https://regionalsprache.de/> [last accessed on 23 February, 2018]. An overview on the sources of all maps in this article as well as the respective permalinks can be found in the appendix.

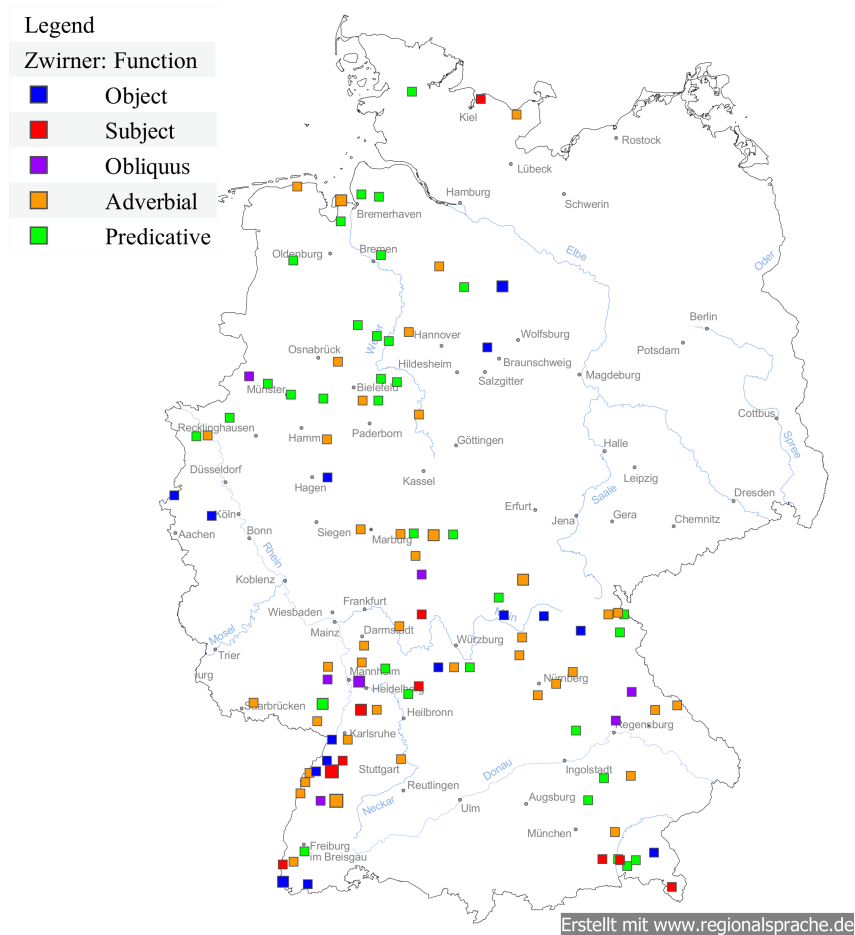


Figure 1: Areal distribution of DFCs in German dialects (Zwirner corpus)

- (21) a. Ich weiß nicht, wieviel er gesehen hat.  
 I know not, how=much he seen has  
 “I don’t know how much he has seen.”
- b. Ich weiß nicht, wieviel Bier er getrunken hat.  
 I know not how=much beer he drunken has  
 “I don’t know how much beer he’s had.”
- (22) a. Ich weiß nicht, wie er gefahren ist.  
 I know not how he driven is  
 “I don’t know what he drove like.”
- b. Ich weiß nicht, wie lange er gefahren ist.  
 I know not how long he driven is  
 “I don’t know how long he drove.”
- c. Ich weiß nicht, warum er gefahren ist.  
 I know not why he driven is  
 “I don’t know why he drove.”

The remaining examples feature *welch* ‘which’ (9 examples), usually in its function as a wh-determiner and only rarely as a pro form (e.g. *welche* ‘some’). One can add different types of wh-items as part of PPs, such as *mit wem* ‘with whom’ or *mit welch- X* ‘with which X’ as



n	wieviel	wie	warum	welch	was für	PPs
128	‘how many’	‘how’	‘why’	‘which’	‘what (kind of)’	e. g. ‘with who(m)’
	32 (25 %)	46 (35,9 %)	23 (18 %)	9 (7 %)	9 (7 %)	9 (7 %)

Table 1: Frequency of different DFC-types (Zwirner corpus)

well as cases of the *was für*-construction (9 examples each). A more thorough analysis of these corpus data beyond simple aspects of areal distribution can be found in chapter 4 where they are annotated in more detail and compared with the results of our judgment study.

Corpora of substandard varieties like the ones accessible via the DGD-platform have generally proven to be quite useful for several questions in the realm of syntax and morphology or more specific dialectological questions (see Lenz 2007 und Anderwald and Szmrecsanyi 2009 for an overview of such corpora and their applications). Unfortunately, the Zwirner Corpus shows certain limitations both in terms of its reliability as well as its empirical coverage. First, it does not contain any recordings from locations in Switzerland and from Austria (with some exceptions), so that no statements on the more Southern dialects of Upper German are possible. Of course, one can be quite safe in assuming that the broad empirical situation very much corresponds to the Alemannic and Bavarian varieties on German soil.<sup>23</sup> Much more problematic is the observation that there seem to be differences in the accuracy of the transcriptions, which show up quite readily when one compares the transcriptions with the aligned audio recordings. More often than not, dialectal structures like doubling or splitting of pronominal adverbs, particle relative clauses, etc. are rendered incorrectly or not in full detail.<sup>24</sup> Presently, we have no means of assessing the accuracy of the transcriptions, but our hunch is that such mistakes occur quite regularly and, therefore, one has to be aware that data gathered from this corpus only gives a very rough picture. Thus, our findings reflect our best try of “making the best use of bad data” (Labov 1994: 11).

So far, we have not had a closer look on the distribution of DFCs in the Dutch dialects. The *Syntactische Atlas van de Nederlandse Dialecten* (SAND) (Barbiers et al. 2005a,b) offers two relevant maps and a combined map on these phenomena. As Figure 2 (retraced from Barbiers et al. 2005b: map 16a) shows, DFCs with embedded questions are robustly attested throughout the Dutch-speaking area, variation being mainly triggered by the choice of the respective complementizers of ‘whether’ and *dat* ‘that’ or combinations of both elements, see (23). While *dat*

23 The Zwirner corpus only comprises transcripts from locations of the old Federal Republic of Germany and some former German-speaking territories in the east. There are audio-recordings for the German Democratic Republic as well, yet they don’t seem to have been included in the electronic corpus. With very few exceptions (e. g. a bulk of recordings from Vorarlberg), it also lacks any material from Switzerland and Austria. A catalogue of all extant recordings of the Zwirner survey was published by Haas and Wagener (1992a,b).

24 To give one concrete example: On the basis of Zwirner data (among other sources), Spiekermann (2010) argues that the doubling construction with pronominal adverbs is attested much farther in the Northern varieties than previously assumed in the literature (e. g. Fleischer 2002). While this might be true for some of the regiolectal evidence he provides, the comparatively few data quoted from Zwirner is not convincing. I checked several of these examples with the corresponding audio recordings and found that they were incorrectly transcribed as doubling constructions when in fact they turned out to be instances of regular (i. e. unsplit) pronominal adverbs.

is prominent in the south (Flemish-speaking parts) and the north-west (in particular the Frisian regions), *of* is the typical variant in the central and north-eastern regions. Combinations of both complementizers are scattered throughout the area of investigation, though they are mostly absent in the south-western regions. If we take Figure 3 into consideration as well (retracted from Barbiers et al. 2005b: map 17a), which features a combined map of DFCs with embedded clauses and relative clauses, a very clear pattern emerges: Even in those regions that eschew DFCs in relative clauses (mostly the central regions), they do indeed pop up in embedded questions.

- (23) Vertel maar niet wie (of) (dat) ze had kunnen roepen. (Dutch)  
 tell just not who (if) (that) she had can call  
 “You’d better not tell her who she could have called.”  
 (after Barbiers et al. 2005b: 16)

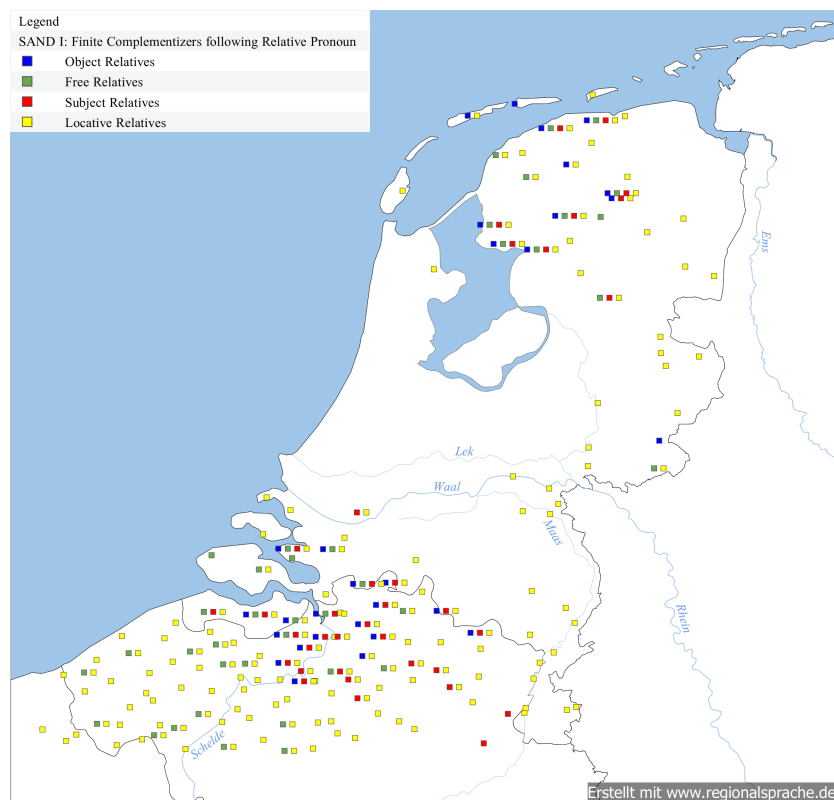


Figure 2: DFCs in relative clauses

A comparison with the SAND data (Barbiers et al. 2005a,b) reveals that there is a somewhat loose areal contiguity of DFC-phenomena in Dutch and German dialects. On the basis of the data on other varieties presented in this section we can safely say that this phenomenon is a genuine (Continental) West Germanic property with some overlaps into neighboring languages/varieties (Romance, Slovene), which might be taken as evidence for some sort of Alpine sprachbund.

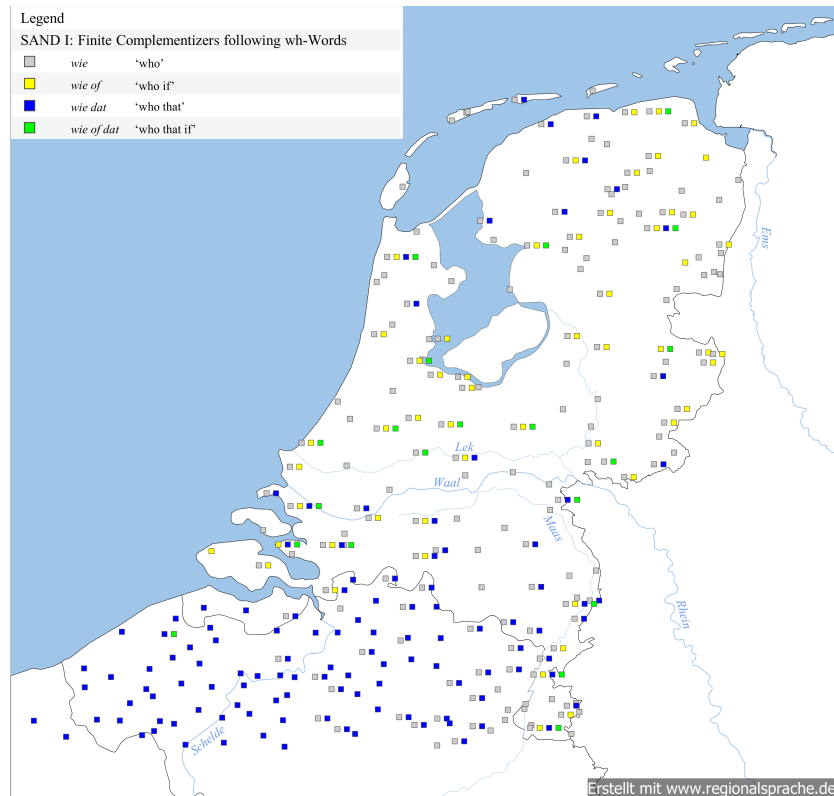


Figure 3: DFCs in relative clauses and embedded wh-clauses (combined maps)

### 3. Microparameters with DFCs

Our comparative discussion has shown that DFCs show quite a high degree of microvariation. In particular, we have found evidence for the following microparameters (Kayne 1996), some of which have already been addressed:

1. Root vs. embedded clauses (e. g. blocking of inversion in embedded contexts in Romance, but root DFCs).
2. Type of the wh-expression (simple vs. complex wh-phrase, syntactic function of the wh-phrase, animacy).
3. (Embedded) wh-clauses and/or relative clauses; complementary distribution with infinite clauses and/or clauses without verb movement.
4. Type of the complementizer (featureless declarative complementizer, polar interrogative complementizer, etc.), co-occurrence of several complementizers in the left periphery.
5. Availability of sluicing (e. g. in Slovenian) and other C-related phenomena.

#### 3.1. Root vs. embedded clauses

Since we have dealt with some of these differences only very superficially, some further remarks are in order. The first distinction aims at the availability of DFCs in root and/or embedded

questions. As discussed in section 2.2, most Romance varieties allow for both types, whereas we could find no hints for “true” matrix questions with DFCs in most Germanic varieties. Apparent exceptions like (24) seem to be restricted to more specific pragmatic functions, like e.g. deliberative questions. Apart from Frisian, Radford (1988: 501) quotes evidence DFC root questions from several other languages, namely colloquial French, Moroccan Arabic, and Irish. We leave these issues to further research.<sup>25</sup>

- (24) Wat oft ik drinke woe? (West Frisian)  
 What whether I drink would?  
 “What would I drink?”  
 (de Haan and Weerman 1986: 98)

On the other hand, there is some indication that there are indeed wh-dependencies (operator dependencies) that show DFCs with root clauses, e.g. exclamatives, cf. (25). Since (additive) exclamatives can both occur with verb-second or verb-final order in German (Altmann 1993: 1026–1027; Näf 1992), this state of affairs is not altogether unexpected. Once again, there is a strict complementarity between verb movement and the presence of the complementizer *dass* ‘that’.

- (25) a. bie hüsch daß der Baam blüeht! (East Central German)  
 how beautiful that the tree blooms  
 “How beautifully the tree blooms!”  
 (Lösch et al. 1990: 1189)
- b. wie schöne dät dät Flas blöht! (East Low German)  
 how beautifully that the flax blooms  
 “How beautifully the flax blooms!”  
 (Gansleweit et al. 2001: 934)

A short note on the diachronic development: Exclamatives are crosslinguistically held to be a typical case of *insubordination* (Evans 2007; cf. also König and Siemund 2013: 863–64), with their development corresponding to the steps depicted in (26). Thus, DFCs in exclamatives can be taken to be a sign that in terms of (some of) their syntactic properties, their origin from subordinated structures is still visible, even though pragmatically they are really independent structures (in terms of their illocutionary force).

- (26) subordinated construction > ellipsis of the matrix clause > narrowing of interpretation  
 > reanalysis as independent matrix clause  
 (Evans 2007: 370–376)

<sup>25</sup> Jarich Hoekstra (message from 16 May, 2016) notes that the Frisian example Radford quotes can only be used quotatively as a matrix sentence, in contexts like the following: *The waitress came to my table. What I wanted to drink?* This notwithstanding, DFCs are licit in deliberative (matrix) questions like (i).

(i) Hoe oft er dat wol hân hat?  
 how if he that MP had.PCPT has  
 “How did he do it?”

### 3.2. Type of the wh-expression

The second parameter is the most complex one, and lies at the heart of the present paper. Since it is discussed in length in section 5, we will only make some general remarks here. As has become apparent in the preceding section, there are differences in the acceptability of different types of wh-expressions and the presence of a complementizer (see p. 8 on Romance). With respect to the German dialects, it has often been noted, for example, that “short” wh-items seem to be marked in comparison to “long” ones, which indicates a processing-related effect (Weiß 2004: 24). Other approaches like Bayer and Brandner (2008, 2010) regard the morphosyntactic properties of the wh-item as the crucial factor, with morphologically less specified wh-items being more complementizer-like (or, in syntactic terms, X<sup>0</sup>s), morphologically more complex ones being like phrases.

Morphosyntactically triggered effects have their parallelism in relative clauses: As Fleischer (2004) shows in his (micro)typological study on German dialects, different relativizing strategies can be observed, depending on the syntactic function being relativized on. These differences can be expressed in terms of the *Accessibility hierarchy* of Keenan and Comrie (1977; 1979), as quoted in (27), where SU = subject, DO = direct object, IO = indirect object, OBL = oblique, GEN = possessor, and OCOMP = object of comparison.<sup>26</sup>

(27) SU > DO > IO > OBL > GEN > OCOMP (Keenan and Comrie 1977: 66)

We will take the situation in Alemannic as an example: As has been repeatedly noted in the literature, the SU and DO relations favor or even force the presence of a relative particle (typically *wo* ‘where’) with no accompanying relative pronoun bearing case features, from the IO relation downwards alternative primary strategies like resumption (28) or additional relative pronouns emerge. Thus, there is a switch from a [-case]- to a [+case]-strategy (see Fleischer 2006: 226).

(28) Lüüt, wo me ne mit em beschte wile nüd cha hälffe (Zurich German)  
people PART one them.DAT with the best intention not can help  
“People one cannot help even with the best intentions”  
(Weber 1987: 299)

Whether there is a connection between the availability of multiple wh-fronting and the presence of a complementizer is difficult to assess at present. The fact that most Slavic languages have the former property, yet lack the second one, points in this direction. As already noted, Yiddish has multiple fronting both in matrix (29a) and embedded questions (29b), which can be seen as a clear interference from the coterritorial Slavic languages. On the other hand, Slovenian shows that both properties need not be mutually exclusive, even though this might as well be an influence in the other direction, so to speak (Alpine sprachbund, cf. section 2.2).

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26 In Standard German, it is impossible to relativize the OCOMP-relation. However, a colloquial example (perhaps only grammatical in the southern German regiolect that O. S. and A. D. are familiar with) featuring the relative particle *wo* and resumption would be: *Der Mann, wo ich schneller als er laufen kann.* “The man I am able to outrun.”

- (29) a. Ver vos hot gekoyft? (Yiddish)  
 who what has bought  
 “Who has bought what?”
- b. Ikh veys nit ver vos es hot gekoyft  
 I know not who what EXPL has bought  
 “I don’t know who bought what”  
 (Diesing 2003: 54, ex. (5b), 59, ex (18c))

### 3.3. Syntactic properties of the operator clause

The third parameter is closely related to the preceding one; it deals with the syntactic properties of the operator clause, in particular verb movement and a finiteness restriction. For the Continental West Germanic languages this means that embedded questions (regardless of DFC-effects) are incompatible with verb-second (or, more generally, any verb movement to the left). Conversely, in Romance and English (with a more layered clause structure), subject-verb inversion is blocked in embedded wh-questions (see Hack and Kaiser 2013: 150–153 and Zwicky 2002: ch. 2.3). This connection is at the heart of what has come to be known as “Reis’ dilemma” in the theoretical literature on German sentence structure, namely the question as to why verb movement is obligatory in root questions but ungrammatical in embedded questions (see section 5.1 for some more discussion). Apparent violations of this connection can only be observed with (some) intensional predicates, e. g. *sich überlegen* ‘ponder’ (Pasch 1991; Reis 2003: 172) or with short and very formulaic “matrix” sentences that do not impose any illocutionary restrictions on their complements (30) (Freywald 2015: 354–356). Pasch (1991: 208–209) takes (marginally occurring) embedded questions with verb-second as evidence for a distinction between wh-pronouns *sensu stricto* on the one hand and wh-complementizers with incorporated wh-pronoun on the other, the latter class only allowing the canonical verb-last pattern. As an additional factor, the selectional properties of the matrix predicate come into play. See Reis (1991: 222–223) for a critical evaluation of this argumentation. In the dialects, the situation seems to largely correspond to Standard German. Only Penner and T. Bader (1995: 105–107) discusses some cases of embedded V/2 questions in Bernese German, which, however, seem to be subject to specific semantic and syntactic restrictions.

- (30) a. Das Problem ist halt, wann setzt du es ein?  
 the problem is MP when employ you it PART  
 “The problem is: When do you employ it?”
- b. Aber Fakt ist: Warum gibt es einen Strickblog für Männer?  
 but fact is why COP EXPL a knit=blog for men  
 “But the fact is: Why is there a knitting blog for men?”

As far as we can see, DFCs are restricted to finite clauses, i. e. there are no infinite counterparts to this construction even in languages that possess the grammatical means. English and German form an interesting minimal pair for dissecting this connection. While (embedded) wh-infinitives appear heavily restricted in German (cf. the discussion in Reis 2003: 172–175), they form a productive pattern in English, as can be seen with the translational equivalents in (31). Apart

from the factive/implicative verb *wissen* ‘know’, which marginally licenses wh-infinitives in negative contexts, no other matrix predicate in German seems to be compatible with this kind of embedding—an observation that leads Reis (2003: 174) to the conclusion that it is some sort of fixed expression with some restricted analogical extensions.

- (31) a. I just don’t know what to do with myself.  
 b. ?? Ich weiß einfach nicht, was tun mit mir selber.

In English, by contrast, this type is an option for a proper subset of question-embedding predicates that allow for the infinitival wh-construction, namely those that are compatible with its modal propositional meaning (see Bhatt 2006: ch. 4; Reis 2003: 173). So, for example, verbs of relevance or verbs of conjecture (two of those predicate classes of Karttunen’s 1977 taxonomy of question embedding predicates) are compatible with finite wh-complements, but not their infinite counterparts:

- (32) a. It is important who we invite to the party / \*[who to invite to the party].  
 b. John predicted who will be invited to the party / \*[who to invite to the party].

Brandner (2004: 27) gives evidence from Alemannic showing that embedded wh-infinitivals are more productive in that they can occur with different matrix predicates. In this respect, this German variety patterns with the Romance languages. Following Sabel (1996: ch. 8), she claims that this property is connected to the availability of a general infinitival complementizer (*zum* ‘to=the’, or *für* ‘for’, for that matter) for both complement and adverbial clauses (see also Schallert 2013: section 3.3 for some discussion), which is in complementary distribution with wh-items in the relevant context. This assumption may offer a plausible link for the properties of the English system (33), yet it is refuted by the fact that Dutch, for example, also has such a general-purpose complementizer, namely *om* ‘for’, yet very much corresponds to (Standard) German in its prohibition against wh-infinitives.

- (33) I don’t know which book (\*for) to read.

### 3.4. Type of the additional complementizer appearing in C<sup>o</sup>

The fourth parameter revolves around the question as to which kind of additional complementizer appears in C (or the C-domain, for that matter). Unlike relative clauses, which exhibit a puzzling amount of complementizers (either alone or in combination with relative pronouns or “retention strategies” like resumptive pronouns), embedded questions also show variability in this respect, yet in a much more restricted way. Dialectal variants of Dutch, for example, can feature up to two complementizers in combination with a wh-element.<sup>27</sup> Thus DFC-phenomena in these

<sup>27</sup> In Bavarian relative clauses, also more than one complementizer can appear (Weiß 2013: 781, fn. 10):

- (i) dea Mā, dea wo dass des gsogd hod  
 the man who PART PART that said has  
 “The man who has said that.”

varieties have figured prominently as evidence for an enriched architecture of the C-domain either in terms of several functional projections, as originally proposed by Rizzi (1997), or in terms of different morphosyntactically active features. Bayer (2004: 66, 70, 77–78), for instance, claims that the C-domain comprises three features, namely (1) *wh*, (2) *Q* (disjunction), and (3) *C* (subordination). Languages may differ as to whether they express all three of these features with one morphological element (“morphological packing”), e. g. *wh*-morphemes in the European standard languages, or whether they split them up, e. g. Frisian [<sub>WH</sub> *wie* [<sub>Q</sub> *of* [<sub>C</sub> *dat* ...]]] ~ ‘how’ (lit. ‘how if that’). Theoretical background are Borer’s (1984) hypothesis that parametric variation is located in lexicon and morphology and Giorgi and Pianesi’s (1997) *Feature Scattering Principle*.

Instances of variation with regard to the complementizer also appear in the German dialects, in particular with embedded polar questions (see Weiß 2013: 778–779), yet to our knowledge, no combinations of different complementizers have been observed. Of course, German dialects show several complex conjunctions like e. g. *trotzdem dass* ‘even though that’ or *nachdem dass* ‘after that’, yet not in the context of *wh*-expressions; Weiß (1998: section 2.1.2) has shown that these cases cannot be treated on par with DFCs in the strict sense. Often, these complex conjunctions are derived from amalgamations of subordinators and idiomatic parts of the respective matrix clause and form an intermediary stage in the grammaticalization of simple(r) subordinators, cf. MHG *al die wile daz* ‘all the time that’ > NHG *weil* (Szczepaniak 2011: 175–178). Nonetheless, it could very well be the case that there is some kind of implicational relationship with violations of the DFCs always presupposing pseudo-DFCs (i. e. complex conjunctions). Visual inspection of several dialect dictionaries yields that also the latter type is very frequent in German dialects. But let us return to variation with regard to the complementizer: An example with the complementizer *als* ‘than’ is quoted in (35); cf. also example (19a) on page 14. Usually, however, DFCs feature the unspecific/neutral complementizer *dass* ‘that’, which sometimes can even be extended to polar questions, as (34) from an East Central German variety shows. Note, in passing, that the examples quoted by Weiß (2013) feature the C-element *wat* ‘what’, another highly unspecified and polyfunctional element in the dialects: It can introduce declarative and interrogative complement clauses (Weiß 2013: 779).

- (34) ich soll frägn, daß sie heint zu uns kommen (Thuringian)  
 I should ask that they today to us come  
 “I should ask whether they come to our house today?”  
 (Lösch et al. 1990: 1188)

- (35) Dar hot erausgebrought, in er halb vertel Stunn, wie viel als jeder  
 this.one has figured in one half quarter hour how much COMP everybody  
 kriecht, wann neñ ze daale hunn (South Hessian)  
 gets when nine to divide have  
 “This guy figured out in a quarter of an hour how much everybody gets when splitting  
 nine ways.”  
 (Maurer et al. 2002–2010: 197)



### 3.5. Sluicing

The last point concerns sluicing: With the exception of Slovenian, none of the DFC-languages we have discussed so far shows this property in sluicing contexts. Thus, example (36) from Bavarian can be taken to be representative for what Merchant (2001) calls the “sluicing-COMP generalization”, cf. (37). The problems with this generalization in Slovene (and perhaps also other languages; cf. Marušič et al. 2015) notwithstanding, there is a related phenomenon in Germanic. van Craenenbroek (2010) discusses *spading* whereby a demonstrative, crucially, however, not a complementizer, survives sluicing.<sup>28</sup>

- (36) I woass dass-a ganga is owa I woass ned warum (\*dass) (Bavarian)  
 I know that he gone-is but I know not why that  
 “I know that he left but I don’t know why”  
 (Bayer and Brandner 2010: 7)

- (37) The sluicing-COMP generalization (Merchant 2006: 281; see also Merchant 2001):  
 In sluicing, no non-operator material may appear in COMP.

As Bayer and Brandner (2010: 7–8) argue, there cannot be a direct connection between an additional complementizer in embedded questions and its presence in elliptical contexts, since sluicing is known to show unexpected properties vis à vis its apparent unelided counterparts, e. g. it can violate wh-islands and is present even in wh-in-situ languages like Japanese (see also Merchant 2001 for an overview on the relevant properties). As a corollary, both movement-based and non-movement approaches have to make additional assumptions to exclude complementizers in these contexts. Interestingly, this connection also holds for other phenomena related to the C-domain as, for example, complementizer agreement, which also appears in many Continental West-Germanic varieties (see Weiß 2005 for an overview). As the contrast between (38a) and (38b) shows, inflection in C cannot be suppressed in regular embedded questions, although it is blocked in sluicing contexts (Lobeck 1995; cf. also Merchant 2006: 282).

- (38) a. Du woidd-st doch kumma, owa mia wissn ned wann-st (du) komma woidd-st.  
 you wanted-2SG PRT come but we know not when-2SG you come wanted-2SG  
 (Bavarian)  
 “You wanted to come, but we don’t know when you wanted to come.”  
 b. Du woidd-st doch kumma, owa mia wissn ned wann (\*-st).  
 you wanted-2SG PRT come but we know not when 2SG  
 “You wanted to come, but we don’t know when.”  
 (Lobeck 1995: 59)

### 3.6. Some reflections on the interaction between micro- and macroparameters

This section showed that embedded wh-clauses show a high degree of variability with regard to the presence of an additional complementizer. From a broader typological perspective, however,

<sup>28</sup> The term *Spading* is an acronym which stands for “Sluicing Plus a Demonstrative In Noninsular Germanic”.

it is unclear whether this state of affairs is representative. Let us assume, for the sake of the argument, that the complementizer serves the purpose of marking the interrogative clause it heads as subordinated, whereas fronting of the wh-expression constitutes a syntactic resource that is not directly connected with it—after all, Dutch and German belong to the type of wh-fronting languages. What is more, the complementizer is usually recruited from the arsenal of unmarked declarative subjunctors (e. g. *dass/dat* ‘that’), in some cases also polar interrogatives (e. g. *of* ‘whether’).

Roughly, the following types of wh-dependencies are distinguished in the generative literature (cf. also, from a broader typological perspective, ch. 93 of *World Atlas of Language Structures*).<sup>29</sup>

1. Languages with fronting of a single wh-item: e. g. German, English, Dutch, etc.
2. Languages with fronting of all wh-items (multiple wh-fronting): e. g. most Slavic languages
3. Languages without fronting (wh-in-situ): e. g. Japanese, Chinese
4. Languages with positioning of the wh-item in focus position: e. g. Turkish, Malagasy

Note also, in passing, that there seems to be a relatively clear-cut correlation between the position of question words and the respective base order of a language, as has already been observed by Greenberg (1963: 65) (though on the basis of a somewhat small sample of 16 languages): Whereas VSO and SVO show preposing of the wh-item to the initial position, SOV displays no word order variation in these contexts, i. e. wh-in-situ.<sup>30</sup> Against this typology of wh-dependencies, the question arises which strategies the different types employ in order to mark embedded questions as subordinated and whether there are asymmetries. We aren’t able to offer a discussion of these questions, yet we want to point out two interesting observations in this direction.<sup>31</sup> In Indo-Arian languages like Bengali, which are typically wh-in-situ, there seems to be a rather strict complementarity between complementizers and wh-clauses. A notable exception would be Hindi, which allows the complementizer *ki* (borrowed from Farsi). The converse picture can be found in Udmurt, a wh-fronting language, where the native head-final complementizer *šuyša* ‘that’ can appear in embedded wh-questions, yet not the head-initial complementizer *čto* ‘that’ borrowed from Russian, cf. (39).

(39) Udmurt (Edygarova and Tánczos 2017: 15):

- a. Mon jua-s’ko      kytyn (ul-is’ko-d) ton (ul-is’ko-d)      šuyša.  
1.SG ask-PRS.1SG where live-PRS-2SG 2SG live-PRS-2SG that  
‘I am asking, where you live.’
- b. \*Mon jua-s’ko      čto kytyn ton ul-is’ko-d  
1.SG ask-PRS.1SG that where 2SG live-PRS.2SG  
‘I ask that where you live.’

Be that as it may, it would definitely be interesting to explore the connection between wh-fronting

<sup>29</sup> See <http://wals.info/chapter/93> (last accessed on 22 September 2017).

<sup>30</sup> Cf. Greenberg’s (1963: 65) Universal 12: “If a language has dominant order VSO in declarative sentences, it always puts interrogative words or phrases first in interrogative word questions; if it has dominant order SOV in declarative sentences, there is never such an invariant rule.”

<sup>31</sup> We thank Josef Bayer and Ermenegildo Bidese for sharing these observations with us.

or *wh*-in-situ and the availability of additional complementizers in order to check whether the situation in the languages we have observed in this article (mainly Germanic, Romance, and Slavic) is by any means representative of the languages of the world or not.

## 4. Our study

As the discussion in the previous section showed, there are different microparametric options with regard to DFC structures, all of which deserve an in-depth investigation of their own. In our examination, we focus on one aspect of these entanglements, namely the type and morphosyntax of the *wh*-item. To this end, we conducted an internet-based questionnaire study, examining DFC-phenomena in several regiolectal/colloquial varieties of Dutch and German. Such varieties show clear signs of convergence between traditional base dialects and the respective standard languages. Leveling processes like these can even lead to typical regiolectal features (Schmidt and Herrgen 2011; Cornips 2006). The starting observation is that DFC structures are said to be absent from the respective standard languages, although they are frequently reported for (broader) regional varieties and even colloquial registers.

Apart from that, Dutch and German (dialects/regiolects) offer an interesting pair for comparison. First, both belong to the asymmetric verb-second type, i. e. they show a high degree of similarity in their basic sentence structure. Second, *wh*-dependencies by and large behave alike—even though this is somewhat disputed in the older literature, both languages show no superiority effects, contrary to English and all the Germanic VO languages (e. g. Haider 2004; Häussler et al. 2015). In other respects, both languages differ only minimally, for example in terms of their respective case systems: Whereas Dutch shows a two-case system, most German dialects employ a three-case system, at least in the pronominal paradigm (Mironow 1957: 406; Koß 1983); in Low German, on the other hand, the situation chiefly corresponds to Dutch (with the exception of the Ostphalian dialects, which have preserved a tripartite system up to the present, cf. Berg 2013).

In two separate internet-based questionnaire studies, we collected judgments on the acceptability of sentences with and without DFCF violations among speakers of Dutch and German. In both trials, participants were asked to give acceptability judgments to test sentences on a 4-point scale (3 = ‘very natural’ to 0 = ‘very unnatural’). Participants in the Dutch study were recruited across the Netherlands and the Dutch speaking area in Belgium. Thanks to access to the informant panel of the *Meertens Instituut*, it was possible to reach a large number of Dutch speakers. As far as the German study is concerned, it turned out to be quite difficult to collect data, the main reason being that there is nothing like a nation-wide informant panel similar to the model of the *Meertens Instituut*. In search of a feasible alternative, we decided to focus on two regional varieties for the German study by distributing the questionnaires in the city of Cologne representing a West Central German regiolect, on the one hand, and the cities of Munich and Vienna representing a Bavarian regiolect, on the other hand.

## 4.1. Experimental design

Our primary research interest focused on the influence of phrase-structural complexity and syntactic function on the acceptability of sentences with DFCE violation and their interaction. In order to obtain clear empirical data in the present questionnaire study, we decided to test two categories of complexity (“simple” vs. “complex”) and two syntactic functions (“argument” vs. “adjunct”). A wh-item is considered “complex” if it consists of at least a head and a complement, e.g., *which guy*, and it is considered “simple” if it consists of only one syntactic word irrespective of its internal morphological complexity, e.g., *who*. A wh-item is an “argument” if it is base-generated in an A-position, otherwise it is an “adjunct”. To investigate the difference in acceptability, for each test sentence with a DFCE violation (“DFC” condition) we also included the identical sentence without DFCE violation (“non-DFC” condition) in the questionnaire study.

All critical sentences began with *Ich möchte wissen* (German)/*Ik zou willen weten* (Dutch) ‘I would like to know’ followed by an embedded clause, which was introduced by a complementizer with or without DFCE violation. The critical sentences are given in Tables 15–18 in the appendix, with wh-items representing simple arguments in Table 15, complex arguments in Table 16, simple adjuncts in Table 17, and complex adjuncts in Table 18. Among the conditions with wh-arguments (Tables 15 and 16), half of the wh-items represent the subject, the other half the object of the embedded clauses. Furthermore, we also included an animacy difference because effects along this line are known to have a clear impact on e.g. object initial wh-dependencies (Fanselow et al. 2011). Half of the wh-arguments refer to an animate entity, the other half to an inanimate entity. We used the object experiencer verb *verärgern* (German)/*ergeren* (Dutch) ‘to annoy’ in order to create sentences that take an animate object and would be equally plausible with animate and inanimate subjects. Note that we initially created all stimuli for a pilot study on German so that the later translation of the stimuli into Dutch required some compromises. First, we decided to exclude conditions where we tested dative wh-arguments in German from the final data analysis because these conditions would have no counterparts in Dutch. Second, the multi-word wh-adjunct *mit was* ‘with what’ in the German stimuli needed to be translated to the single-word wh-adjunct *waarmee* ‘wherewith’ so that the “simple” conditions in Dutch contained one more sentence. Of course, *waarmee* ‘wherewith’ as well as *waarom* ‘why’ are morphologically more complex than other wh-words like *waar* ‘where’ or *hoe* ‘how’ but we considered all single-word wh-items as phrase-structurally simple in comparison to multi-word wh-items.

All participants were presented with a total of 72 test sentences of which 32 were the critical sentences. The other 40 sentences served as filler sentences, which were similar in structure and contained other DFCE violations, for example DFCEs in relative clauses. The filler sentences were used to collect some preliminary data on such structures, but will not be discussed in this paper. For the presentation of the test sentences, we made use of four pseudo-randomized lists—each participant was presented with one of those. For the Dutch study we used the identical 72 test sentences in each of the four lists, but for the German study, which was conducted at a later stage, we decided to use two slightly different lexical sets of the 72 test sentences, and each of these two sets was used in two lists. The two sets were identical in structure and contained the

same critical conditions, but some lexemes were substituted to achieve more lexical variation and avoid confounding lexical effects (for example, one set contained the verb *verärgeren* ‘to annoy’ and the other set the verb *stören* ‘to disturb’). Despite this precaution, we assume that negative effects caused by specific lexemes should be minimal in the results of the questionnaire data, as we analyzed the difference scores, not the absolute acceptability ratings. Difference scores were always calculated upon lexically identical sentence pairs that only differed with respect to the DFCF violations (i. e., if the choice of a specific lexeme had affected acceptability, this effect should have been present in both the DFC and non-DFC conditions, and be thus neutralized or drastically mitigated in the difference score).

## 4.2. Results for Dutch

1515 individuals from the Dutch-speaking areas in the Netherlands and Belgium participated in the Dutch questionnaire study. In a screening questionnaire we collected data on the participants’ regional and linguistic backgrounds. Due to the large number of participants it was possible to include into the data analysis only those 525 individuals who reported good to very good dialectal competence (female: 245, male: 280; mean age: 59.21 years, SD: 13.02; age range: 18–88 years) in order to investigate a potential influence of dialect background on the acceptability of DFC structures.

For the data analysis, we first calculated differences by subtracting the acceptability judgment of each DFC sentence from its respective non-DFC counterpart since we were interested in acceptability differences rather than the absolute acceptabilities of every test sentence. A sentence pair with a difference score of zero means that both test sentences were rated equally good/bad. A positive difference score indicates that the non-DFC sentence was preferred over the DFC variant. A negative difference score would show that the sentence containing the DFCF violation was preferred.<sup>32</sup> Table 2 shows the acceptability differences for the 8400 sentence pairs in the study on Dutch. Just under three-fourths of the non-DFC sentences were preferred, and in a little more than one-fifth of the sentence pairs there was no difference in acceptability. Only about 4% of all sentence pairs were rated in favor of the DFC variant. These results led us to the general assumption that sentences containing a DFCF violation show decreased acceptability.

Difference	3	2	1	0	-1	-2	-3
No. of answers	2030	2111	2122	1796	269	59	13
Percentage	24.2%	25.1%	25.3%	21.4%	3.2%	0.7%	0.2%

Table 2: Ratio of acceptability differences (numbers of answers across all test sentences) in the Dutch study

For a preliminary data analysis participants were grouped into five dialects according to their regional backgrounds: Low Saxon (N = 105), Hollandic (N = 70), Limburgish (N = 199), Zee-

<sup>32</sup> Note that for the sake of convenience we may sometimes simply speak of a “more or less acceptable or preferred DFC sentence”, which should then be understood as a smaller or greater difference in acceptability between a non-DFC sentence and the respective DFC sentence.



Figure 4: Classification of Dutch dialects (van der Sijs 2011)

landic/West Flemish ( $N = 37$ ), and Brabantian/East Flemish ( $N = 114$ ), which more or less correspond to the traditional division of Dutch dialects as depicted in Figure 4 (taken from van der Sijs 2011).

In Figure 5, ratings to all wh-items for each of the five dialects are displayed.<sup>33</sup> It can be seen that the overall pattern of ratings is similar between dialects, but there seems to be a regional bias: In the two southern regions Zeelandic/West Flemish and Brabantian/East Flemish, DFC structures were rated more acceptable than in the two northern regions Hollandic and Low Saxon; the Limburgish speaking area produced ratings that appear in the middle.

Among these five dialect areas, the Zeelandic/West Flemish group with  $N = 37$  is the smallest group, whereas the Limburgish group with  $N = 199$  has more than five times as many participants. Unbalanced data due to the unequal numbers of subjects in the five dialect areas could negatively affect the accuracy in statistical analyses. Therefore, we created three larger dialect areas for further analyses by combining Zeelandic/West Flemish and Brabantian/East Flemish into a southern area ( $N = 151$ ) and Hollandic and Low Saxon into a northern area ( $N = 175$ ). The Limburgish area is included as the third area in the new analyses. These three areas will still allow to investigate potential regional differences but contain similar numbers of participants.

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<sup>33</sup> All figures in this section show mean values of acceptability differences by participants. Values greater than 0 indicate that the non-DFC structure was preferred over the respective DFC structure: the greater the value, the greater the difference. Values around 0 indicate that both non-DFC and DFC structures were rated similarly. Values below 0 would indicate better rated DFC structures. Note that the plot has been zoomed in to the range from 0 to 3 on the y-axis because none of the mean values was smaller than 0. When a figure shows error bars, these give the 95% confidence intervals.

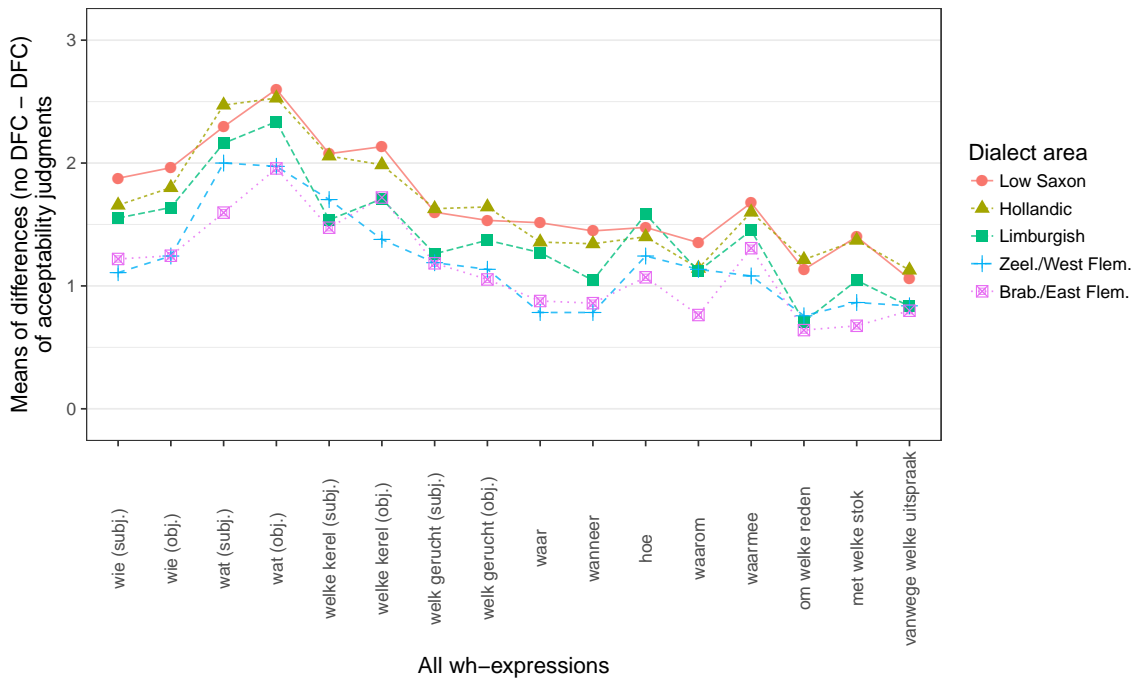


Figure 5: Results of the acceptability judgments on all sentences in the Dutch study grouped into five dialect areas

Figure 6 shows the acceptability ratings for each of the three dialect areas.

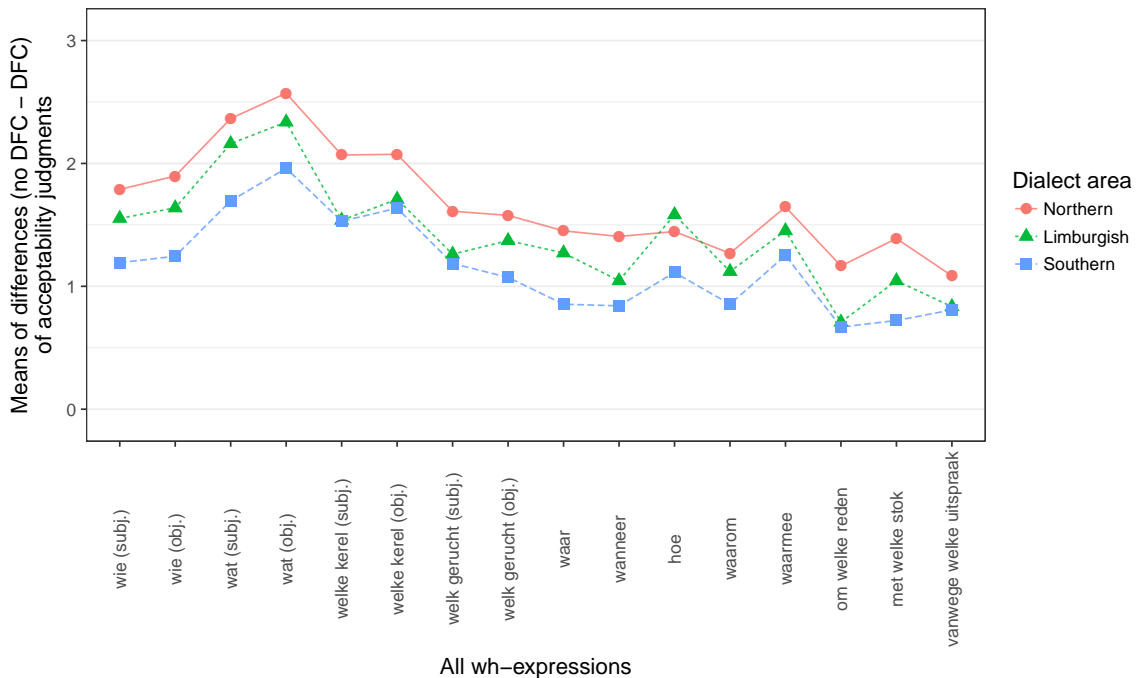


Figure 6: Results of the acceptability judgments to all sentences in the Dutch study grouped into three dialect areas

#### 4.2.1. Syntactic function and phrase-structural complexity

Figure 7 gives the ratings for the different syntactic functions and degrees of phrase-structural complexity in each of the three dialect areas. In all of the three dialect areas we observe that DFC structures containing adjuncts were rated more acceptable than DFC structures containing arguments. Furthermore, it seems that DFC structures containing complex wh-items were rated more acceptable as compared to their simple counterparts, which appears to be the case for both arguments and adjuncts. As far as the dialect areas are concerned, the effects of syntactic function and complexity look very similar, but the overall acceptability differs: DFC structures seem to be more acceptable in the southern as compared to the northern area, with Limburgish in an intermediate position.

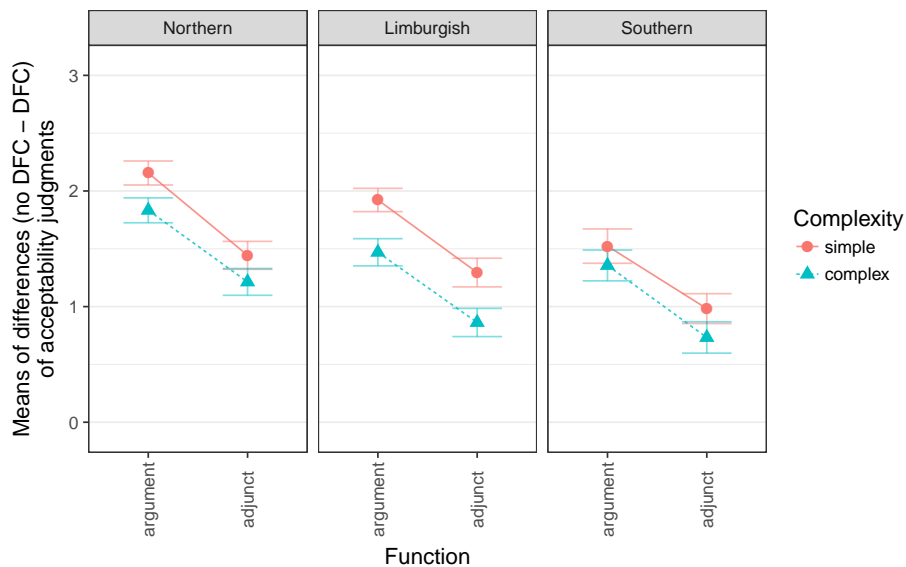


Figure 7: Results of the acceptability judgments to sentences with wh-arguments and wh-adjuncts in the Dutch study

Our impressions were confirmed by statistical analysis. We calculated a repeated-measures analysis of variance (ANOVA) using the within-subjects factors Function (argument vs. adjunct) and Complexity (simple vs. complex) and the between-subjects factor Area (Northern, Limburgish, Southern). The ANOVA revealed a significant main effect of Function and a significant main effect of Complexity; however, there was no significant interaction between Function and Complexity. Furthermore, the ANOVA showed a significant main effect of Area and a significant interaction of Area with Complexity (all  $F$ - and  $p$ -values in Table 3). Resolving this interaction by Area shows that the effect of Complexity is significant in all three areas (Northern:  $F(1,174) = 57.56$ ,  $p < .001$ ; Limburgish:  $F(1,198) = 152.06$ ,  $p < .001$ ; Southern:  $F(1,150) = 23.07$ ,  $p < .001$ ). These results indicate that both syntactic function and phrase-structural complexity have an effect on the acceptability of DFC structures, but the strength of the complexity effect differs significantly between dialect areas.



Conditon	$F$	$p$	
Function	$F(1,522) = 695.05$	$p < .001$	*
Complexity	$F(1,522) = 209.39$	$p < .001$	*
Function : Complexity	$F(1,522) < 1$	$p = .7$	n. s.
Area	$F(2,522) = 22.46$	$p < .001$	*
Area : Function	$F(2,522) < 1$	$p = .4$	n. s.
Area : Complexity	$F(2,522) = 10.09$	$p < .001$	*
Area : Function : Complexity	$F(2,522) = 1.47$	$p = .2$	n. s.

Table 3: Results of the ANOVA for sentences with wh-arguments and wh-adjuncts in the Dutch study

#### 4.2.2. Animacy and complexity in wh-arguments

Half of the critical sentences contained wh-items representing arguments (cf. Tables 15 and 16 above). Recall that we designed this subset to include further conditions: A wh-argument could be simple or complex, but it could also be subject or object and animate or inanimate. To investigate the interaction of the three dimensions phrase-structural complexity, argument function, and animacy, we calculated a new analysis on this subset.

The new analysis, illustrated in Figure 8, revealed an interesting interaction of animacy with phrase-structural complexity, whereas the overall differences between subjects and objects seem to be rather small. Both subject and object conditions show a large complexity effect for DFC structures with inanimate wh-arguments. Thus, DFCF violations seem to drastically reduce acceptability in sentences with a simple inanimate wh-argument, i.e. the combination *wat dat* ‘what that’. Interestingly, for DFC structures with animate wh-arguments we observe no complexity difference in the Limburgish area, and even a complexity effect going in the opposite direction in the other two areas: In the northern and southern regions DFC sentences with a simple animate wh-argument were rated more acceptable than their complex counterparts. This reverse pattern is unexpected in the light of the findings presented in the previous section where we found that simple conditions were less acceptable than complex conditions (cf. Figure 7 above). In retrospect, the pronounced complexity effect for inanimate wh-arguments might have masked the smaller reverse complexity effect for animate wh-arguments. Thus, our preliminary conclusion requires to be modified in the way that multi-word wh-phrases often but not always increase acceptability of sentences containing a DFCF violation.

To confirm our conclusions drawn from the observations of Figure 8, we calculated an ANOVA using the within-subjects factors Animacy (animate vs. inanimate), Argument Function (subject vs. object), and Complexity (simple vs. complex) as well as the between-subjects factor Area (Northern, Limburgish, Southern). The ANOVA revealed significant main effects of Animacy, Argument Function, and Complexity. Animacy did not interact with Argument Function, but we found significant interactions of Animacy with Complexity and Argument Function with Complexity as well as a significant three-way interaction of Animacy:Function:Complexity. Furthermore, the main effect of Area and the interaction of Area with Complexity were significant

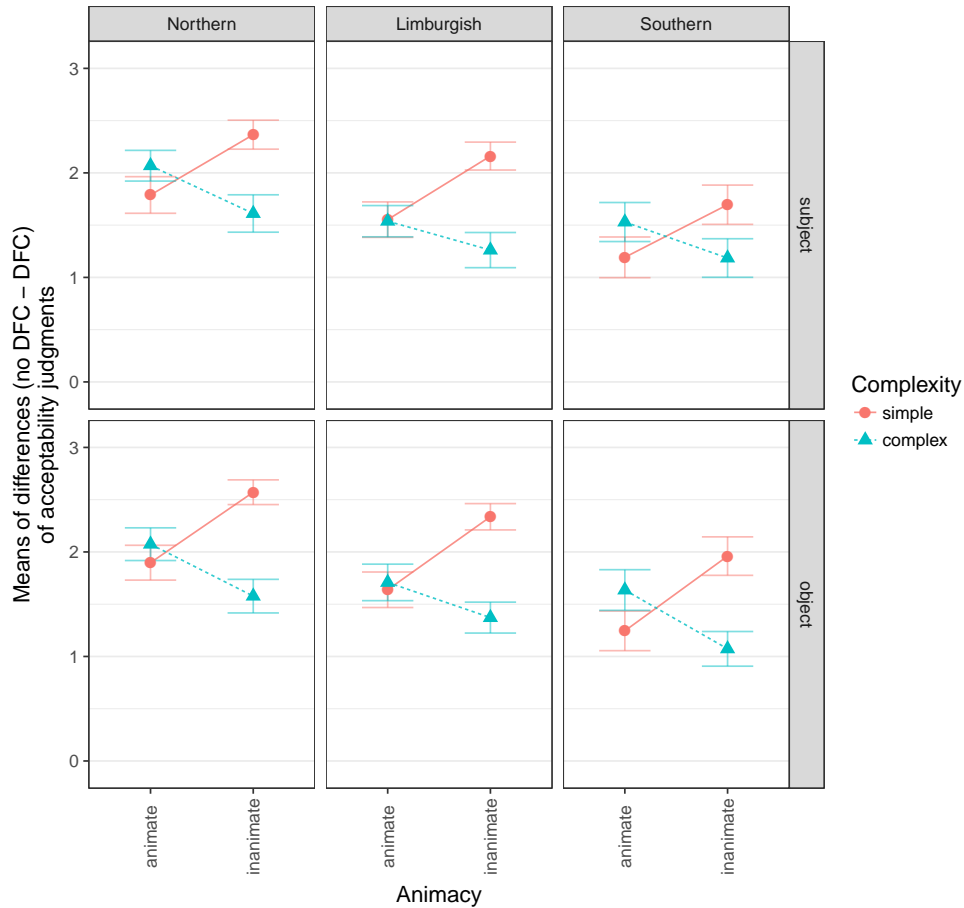


Figure 8: Results of the acceptability judgments to sentences containing wh-arguments in the Dutch study

(all  $F$ - and  $p$ -values in Table 4).

We resolved the three-way interaction by Animacy. The animate conditions showed significant effects of Argument Function ( $F = 4.34$ ,  $p < .05$ ) and Complexity ( $F = 22.60$ ,  $p < .001$ ), but no significant interaction ( $F < 1$ ,  $p = .9$ ). The inanimate conditions revealed significant main effects of Argument Function ( $F = 7.62$ ,  $p < .01$ ) and Complexity ( $F = 448.94$ ,  $p < .001$ ), and also a significant interaction of Argument Function with Complexity ( $F = 8.76$ ,  $p < .01$ ). To investigate regional influences, we resolved the interaction of Area with Complexity by Area and found significant effects of Complexity in all three areas (Northern:  $F(1,174) = 47.99$ ,  $p < .001$ ; Limburgish:  $F(1,198) = 90.13$ ,  $p < .001$ ; Southern:  $F(1,150) = 9.08$ ,  $p < .01$ ).

These results can be interpreted in the following way: Both the small complexity differences for animate wh-arguments and the large complexity effects for inanimate wh-arguments are significant. But whereas the complexity effect in animate wh-arguments is not dependent on argument function, argument function has an impact on inanimate wh-arguments because the complexity difference is even more pronounced in the object conditions. Furthermore, the main effect of dialect area and the interaction with complexity confirm that overall acceptability of the DFC structures and the influence of phrase-structural complexity differ between the regions.

Conditon	<i>F</i>	<i>p</i>	
Animacy	$F(1,522) = 14.82$	$p < .001$	*
Function	$F(1,522) = 10.52$	$p < .01$	*
Complexity	$F(1,522) = 130.20$	$p < .001$	*
Animacy : Function	$F(1,522) < 1$	$p = .8$	n. s.
Animacy : Complexity	$F(1,522) = 342.38$	$p < .001$	*
Function : Complexity	$F(1,522) = 3.93$	$p < .05$	*
Animacy : Function : Complexity	$F(1,522) = 4.58$	$p < .05$	*
Area	$F(2,522) = 24.07$	$p < .001$	*
Area : Animacy	$F(2,522) = 1.30$	$p = .3$	n. s.
Area : Function	$F(2,522) < 1$	$p = .6$	n. s.
Area : Complexity	$F(2,522) = 8.09$	$p < .001$	*
Area : Animacy : Function	$F(2,522) < 1$	$p = .9$	n. s.
Area : Animacy : Complexity	$F(2,522) < 1$	$p = .5$	n. s.
Area : Function : Complexity	$F(2,522) = 1.45$	$p = .2$	n. s.
Area : Animacy : Function : Complexity	$F(2,522) < 1$	$p = .5$	n. s.

Table 4: Results of the ANOVA for sentences with wh-arguments in the Dutch study

### 4.3. Results for German

For German, we conducted questionnaire studies at three cities in two regiolect areas: 25 participants in Munich and 32 participants in Vienna for Bavarian, 85 participants in Cologne for West Central German. In correspondence with the Dutch study, data on the regional and linguistic backgrounds of participants were collected. Only those participants from Munich and Vienna who were born and raised in the Bavarian area and only those participants from Cologne born and raised in the West Central German regiolect area entered the data analysis. However, due to the rather low numbers of participants we had to include speakers with any level of dialect competence as long as they were raised in a place where a dialect was spoken (whereas in the Dutch study only participants with good to very good dialect competence were included). Furthermore, we decided to also accept neighboring dialects in the respective regiolects, for example, Swabian was subsumed under the Bavarian group. Individuals who were born in a different regiolect area or reported to have not been exposed to any dialect as well as non-native speakers were excluded. It is interesting to note that approximately one third of the participants located in Cologne reported that no dialect was spoken at their place of birth as opposed to only 2 participants in the Munich/Vienna group. 97 individuals met the regiolect criteria and entered the final data analysis (female: 75, male: 22; mean age: 25.74 years, SD: 8.13; age range: 18–63 years): 48 for Bavarian and 49 for West Central German.

As was the case with the Dutch data, we calculated difference scores instead of analyzing absolute acceptability ratings. Table 5 shows the acceptability differences for the 1904 sentence pairs in the study on German. 90% of the sentence pairs revealed a better acceptability of non-DFC sentences, 8% did not show any difference, and in only about one percent of the sentences DFCF violations were preferred.

Difference	3	2	1	0	-1	-2	-3
No. of answers	968	447	303	160	23	2	1
Percentage	50.8 %	23.5 %	15.9 %	8.4 %	1.2 %	0.1 %	<0.1 %

Table 5: Ratio of acceptability differences (numbers of answers across all test sentences) in the German study

Figure 9 gives the ratings to all wh-items for the Bavarian group (N = 48) and the West Central German group (N = 49). A clear regional bias can be observed as all sentences in the Bavarian group were rated more acceptable as compared to the West Central German group. Furthermore, the acceptability ratings seem to show more variation in Bavarian. The quite similar ratings in West Central German are indicative of a floor effect, with the exception of some complex adjuncts which received better ratings (*mit was* ‘with what’, *wegen was* ‘because of what’, *wegen welchem Spruch* ‘because of which remark’).<sup>34</sup>

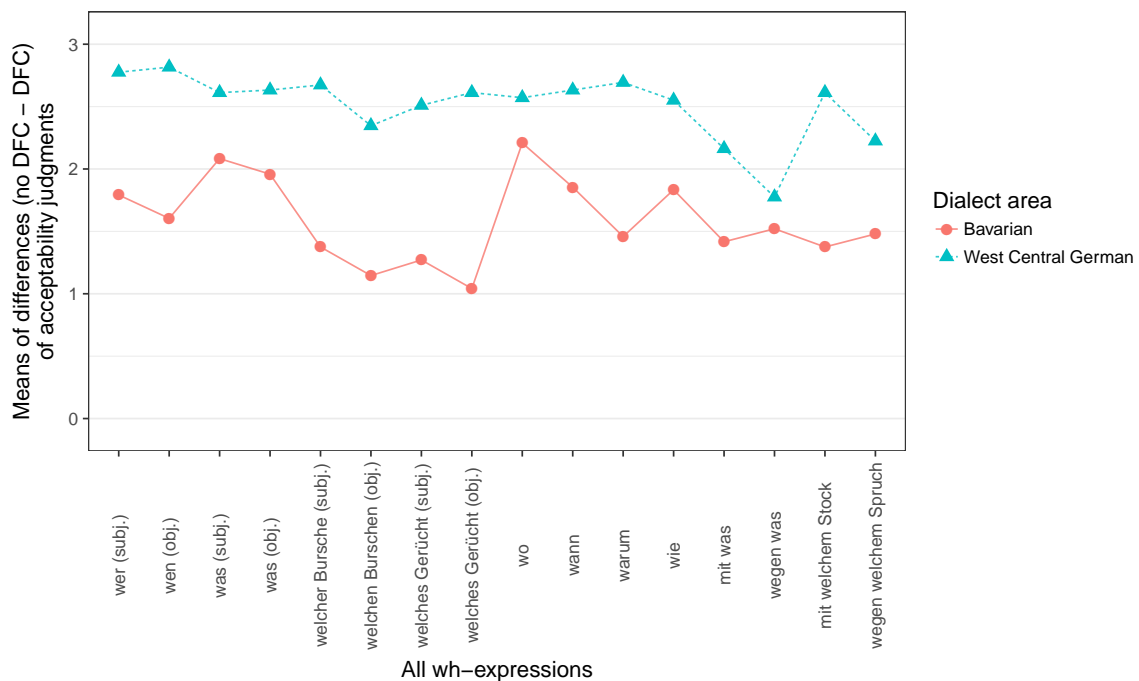


Figure 9: Results of the acceptability judgments on all sentences in the German study

#### 4.3.1. Syntactic function and phrase-structural complexity

As in the Dutch study, we were interested in possible effects of syntactic function and phrase-structural complexity on the acceptability of DFC structures. Figure 10 shows that DFC sentences with complex wh-items were preferred over DFC sentences with simple wh-items both in Bavarian and West Central German. The influence of syntactic function is less clear: In

<sup>34</sup> Note that we speak of a floor effect rather than a ceiling effect because the high difference scores near 3 are the result of DFC sentences rated near 0.

both regiolects simple wh-items show only minimal differences between argument and adjunct conditions, whereas complex wh-items display different patterns in Bavarian and West Central German with either the argument or the adjunct conditions being preferred.

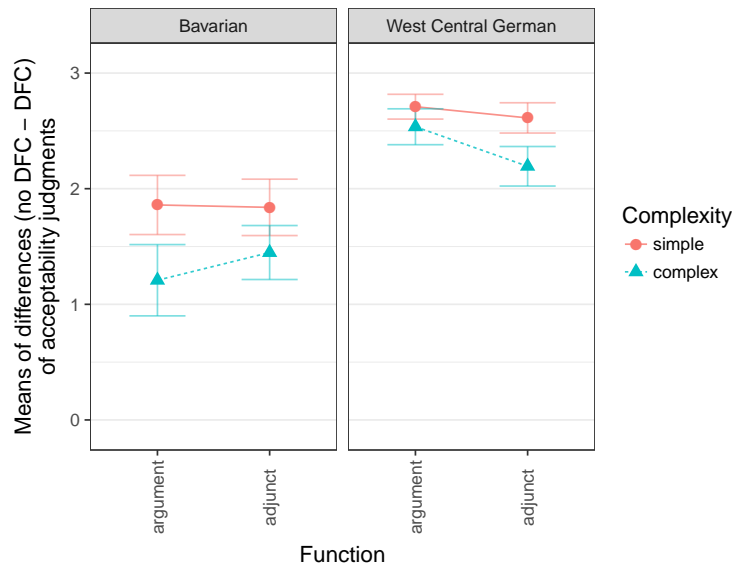


Figure 10: Results of the acceptability judgments on sentences with wh-arguments and wh-adjuncts in the German study

We calculated an ANOVA using the within-subjects factors Function (argument vs. adjunct) and Complexity (simple vs. complex) and the between-subjects factor Area (Bavarian, West Central German). The ANOVA revealed a significant main effect of Complexity as well as a significant main effect of Area and interactions of Function and Complexity with Area (all  $F$ - and  $p$ -values in Table 6). We resolved the three-way interaction of Area with Function and Complexity by Area. In the Bavarian group, we found a significant effect of Complexity ( $F(1,47) = 43.10$ ,  $p < .001$ ) and an interaction of Function with Complexity ( $F(1,47) = 5.25$ ,  $p < .05$ ). Further resolving by Complexity shows that the effect of Function is only significant in the complex conditions ( $F = 5.60$ ,  $p < .05$ ) but not so in the simple conditions ( $F < 1$ ,  $p = .8$ ). For the West Central German group, the effect of Function ( $F(1,48) = 15.85$ ,  $p < .001$ ) and the effect of Complexity ( $F(1,48) = 34.56$ ,  $p < .001$ ) as well as the interaction of Function with Complexity ( $F(1,48) = 5.26$ ,  $p < .05$ ) were significant. Resolving further by Complexity shows a significant effect of Function in the complex conditions ( $F = 17.63$ ,  $p < .001$ ) but not so in the simple conditions ( $F = 1.83$ ,  $p = .2$ ). Thus, the ANOVA confirmed that the simple conditions did not differ in each of the regiolects, but the complex conditions interacted with the syntactic function. Interestingly, DFC sentences with complex wh-arguments were rated better than those with complex wh-adjuncts, whereas in West Central German the pattern is reversed in that DFC sentences with complex wh-adjuncts were more acceptable.

Conditon	$F$	$p$	
Function	$F(1,95) = 1.77$	$p = .2$	n. s.
Complexity	$F(1,95) = 75.81$	$p < .001$	*
Function : Complexity	$F(1,95) < 1$	$p = .9$	n. s.
Area	$F(1,95) = 49.02$	$p < .001$	*
Area : Function	$F(1,95) = 14.89$	$p < .001$	*
Area : Complexity	$F(1,95) = 5.78$	$p < .05$	*
Area : Function : Complexity	$F(1,95) = 10.52$	$p < .01$	*

Table 6: Results of the ANOVA for sentences with wh-arguments and wh-adjuncts in the German study

### 4.3.2. Animacy and complexity in wh-arguments

Figure 11 shows the effects of animacy and argument function in addition to phrase-structural complexity for sentences containing wh-arguments. In the Bavarian group both subject and object conditions show a similar pattern: The complex conditions are always preferred over the simple conditions, and the simple inanimate conditions were rated less acceptable than the simple animate conditions. The low acceptability for the simple inanimate conditions (with the combination *was dass* ‘what that’) is reminiscent of the findings from Dutch where the respective conditions (with *wat dat*) also received very low acceptability ratings. The West Central German group shows different results because all conditions were rated as very unacceptable. The only outlier is the complex animate object, which achieved a slightly better acceptability.

We calculated an ANOVA using the within-subjects factors Animacy (animate vs. inanimate), Argument Function (subject vs. object), and Complexity (simple vs. complex) as well as the between-subjects factor Area (Bavarian, West Central German). It should be noted that each condition in this analysis contained only a single sentence so that the total number of data points was relatively low due the low number of participants in the German study. Therefore, the results of this ANOVA must not be overestimated, but should rather be considered to show tendencies and help to direct future investigations. The ANOVA revealed significant main effects of Argument Function and Complexity as well as a significant main effect of Area and interactions of Animacy and Complexity with Area (all  $F$ - and  $p$ -values in Table 7). Resolving the three-way interaction of Area with Animacy and Complexity by Area revealed a significant effect of Complexity in the West Central German group ( $F(1,48) = 5.59$ ,  $p < .05$ ). In the Bavarian group we found a significant effect of Complexity ( $F(1,47) = 38.88$ ,  $p < .001$ ) as well as an interaction of Animacy with Complexity ( $F(1,47) = 7.10$ ,  $p < .05$ ). The effect of Complexity was even more pronounced in inanimate conditions ( $F = 38.01$ ,  $p < .001$ ) as compared to animate conditions ( $F = 12.77$ ,  $p < .001$ ). Thus, statistical analysis confirmed an influence of animacy on the acceptability of DFC structures in Bavarian.

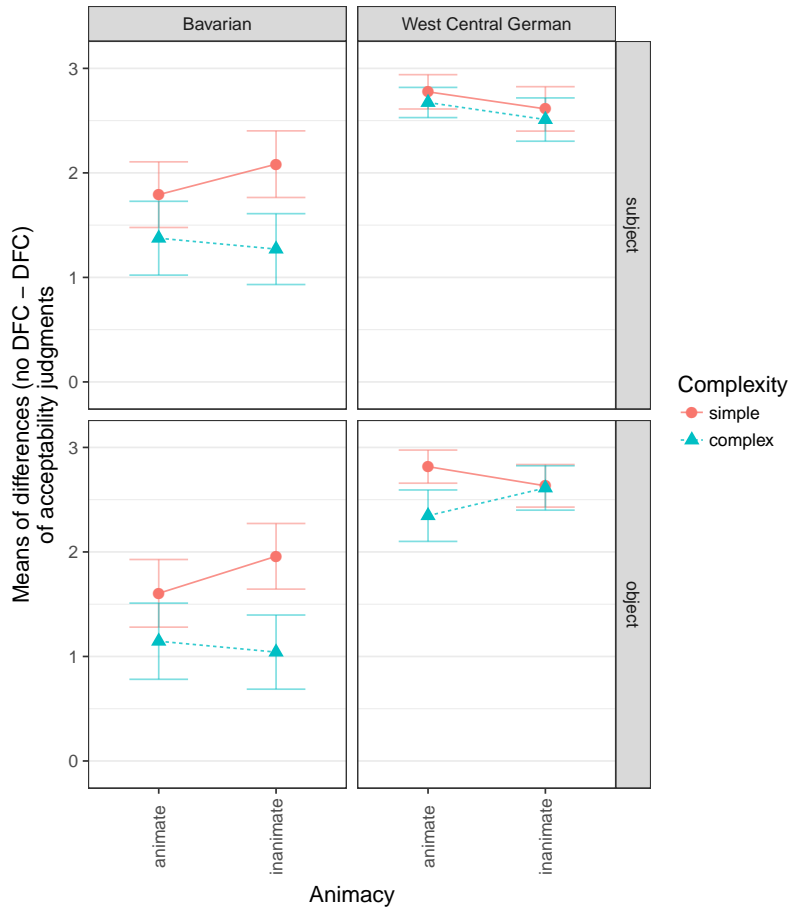


Figure 11: Results of the acceptability judgments on sentences containing wh-arguments in the German study

Conditon	$F$	$p$	
Animacy	$F(1,95) < 1$	$p = .7$	n. s.
Function	$F(1,95) = 5.71$	$p < .05$	*
Complexity	$F(1,95) = 41.55$	$p < .001$	*
Animacy : Function	$F(1,95) = 1.87$	$p = .2$	n. s.
Animacy : Complexity	$F(1,95) < 1$	$p = .3$	n. s.
Function : Complexity	$F(1,95) = 1.52$	$p = .2$	n. s.
Animacy:Function:Complexity	$F(1,95) = 1.12$	$p = .3$	n. s.
Area	$F(1,95) = 56.02$	$p < .001$	*
Area : Animacy	$F(1,95) = 2.57$	$p = .1$	n. s.
Area : Function	$F(1,95) = 2.45$	$p = .1$	n. s.
Area : Complexity	$F(1,95) = 14.11$	$p < .001$	*
Area : Animacy : Function	$F(1,95) < 1$	$p = .3$	n. s.
Area : Animacy : Complexity	$F(1,95) = 9.98$	$p < .01$	*
Area : Function : Complexity	$F(1,95) < 1$	$p = .7$	n. s.
Area : Animacy : Function : Complexity	$F(1,95) = 1.91$	$p = .2$	n. s.

Table 7: Results of the ANOVA for sentences with wh-arguments in the German study

#### 4.4. Summary of the questionnaire studies on Dutch and German

The two questionnaire studies on Dutch and German are not easily comparable. First and foremost, the Dutch study could be conducted on a far larger scale with a great number of participants from the whole Dutch speaking area. By contrast, the number of participants was lower in the German study, and we could only focus on two regiolect areas. Furthermore, the mean age of the participant groups was quite different, with 59.21 years in the Dutch study and 25.74 years in the German study. Thus, we believe that the results obtained from the study on Dutch can be regarded as robust, whereas the German data can only show tendencies with further research necessary.

Summarizing the results of the Dutch study, both syntactic function and phrase-structural complexity had a strong influence on the acceptability of DFC structures. DFC structures with wh-adjuncts were rated more acceptable than DFC structures with wh-arguments, and—on average—DFC structures with complex wh-items were preferred over DFC structures with simple wh-items. However, the picture becomes more complex when we investigate the interaction of phrase-structural complexity with animacy in DFC sentences with wh-arguments. Inanimate wh-arguments led to a greater acceptability in the complex conditions, whereas sentences with animate wh-arguments were rated more acceptable in the simple conditions. Among all sentences, DFCF violations reduced acceptability most severely in sentences with the inanimate simple wh-argument *wat* ‘what’. As far as regional influences are concerned, the overall patterns of the function and complexity effects seem similar in all dialect areas, but the southern areas Zeelandic/West Flemish and Brabantian/East Flemish show a tendency toward greater acceptability of DFC sentences than other areas.

The overall effects of phrase-structural complexity were similar in Dutch and German because in both studies DFC sentences with complex wh-items were rated more acceptable than DFC sentences with simple wh-items. However, in the Dutch study there was a clear effect of syntactic function because DFC sentences with wh-adjuncts were preferred over DFC sentences with wh-arguments, whereas the German study showed an advantage for wh-adjuncts only in the complex conditions in West Central German, and even a disadvantage for wh-adjuncts in Bavarian. Considering animacy effects on DFC sentences with wh-arguments, the Bavarian group showed some similarities with the Dutch data, in particular the strong rejection of simple inanimate conditions with *was* ‘what’, whereas almost all DFC sentences with wh-arguments received very low acceptability ratings in the West Central German group.

A concluding note on regional differences within the German population: As the results from the West Central informants show, DFCs received a very low acceptability in general. Interestingly, however, rating improved somewhat with “long” (i. e. complex) wh-items in adjunct function (*wegen welchem Spruch dass du den Burschen geschlagen hast* ‘because of which remark that you have hit the guy’) or with complex animate objects (*welchen Burschen dass du gehört hast* ‘which guy that you have heard’) even though such structures received much worse average ratings from these speakers than from the southern group. Thus, we have evidence that acceptability scales in both directions, so to speak. Whether or not this constitutes sufficient evidence for assuming different grades of grammaticality, as assumed by Sorace and Keller (2005), shall not concern



us here (Schütze 2016: ch. 3 for a general overview on this matter). A related phenomenon is reported by Berg (2011) who investigates passive constructions in Low German dialects (see also Berg 2013: ch. 4.4 for an updated version, yet with the same empirical results). In the traditional base dialects documented in older grammatical descriptions (around the turn of the century) case conversion is reported with benefactive arguments (like e. g. *helpen* ‘help’), which can be viewed as evidence that 2-place verbs show no verb-class specific restrictions with regard to passivization. The modern dialects, by contrast, seem to have taken over the German passivization strategy which only allows an impersonal passive (with no case conversion) with verbs like these. However, in some regions (Cloppenburg) the English-like passive received significantly better ratings than in other regions, which can be viewed as the result of mutual influence of dialect and standard system, which may ultimately lead either to convergence to the latter system or the emergence of “new” regiolectal features (see Berg 2011: 15–18 and in particular Berg 2013: ch. 5.2.3 for discussion of this idea).

#### 4.5. Comparison between the corpus data and judgment data

Let us next turn to a more thorough analysis of the corpus data beyond the simple aspects of areal distribution presented in section 2.4. In order to have a more direct means of comparison with our judgment data, we annotated the Zwirner results in two different dimensions, which we will report below. Please note that both annotations did not reveal any significant areal patterns so that we don’t give any further maps in this paper.

Firstly, we annotated for the syntactic function of the wh-item so as to have a direct means of comparison with our judgment data. As Table 8 shows, there are clear differences in terms of frequency between the basic syntactic relations, which can be ordered as follows:

- (40) Adverbial > predicative > object > subject > oblique

N	Subject	Object	Oblique	Predicative	Adverbial
128	13	19	9	38	48
	10.2 %	14.8 %	7.0 %	29.7 %	37.2 %

Table 8: Classification of the Zwirner data by syntactic function

Secondly, we annotated for different types of wh-items, following the classification sketched in Sag (2010: 491), which is based on several syntactic and semantic criteria (e. g. the availability in different sentence types like interrogative, exclamative, and relative clauses). NP, PP, AdvP, and Det[erminer] stand for the main syntactic categories to which wh-items can belong, whereas degree words like *wie* ‘how’ or *wie viel* ‘how many’ involve the semantic property of gradability. This latter property (among others, of course) distinguishes interrogative and exclamative uses on the one hand from relative uses on the other hand, cf. the contrast between (41a, b) and (41c). A more detailed discussion on these different types can be found in Sag (2010: 490–495).

- (41) a. How tall did they get?  
 b. How tall they got!  
 c. \* The extent how tall they got...  
 (Sag 2010: 492)

As displayed by Table 9, most of the corpus examples belong to the category of degree words, followed by PPs and determiners. With some justification, degree expressions can be subsumed under the category of Det because of their overlapping syntactic distribution (in both cases, the wh-expression functions as a D-element), so that almost three quarters of all cases involve wh-expressions that act as part of a larger question phrase.

n	NP	Det	PP	AdvP	Degree word
128	8	18	23	2	77
	6.3 %	14.1 %	18.0 %	1.6 %	60.2 %

Table 9: Classification of the Zwirner data following Sag (2010)

It is not easy to match the picture we got from the Zwirner data with the results of our acceptability study, which is, first and foremost, due to their differences in terms of date, age groups of the informants and modality of the task (acceptability judgments to experimental stimuli vs. recordings of more or less free speech). This caveat aside, there are some interesting correspondences between the two sources: As far as the syntactic function is concerned, the Zwirner data roughly fits the results from Dutch in that wh-expressions in adverbial and predicative function constitute the most frequent class. This is an interesting connection that roughly corresponds to what is reported in the literature: On the basis of several phenomena from (spoken) German (dative passive, verbal complex, argument order on the clausal level), M. Bader and Häussler (2010: 310–315) show that there is a complex interaction between the perceived acceptability of a syntactic pattern and its corpus frequency. While it is never the case that of two syntactic structures  $S_1, S_2$  differing in their acceptability, the more acceptable one occurs less frequently, yet there is no two-sided direct interaction between the two domains, with ceiling mismatches (42a) as well as floor mismatches (42b) as confounding factors.

- (42) a. *Ceiling Mismatch*

When perceived well-formedness is at ceiling, two syntactic structures may differ in terms of frequency despite being perceived as equally well-formed.

- b. *Floor Mismatch*

If frequency is at floor, two syntactic structures may differ in terms of perceived well-formedness despite both occurring with zero or near-zero frequency

As far as the factor length is concerned, we have no direct means of comparison because the judgment study made use of a rougher taxonomy of wh-expressions, ignoring the internal structure of the respective elements. Let it suffice to say, in the present context, that our corpus data

contained only 1 (!) genuine example of a short wh-expression co-occurring with an additional complementizer. Most of the DFCF-violations we found were either with simplex wh-words with a morphologically complex structure (e. g. *warum* ‘why’, *wieviel* ‘how many’) or cases where the wh-item is part (subconstituent) of a bigger phrase. Things were a bit messier with the German data, yet length does seem to contribute to the overall acceptability in that shorter wh-items were always rated worse than long ones, or at most equally good (see Figure 10 on 37). However, there is a complex interaction with syntactic function that leads, unexpectedly, to a decline in acceptability in the Bavarian group of the adjunct vs. argumental condition, whereas the West Central German group corresponds to the Dutch pattern (with adjuncts rated better than arguments). Once again, we have to point to the fact that the German informants are much younger than the Dutch ones and, of course, the speakers recruited for the Zwirner recordings, so that age might indeed be an important confounding factor for which we couldn’t control sufficiently well. We have to leave this issue open for further research. In broad terms, however, this picture seems to at least partly correspond to what is claimed in the literature (see also the discussion in the next section).

## 5. Analysis

This final section of this paper is concerned with theoretical aspects. First, we point out the theoretical relevance of the phenomenon and its status between grammar and processing (section 5.1). Then we evaluate different approaches to DFC-structures in the light of the empirical data we have gathered (section 5.2). As our point of departure, we take the analysis of Bayer and Brandner (2008, 2010) because it has the most far-reaching implications and because it explicitly addresses an important microparametric issue, i. e. the question which types of wh-items are compatible with a complementizer and which aren’t (see also the discussion in section 3). While this approach certainly has its merits, we want to point out some empirical shortcomings that lead us to sketch a modified version of the DFCF, which is sketched in section 5.3.

### 5.1. DFCs between grammar and processing

DFCs pose interesting questions for the structure of interrogatives, in particular with regard to differences between root and embedded variants. In German (and other asymmetric verb-second languages) the puzzling observation is that embedded interrogatives must not appear with verb-second (V/2), while “true” root interrogatives (excluding *deliberative* questions) cannot appear with verb-last (V/L) (43). This problem was first noted and systematically described by Reis (1985: 293–295), so that Grewendorf (1988: ch. 11.3) coined the term “Reis’ dilemma” for this state of affairs (see also Weiß 1998: 27).

- (43) Weiß            der Himmel,  
       know.3.SG the heaven
- a. wie man diese Fakten erklären *kann*.  
       how one these facts explain can.3SG

- b. \*wie *kann* man diese Fakten erklären.  
 how can.3SG one these facts explain  
 “God’s knows how one can explain these facts”

In a more formalized setting, this connection can be stated as in Table 10, which is based on the examples in (44): In embedded questions, the C-position (or, in traditional topological terms, the “left sentence bracket”) is inaccessible for the finite verb. Varieties with DFC, on the other hand, show overt material in this position.

- (44) a. I woäß ned wer daß des tōa hod (Bavarian)  
 I know not who-NOM that this done has  
 “I don’t know who has done that.”  
 (adapted from Bayer 1984: 212)
- b. Ich weiß nicht wer ∅ das getan hat (Standard German)  
 I know not who that done has

Prefield	Left sentence bracket	Middle field	Right sentence bracket
wer	daß	des	tōa hod
wer	∅	das	getan hat

Table 10: Topological analysis of the examples in (44)

As the preceding discussion showed, those varieties that allow violations of the DFC-filter do not form a homogenous group. Whereas there seem to be general DFC-languages which always lexicalize the C-position, others seem to be open to microparametric variation with regard to the acceptability of DFCs, depending on the morphosyntactic properties of the wh-expression involved. It is unclear how deeply entrenched they are in the grammatical systems of these variants. Somewhat orthogonally, there also seem to be parsing-related factors at work in that short wh-items disprefer *dass* “that” whereas it is preferred with long wh-items, cf. the contrast between (45a) and (45b). Note that our study corroborated this effect.

- (45) Bavarian (data from Weiß 2004: 24):
- a. I woäß ned, [w<sub>H</sub> wea] ?*dass* do is.  
 I know not who that here is.  
 “I don’t know who is here.”
- b. Es is scho erschdaunle, [w<sub>H</sub> mid wos fiar an Schmarn] ?(*dass*) ma Geid vodein  
 It is MP surprising with what for a bullshit that one money earn  
 ka.  
 can  
 “It’s fairly surprising what bullshit earns you money.”

A related motivation for DFCs associated with parsing is discussed by Cooper (1995: 98–99). According to her hypothesis, overt material in C can function as a syntactic diacritic, so to speak,

in that it allows to identify an embedded *wh*-clause as such.<sup>35</sup> Otherwise, *wh*-clauses which are string-invariant to their unembedded respective verb-second counterparts are ungrammatical. Similar effects can be found with relative clauses in certain dialects/regiolects where the particle *da* (< ‘there’) seems to act as a subordination marker (cf. Weiß 2013: 782).

- (46) a. Ich wott wüsse wo dass  $\emptyset$  übernachtisch (Zurich German)  
 I want know where that overnight  
 “I want to know where you are staying overnight”
- b. Ich wott wüsse wo-t/\* $\{\emptyset\}$  übernachtisch  
 I want know where=you/ $\emptyset$  übernachtisch
- c. Ich wott wüsse wo  $\emptyset$  übernachtete wottsch  
 I want know where overnight want  
 “I want to know where you want to stay overnight”

A short note on example (46b): While traditional research takes *t* to represent the clitic variant of the personal pronoun *du(u)* ‘you’, Cooper (1995) analyzes it as an agreement morpheme very much like the well-known inflected complementizers occurring in many Continental West Germanic varieties (see Weiß 2005: 156–157 for some discussion on this aspect and for a general overview on this phenomenon). This matter doesn’t bear on Cooper’s point, though.

If we are a bit more generous with our demarcation between grammar and processing and subsume under the latter label also “extra-syntactic” factors, then we can also include the approach by Schönenberger (2010) (see also Schönenberger 2016b). Based mainly on data from St. Gall German, she proposes a prosodic explanation: Whenever the *wh*-expression and the following element form a trochaic foot, which is typically the case with simplex *wh*-items, an additional complementizer is blocked.<sup>36</sup> A sign of such a clustering is epenthetic *n*, which typically appears in hiatus contexts, cf. (47a).

- (47) Weisch [wo-n-er wohnt]? (St. Gall German)  
 know-2SG where=he lives  
 “Do you know where he lives?”  
 (Schönenberger 2010: 45)

In all other cases, insertion of a complementizer is either obligatory or at least optional,<sup>37</sup> one reason being that the *wh*-item cannot function as clitic host, so that *dass* ‘that’ acts as a substitute. Naturally, this is the case with polysyllabic *wh*-items that clearly deviate from the respective prosodic template. Other deviations can be induced if either the *wh*-item or its successor bears stress, cf. (48).

35 We thank Guido Seiler (Munich) for drawing our attention to this point.

36 Helmut Weiß (personal communication, 9 October, 2017) comments that this explanation is somewhat circular: Since clustering is only possible in the absence of *dass*, a missing complementizer is not surprising in clustering contexts. A more solid way of formulating this prosodic argument would be to state that only trochaic clusters are well-formed, while others aren’t.

37 This seems to be the case with Lucernese German. Since Schönenberger (2010) mostly reports data from a single speaker of this variety, such a conclusion might be not fully warranted, though.

- (48) Weisch du [worum ICH en Schwanz mach]? (Lucernese German)  
 know you why I a pigtail make  
 “Do you know why I make a pigtail?”  
 (Schönenberger 2010: 47)

An updated report on these matters is offered by Schönenberger (2016a) where it is conceded that the analysis put forward by Schönenberger (2010) cannot be maintained anymore. Additional data gathered from her corpus shows that *dass* ‘that’ can also appear with short wh-items (albeit when they are stressed). Under these new circumstances, she tries to identify several phonological factors that govern the presence or absence of the complementizer. In some cases, for instance, *dass* “may be used to provide an unstressed syllable between two heavily stressed syllables” or “to add weight to a short prosodic unit in order to counter-balance the length of an adjacent longer prosodic unit” (Schönenberger 2016a: 212). Thus, the complementizer acts as a device for creating a more natural rhythmic flow.<sup>38</sup> We won’t be taking issue with this intuition but take it as a hint that a multifactorial analysis of DFC phenomena taking into consideration different – and perhaps also conflicting parameters – is on the right track.

Thus, the challenge for any successful approach to DFCs is to clarify these two interrelated questions, i. e. to specify the difference between languages that respect the DFC-filter and those that allow violations and to specify under which exact circumstances filling of the complementizer position is licit. This observation can be captured in different ways, a question we will return to at the end of this section.

## 5.2. Theoretical approaches to DFCs

As mentioned before, there are quite different approaches to DFCs on the market (with focus on German): The “traditional” account, so to speak, has been put forward by Grewendorf (1988) and, with certain modifications, Weiß (1998). It rests on the assumption that DFCs involve a featureless complementizer (licensed by an operator in Spec-CP) whose phonological content is optionally or obligatorily erased. Feature sharing via Spec-Head-agreement allows the wh-feature of the wh-item to be handed to C<sup>0</sup> in order to fulfill the selection requirements of the matrix predicate (Grewendorf 1988: 250–252). In a similar vein, yet within an HPSG-setting, Holler (2001) assumes an empty complementizer whose content can be “spelled out” in the relevant dialects. There is also a more surface-based approach in this framework by Kathol (2000), who assumes that wh-elements and finite verbs belong to the same equivalence class. To each of these classes, linearization statements in the common linear precedence (LP) format apply, which in the case at hand correspond (more or less) to the restrictions for topological fields specified in traditional descriptive research (see e. g. Wöllstein 2010 for a thorough treatment). Thus, both finite verbs and complementizers compete for the cf-position (“complementizer field”, i. e. left bracket), which can only host one member of this class and functions as a so-called

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38 In the domain of word order, euphonic principles that refer to a steady alternation of stressed and unstressed segments have a long tradition, e. g. Behaghel (1932: 6) (his 5<sup>th</sup> “law”) or Ries (1907). See Speyer (2010) for an updated and more precise formulation of this principle in the guise of a *Clash Avoidance Requirement* and an application on topicalization constructions in English.

marking trigger for verb-final order (see also the discussion by Holler 2001: 11). When it comes to DFC-dialects, Kathol (2000) stipulates that if the complementizer is realized overtly, the wh-item is recategorized as belonging to the class of vf-elements (whereby vf indicates ‘pre-field’). Holler (2001: 9–14) has shown convincingly that this analysis not only offers no principled account for DFC-varieties, but also runs into serious problems even with the Standard German facts. Finally, there is the approach by Bayer and Brandner (2008, 2010) where DFCs are regarded as a “hybrid phenomenon” that involves different classes of wh-items with head-like or phrasal properties (Bayer and Brandner 2008, 2010; BB in the following). As mentioned above, we focus on this approach because it has the most far-reaching consequences.

On the basis of two acceptability studies (on Alemannic and Bavarian), BB assume that there is a hierarchy of wh-elements as to whether they are compatible with DFCs (see Table 11). The basic idea is that beside clear wh-phrases (49a) and clear wh-words (49b) there are also seemingly word-like wh-items like (49c) that exhibit a more complex internal structure: So-called pronominal adverbs like *warum* ‘why’ (lit. what=for) involve movement of the wh-expression to the specifier of the embedding PP, cf. (50a), and thus have phrasal status (cf. Bayer and Brandner 2010: 5). In a similar vein, they assume a case phrase (KP) for dative-marked wh-items, on the grounds that they seem to pattern with wh-phrases in terms of the acceptability of *dass* ‘that’, cf. (50b).

X'-status	subtype	DFC restriction
wh-phrase	wh-DPs, wh-PPs	optimal with manifest C
wh-word 1	<i>warum</i> ‘why’, <i>wie viel</i> ‘how many’, <i>wem</i> ‘whom.DAT’	
wh-word 2	<i>wer</i> ‘who’, <i>wen</i> ‘whom-ACC’, <i>was</i> ‘what’, <i>wie</i> ‘how’, <i>wo</i> ‘where’	bad with manifest C

Table 11: Types of wh-elements (after Bayer and Brandner 2008: 12)

- (49) a. Ich weiß nicht, [XP *wie viele Seiten*] ich noch brauche. (wh-phrase)  
 I know not how many pages I still need  
 “I don’t know how many pages I still need.”
- b. Ich würde gerne wissen, [X<sup>o</sup> *was*] ich ausfüllen muss. (wh-word 2)  
 I would MP know what I fill=in must  
 “I’d like to know what I have to fill in.”
- c. Ich würde gerne wissen, [XP *warum*] sie das gesagt hat. (wh-word 1)  
 I would MP know why she that said has  
 “I’d like to know why she said that.”
- (50) a. [PP war [P’ um ~~was~~]]  
 b. [KP K<sup>o</sup> [NP wem ]]

The core of the explanation (see Bayer and Brandner 2008: 13–14) rests on the assumption that simplex wh-expressions (i. e. belonging to the class of w-word 2) have a latent C-feature which

gets activated when they are moved into the left periphery and have a functional projection (e. g. TP) as their sister (51a). When the wh-item stays in situ (e. g. with multiple wh-questions) the C-feature is deactivated, which makes a complementizer in C necessary (51b). This leads to the modified version of the Doubly-filled COMP filter quoted in (51)–(52).

- (51) Feature structure:  $\langle W, \pm C \rangle$
- a.  $[_{CP} \text{ was } \langle W, +C \rangle [_{TP} [_{VP} \text{ was } V^o]]]$   
e. g. ... *was er getan hat* “what he did”
  - b.  $[_{CP} \text{ an was } \langle \text{wh}, -C \rangle [_C C^o \text{ dass } [_{TP} \text{ es PP } \langle \text{wh}, -C \rangle V^o \text{ liegt}]]]$   
e. g. ... *an was dass es liegt* “on what (that) it depends”

- (52) Doubly-filled COMP filter:  
\* $[_W \text{ dass}]$  if  $W = X^o$

This approach undoubtedly has its merits, yet it makes necessary certain assumptions that deviate from mainstream Generative Grammar. For example, (51) violates Chomsky’s (1995) chain uniformity condition<sup>39</sup> because the copy of the wh-item in the base position (the foot of the chain) represents an XP, yet a head ( $X^o$ ) in the head of the chain. Bayer and Brandner (2010: 17–19) address this issue in some length and propose the modified version of the chain uniformity condition in (53), according to which it is sufficient if the head of a wh-chain can be simultaneously interpreted as  $X^o$  as well as XP.

- (53) *Condition on chain uniformity* (after Bayer and Brandner 2010: 19):  
The chains  $CH = \langle X^o \dots XP \rangle$  and  $CH \langle XP \dots X^o \rangle$  are uniform if  $X^o$  is surface-equivalent with XP and XP is surface equivalent with  $X^o$ .

The choice between the older erasure approach (Grewendorf 1988; Weiß 1998), which can be regarded as the zero-hypothesis, and the more elaborated, yet also more complex approach by Bayer and Brandner (2008, 2010) is an empirical question that can only be assessed if it has been clarified what the core explananda of the DFC construction are. This issue is of course also dependent on where to draw the division line between grammar proper and processing. Our data shows that both factors have an impact on the acceptability of a complementizer in embedded wh-questions, yet we didn’t find empirical support for such a fine-grained taxonomy of wh-items as proposed by BB. To be fair, we have to admit that our classification wh-items doesn’t fully match with theirs (e. g. we treat *wem* ‘who.DAT’ as simplex wh-item), but we believe that there are nonetheless enough correspondences. In particular, the assumption that a dative-marked wh-item projects more structure than other word-like wh-elements appears rather *ad hoc*. Obviously it is motivated by rather small (and statistically most likely insignificant) acceptability differences within their informant population (cf. Bayer and Brandner 2010: 4–5). In Table 12, the mean acceptability of *wem* ‘whom-DAT’ with respect to the neighboring classes

<sup>39</sup> This condition is as follows (Chomsky 1995: 253): “A chain is uniform with regard to phrase structure status.” In other generative frameworks like HPSG such a condition is not necessary because nonlocal dependencies can be modeled without recourse to the  $X'$ -status of filler and gap (cf. Müller 1999: ch. 9).



is displayed, but even in the absence of any inferential statistic testing (e. g. by conducting a  $\chi^2$ -test or an ANOVA) it is dubious that they represent any significant differences. Comparable data are found in Bayer (2014: 31–32), who reports the results of a questionnaire study with different age groups of speakers from Central to Eastern Bavarian. The acceptability of *wem* ranges from 2.5 (age 40–78) over 3.9 (age 25–35) to 4.4 (young speakers).

wh-phrase	<	wem	<	wh-word
2.5		2.9		(Alemannic)
1.25		2.5		(Bavarian)

Table 12: Mean acceptability of *wem dass* ‘whom.DAT that’ in comparison to the neighboring classes

What is more, we do find DFCs with word-like wh-items (type 2), as the examples in (54) from Vorarlberg Alemannic show (Schallert 2014a: 81). In any event, such cases are quite rare in this variety, but if we take a look at the full spectrum of DFCs in the different languages (section 2), it becomes obvious that there is no strict incompatibility between simplex wh-expressions and a complementizer, see above all the Bavarian examples from Bayer (1984) quoted at the beginning of this paper.

(54) Vorarlberg Alemannic (data from Schallert 2014a):

- a. Jâ jetz’ könnt’r (...) v’rزهla, *wia* daß es dâ früh’r gs’i ischt.  
 well now can=you tell how that EXPL there earlier been is  
 “Well can you tell me a little bit, how it was in the olden days.”
- b. Und denn söt ma-n-o’ noch luaga, *wer* daß da bess’r Leumund het.  
 and the should one=also MP look who that the better reputation has  
 “And then one should also look who has the better reputation.”

As further empirical support for their bipartite distinction between head-like and phrasal wh-items, Bayer and Brandner (2010) and Bayer (2015) point to consonant epenthesis and the interaction with inflected complementizers. Let us start with the second point: Only word-like wh-items seem to be able to act as host for COMP-inflection (55), whereas phrasal operators necessitate insertion of *dass* ‘that’ (56), since they cannot act as a potential target for inflection, which requires the C-head to be lexically filled (cf. Bayer 2015: 23).

(55) a. I woass scho, *wia*-st (du) ausschau-st  
 I know already how-2SG you out=look-2SG  
 “I already know what you look like.”

- b. I woass scho, *wann*-ts (e:s) ins Bett geh-ts  
 I know already when-2PL you.PL in=the bed go-2PL  
 “I already know when you go to bed.”

(56) a. \*I woass scho, *wos* fia Schua-st (du) õ:zong ho-st  
 I know already what for shoes-2SG you on-put have-2SG  
 “I already know what kind of shoes you have put on.”

- b. I woass scho, was fia Schua dass-st (du) õ:zong ho-2SG  
 I know already what for shoes that-2SG you on=put have-2SG

We don't think that this argument is conclusive, though, because there is evidence that also phrasal *wh*-items (in the sense of BB) can license COMP-inflection. Lenz et al. (2014: 10–15, 28–29), for instance, report some results of a pilot study on areal syntactic variation in Bavarian (covering all major dialect regions), among them also COMP-phenomena with the *wh*-operator *warum* 'why'. What is more, clustering is governed by prosodic factors and, therefore, applies on PF. There is no necessity that only C<sup>o</sup>-elements can form such prosodic clusters.<sup>40</sup> Interestingly, both inflection as well as DFCs are robustly attested in this context (inflection: 2.9% of the older and 5.8% of the younger informants; DFCs: 16.5% older, 5.1% younger;  $n_{old} = 103$ ,  $n_{young} = 347$ ). What is more, even Bayer (2015) admits that COMP-inflection can appear with PPs, as is shown in (57). It might very well be that "PPs with a potential X<sup>o</sup>-complement may be analyzable as syntactic heads" (Fn. 20), but this is definitely an auxiliary assumption.

- (57) nix verbotenes, und a ned des [PP an wo ]-st du schon wieder denk-st  
 nothing forbidden and also not this at what -2SG you already again think-2SG  
 "Nothing forbidden and not what you already have thoughts about."  
<http://www.flf-book.de/Benutzer/Partybus.240.htm>

The first point mentioned above circles around the occurrence of epenthetic /r/ (in Bavarian) or /n/ (in Alemannic) as a means to avoid a hiatus (see also Bayer and Brandner 2010: 14–17). In the relevant contexts, both light *wh*-items and *dass* are able to act as clitic host, cf. (58a, b), whereas complex *wh*-expressions on their own fail to do so (58c). The interpretation of this contrast is that cliticization "applies to a syntactic head but cannot apply to a *wh*-phrase" (Bayer 2015: 22).

- (58) a. De woass, we-r-e bin  
 she knows who-R-I am  
 "She knows who I am..."  
 b. De woass [um wiavui Ua] dass-e geh  
 she knows at how-much clock that-I go  
 c. \*De woass [um wiavui Uh-r]-e geh  
 she knows at how-much clock-R-I go  
 "She knows at what time I leave..."

Once again, there is no compelling reason to interpret this contrast as supporting the head-status of light *wh*-elements. While it is true that consonantal intrusion applies only to combinations of function word plus function word (cf. Kabak and Schiering 2006: 73), there are different plausible prosodic reasons why it is blocked with complex *wh*-expressions, first and foremost the fact that they head their own prosodic phrase. This is not to say that such prosodic factors are irrelevant (see the discussion in the preceding section). We just think that they don't warrant such far-reaching conclusions with regard to syntactic structures.

<sup>40</sup> Thanks to Helmut Weiß for bringing up this point.

Another crucial point is this: BB assume that the compatibility of a *wh*-item with a complementizer is a lexical property of the *wh*-item, i. e. whether or not it is equipped with a latent C-feature. This assumption is difficult to reconcile with our empirical findings which suggest, among other things, that syntactic function is an important conditioning factor when it comes to DFC-violations. Even though its grammatical relation may in part be lexicalized in the shape of the *wh*-item or reflected by inflectional features it bears,<sup>41</sup> it is also a relational property by which it is connected with the clausal predicate. Note, in passing, that function is also acknowledged by BB since they try to cover the somewhat better acceptability of dative-marked *wh*-items by assuming an additional functional layer (i. e., a “case phrase” KP).

As interesting as BB’s approach to DFCs may be, it makes too many assumptions with too little empirical gain. Thus, the zero hypothesis which holds that all fronted *wh*-expressions occupy the same structural position (the prefield, in cases of single fronting) preceded by a (silent) complementizer in C<sup>0</sup> seems to be along the right track. Of course, the question remains under which circumstances this head position can or cannot be lexicalized. A partial answer will be presented in the next section.

### 5.3. A modified version of the DFCF

On the basis of our empirical findings and the information we have compiled about microparametric options concerning DFCs, we want to sketch a modified version of the DFCF, which is stated in a constraint-based fashion. The basis of our proposal will be Holler’s (2001) analysis of embedded questions in HPSG. Her analysis rests on the assumption that this sentence type involves a silent complementizer which can optionally be lexicalized. We propose different constraints for this spell-out process, which will be couched in a optimality-theoretical fashion and thus, via constraint-reranking, open to parameterization.

In Holler (2001: 16) the idea can be found that embedded questions feature an empty complementizer. The FORM-specification of such an element is given in (59).

$$(59) \left[ \begin{array}{l} word \\ PHON \langle e_{wh} \rangle \\ SYNSEM | \dots | HEAD \left[ \begin{array}{l} compl \\ FORM *whform* \end{array} \right] \end{array} \right]$$

Naturally, this complementizer differs from its overt counterparts in that the attribute PHON isn’t specified. By comparison, FORM as head-feature has the value *whform* (which is correlated with the respective sentence type description *wh-interrogative*) in order to assure that its complement bears, via subcategorization, the correct morphosyntactic specification (cf. Holler 2001: 23, 26). Violations of the DFCF can be handled by the following assumption:<sup>42</sup>

41 Hence the incompatibility of *was/wat* ‘what’ in many German and Dutch varieties, because it constitutes the maximally underspecified member of this class in terms of its morphosyntactic features (see Jäger 2000 for an investigation of this idea).

42 We leave open the question of how the Dutch/Frisian cases with two complementizers (e. g. *wie of dat* ‘who

(...) the empty *wh*-interrogative complementizer can be phonologically realized as ‘dass’ in certain dialects. This assumption suits the observation that interrogative *wh*-phrases co-occur only with particular complementizers.

(Holler 2001: 26, fn. 37)

Taking Holler’s (2001) analysis as point of departure, we want to propose three conditions for the lexicalization of the zero complementizer  $e_{wh}$ . They will be stated in a constraint-based fashion, more specifically in the format of *Optimality Theory* (OT). Our primary goal is to give some conceptual and, on the basis of our findings (cf. section 4), empirical motivation for them, without bothering too much about the technical details of such an approach. These gaps have to be filled-in by a more thorough investigation on the variability of DFC-phenomena in different dialects/regiolects. The reason for choosing this particular framework is that OT has proven to be a very powerful and flexible approach in modeling small-scaled or “micro-parametric” (cf. Kayne 1996) variation in syntax, be it in terms of areal variation (cf. Bresnan et al. 2007; Seiler 2004) or even down to speaker-oriented variation (Cornips 2009; Schallert 2014b). What is more, we take these constraints to be rather superficial or “soft”, meaning that they don’t have much impact on the grammatical structure per se, but on the lexical realization of a functional morpheme.

On a conceptual level, we are much in line with the suggestion by Sorace and Keller (2005) who argue that grammaticality (not just acceptability as native speakers’ immediate reaction with regard to the wellformedness of a certain linguistic stimulus) is a gradient phenomenon. One point of departure for them are examples like (60)–(61) that each feature extraction of a *wh*-item out of a picture-NP. While (60b)–(60d) were judged less deviant in a magnitude estimation study, the stimuli in (61) received significantly worse ratings. This difference can be modeled as the effect of the “soft” and “hard” constraints in (62) and (63), which are violated in the respective cases (Sorace and Keller 2005: 1506). In *Stochastic Optimality Theory* (StOT) (Boersma 1998; Boersma and Hayes 2001) where constraints are not just ranked on an ordinal, but on an interval scale, this difference is regarded as reflecting the relative distance between the relevant constraints. Since these are interpreted as mean values of normal distributions and each evaluation (i. e. each production or perception act) corresponds to drawing a value out of the normal distributions, soft constraints have a higher probability of temporary re-rankings and thus variability/gradience than hard ones (cf. Bresnan et al. 2007: 332–336 for a more detailed discussion of stochastic constraint evaluation).<sup>43</sup>

- (60) a. Which friend has Thomas painted a picture of?  
b. ? Which friend has Thomas painted the picture of?

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if that”) can be modeled, but note that the two complementizers always appear adjacent so that there is no principal reason for not treating them as a complex lexical element.

<sup>43</sup> This idea is also reflected in the following quote (Sorace and Keller 2005: 1519):

POT [= Probabilistic Optimality Theory, i. e. stochastic OT; our comment] has the advantage of allowing us to compare the relative grammaticality of arbitrary structures. It also provides a natural account for the dichotomy between hard and soft constraints: hard constraints have a very low (near-zero) re-ranking probability, while soft constraints have a higher re-ranking probability.

- c. ? Which friend has Thomas torn up a picture of?
  - d. ? How many friends has Thomas painted a picture of?
- (61)
- a. \* Which friend Thomas has painted a picture of?
  - b. \* Which friend have Thomas painted a picture of?
  - c. \* Which friend has Thomas painted a picture of her?
- (62) **Soft constraints on extraction**
- a. DEFINITNESS (DEF): a picture NP has to be marked [- DEFINITE].
  - b. VERBCLASS (VERB): a verb subcategorizing for a picture NP has to be marked [- EXISTENCE].
  - c. REFERENTIALITY (REF): an NP extracted from a picture NP has to be marked [+ REFERENTIAL].
- (63) **Hard constraints on extraction**
- a. INVERSION (INV): subject and auxiliary have to be inverted.
  - b. AGREEMENT (AGR): subject and verb have to agree in number.
  - c. RESUMPTIVE (RES): resumptive pronouns are disallowed.

The first condition we want to discuss is grammatical weight, which we consider as a processing factor situated outside grammar proper.<sup>44</sup> Our empirical results on Dutch (and, to a somewhat lesser extent, German) clearly point to the relevance of this factor. We also think that some of the rather subtle structural differences between different types of wh-expressions assumed by Bayer and Brandner (2010) can be subsumed under this factor because there are several possible measures of grammatical weight (cf. the discussion by Wasow 1997: 84–87). On the basis of a corpus study on weight-sensitive phenomena in English like particle shift or heavy NP shift, Wasow (1997: 93) concludes that different structural measures of weight in terms of dominance (words, nodes) are equally good predictors for word order variation. Thus, we want to propose a constraint like (64), which partitions wh-items into the two classes exemplified by (65).

- (64) GRAMMATICAL WEIGHT (GRWEIGHT):
1. Branching wh-expressions allow lexicalization of  $e_{wh}$ ; non-branching ones, by contrast, prohibit its spell-out.
  2. A wh-expression is branching if it contains more than one terminal node or if a lexical rule has applied.
- (65) a. Branching wh-items: *warum* ‘why’, *weswegen* ‘why’,<sup>45</sup> *wie viel*- ‘how many’, *welch*- ‘which’, etc.

44 Pioneering work on this factor has been done by Otto Behaghel who formulates the “law of growing members” (see, among other work, Behaghel 1932: 6), which states that among two constituents, if possible, the longer follows the shorter one.

45 In many dialects variants of this wh-expression without fronting occur, e.g. Alemannic *wegs was*, Bavarian *weng wos*, etc.

- b. Non-branching wh-items: *wer* ‘who’, *wem* ‘whom.DAT’, *wann* ‘when’, *wie* ‘how’, *was* ‘what’, etc.

The trivial case for a branching wh-expression would be DPs containing the wh-determiner *welch-*, since they contain an NP as their complement. In a similar vein, wh-expressions like *warum* ‘why’ (lit. ‘what for’) can be regarded as the result of lexical rule application, the standard case being the formation of particle verbs in the Germanic languages, e. g. *auf=machen* ‘open’ (lit. ‘up-make’). Of course, the purely syntactic analysis proposed by Bayer and Brandner (2010: 5), where these cases are treated as PPs with movement of the wh-item to its specifier, also yields a branching configuration:

(66) [PP *war* [P' *um was*]]

As we saw with e. g. the examples from Romance quoted in section 2.2, GRWEIGHT seems to be violable or ranked lower in certain varieties since DFC do occur with light (or non-branching) wh-items. To a lesser extent, this also applies to Germanic, an interesting case being the somewhat blurred picture that emerges with the dative form *wem* ‘whom’ (see section 5.2).

The second factor is grammatical relation. Especially our results on Dutch showed that syntactic function is an important conditioning factor for the presence of a complementizer in the C-domain. As discussed in section 3.2, there is an interesting parallel in the domain of relativization patterns, which in syntactical terms also feature wh-dependencies: The validity of the *Accessibility hierarchy* (AH) (Keenan and Comrie 1977, 1979), which is repeated in (67), as the standard tool for capturing crosslinguistic generalizations in this syntactic domain stems from the idea that syntactic functions decrease monotonically in their availability for the primary relativization strategy in a given language (cf. Keenan and Comrie 1977: 67–68). Note that this hierarchy constitutes the formal basis for the analysis of relativization patterns in unification-based grammar theories like HPSG. In this setting, it regulates the representation of valency information in the SUBCAT-list of a verb’s lexical entry and, by this, the accessibility of grammatical functions for different syntactic constructions, e. g. with depictive predicates (Müller 2008: 45).

(67) SU > DO > IO > OBL > GEN > OCOMP (Keenan and Comrie 1977: 6)

In the spirit of the AH, we can formulate a rough hierarchy for the applicability of the DFCF along the lines of syntactic functions:

(68) GRAMMATICAL RELATION (GRREL):

Wh-items marked for secondary syntactic relations (adverbial, predicative) allow lexicalization of  $e_{wh}$ ; primary syntactic relations (subject, direct object, indirect object) prohibit its spell-out.

So far, we have only found evidence for a rough partitioning of wh-items along these lines, but more fine-grained versions of GRREL are easily conceivable, e. g. along the lines of the different

syntactic functions or semantic types of adverbials (local, temporal, instrumental, etc.). Note that this constraint is dissociated from grammatical weight since it either applies to both short and long wh-items (Dutch) or shows interesting interactions (increasing acceptability of arguments with long wh-items in German).

The third and perhaps most notorious factor we addressed in our empirical study is animacy. The relevance for this factor for a wide range of syntactic phenomena (e.g. differential object marking, scrambling) has been demonstrated, and the *Animacy hierarchy* (Silverstein 1976) and its different reformulations can be regarded as one of the most famous implicational scales in typology. As noted in section 4, also in the domain of wh-dependencies do we find evidence for animacy effects, e.g. in text context of object initial wh-dependencies (Fanselow et al. 2011). On a much more rudimentary level, lexical animacy contrasts in this domain can be observed in quite many languages in that they show a distinction between *who* (animate) and *what* inanimate. In the typological study conducted by Lindström (1995), which is based on a combined sample of 46 languages, all but two languages don't show such a contrast (Lindström 1995: 308). Quite unexpectedly, animacy manifested itself in two directions in our study: While inanimate wh-arguments tended to be judged as more acceptable in the complex condition, their animate counterparts were rated more acceptable in the simple conditions. We can only speculate on what caused this difference, but a plausible hypothesis is the following: In complex wh-elements, animacy is always superimposed by gender (and number, for that matter), whereas it acts as the only diacritic, so to speak, with simplex wh-items. Therefore, a word form like *welchen Mann* 'which man-MASC.ACC.SG' is marked for gender, case, and number, yet conversely a word form like *wem* 'whom-DAT.SG' only in terms of case and animacy. Note that in the case of its inanimate counterpart *was* 'what' it can plausibly be assumed that it even lacks a case specification altogether due to the unavailability of a dative form, alongside nominative and accusative show syncretism (cf. Jäger 2000). For reasons like these, we are hesitant to propose any concrete constraint on the basis of this factor. Of course, additional constraints on the lexicalization of  $e_{wh}$  are imaginable and perhaps also necessary, viz. the prosodic restrictions that seem to govern its presence (cf. section 5.1). However, we won't elaborate on these matters in the present context since we haven't controlled for this factor in our study and the evidence presented and discussed in the existing literature is still inconclusive.

To give you, respected reader, a hint on how the two constraints we have proposed might interact, we give a concrete example with examples from Dutch. As Tables 13–14 show, GRREL has to be ranked higher than GRWEIGHT because wh-adjuncts are always judged significantly better than wh-arguments, irrespective of size. On the other hand, long wh-phrases are judged significantly better than short ones, irrespective of function.

To conclude this final section, we have motivated two “soft” constraints governing the presence/absence of a complementizer in embedded wh-clauses. We believe that they are sufficiently motivated by the empirical evidence adduced by our own study on DFCs in Dutch and German, and of course also the existing literature. Assuming these constraints to be violable and ranked, in OT fashion, opens the possibility of capturing some of the small-scaled variation that can be

Sentence	GrRel	GrWeight
... wie dat je hebt gehoord. (who that you have heard)	*!	*
☞ ... waar dat je de kerel hebt geslagen. (where that you the guy have hit)		*

Table 13: Constraint evaluation for wh-arguments vs. wh-adjuncts

Sentence	GrRel	GrWeight
... waar dat je de kerel hebt geslagen. (where that you the guy have hit)		*!
☞ ... om welke reden (dat) je de kerel hebt geslagen. (of which reason that you the guy have hit)		

Table 14: Constraint evaluation for short vs. long wh-adjuncts

observed among the many DFC-languages in a more natural and consistent way. Of course, the details of such an approach still have to be worked out, since it necessitates more precise picture of the empirical situation: As the pioneering work by Bayer and Brandner (2010) and Bayer (2014) has shown, the presence or absence of a complementizer in embedded wh-clauses (and related syntactic configurations like relative clauses, for that matter) can be governed by quite subtle grammatical factors, and future research has to investigate these factors more thoroughly and on the basis of a representative sample of varieties. In theoretical terms, we subscribe to a lexicalist analysis like the one by Holler (2001). An approach very much along the same lines is presented in Weiß (1998: 27) where it is assumed that in languages that respect the DFCE (e. g. Standard German) the phonological content of the complementizer can be erased. Therefore, instead of assuming two different classes of wh-operators—head-like and phrasal—, as is done by Bayer and Brandner (2010) or Bayer (2015), we keep in line with the traditional analysis that wh-dependencies never target a head-position. Note that we fully agree with the observations presented by Bayer (2015: 26–28) that there is, in diachronic terms, a strong affinity (or cline) from wh-operators to complementizers, but this is not sufficient motivation for a bipartite synchronic analysis.

## 6. Conclusions

This paper tried to give a state-of-the-art-report on DFC-phenomena, mainly in the context of embedded wh-questions. After a detailed survey of comparative and diachronic aspects (section 2) and exploring the range of possible (micro-)variation governing the presence/absence of an additional complementizer (or potentially two, as is the case in Dutch/Frisian) (section 3), we presented some new findings on the situation in Dutch and German dialects/regiolects (section 4). On the basis of a questionnaire study and a corpus investigation, we can make the following



claims:

- Beside the well-known factor of phrase-structural complexity, also the syntactic function of the wh-item (in particular subject/object vs. adverbial) seems to have a robust influence on the overall acceptability of DFCs. This influence, however, may manifest itself in different directions in both languages. A somewhat blurred affect is associated with animacy (relevant as a diacritic for short wh-elements, yet superimposed by other factors in the case of long wh-items).
- With regard to German, there are clear areal differences with regard to the acceptability of DFCs in that the Bavarian/Austrian regiolect (with a stronger dialectal background) also shows a much higher acceptance of this phenomenon than the West Central regiolect we observed. Note that in the traditional base dialects, DFC-structures can be observed all over the German-speaking area (Weiß 1998, Weiß 2017).
- There are some interesting correspondences between the two sources investigated: As far as the syntactic function is concerned, the Zwirner data roughly fits the results from Dutch in that wh-expressions in adverbial and predicative function constitute the most frequent class. As far as the factor length is concerned, our corpus data contained only 1 (!) genuine example of a short wh-expression co-occurring with an additional complementizer. Most of the DFCF-violations we found were either with morphologically complex wh-words (e.g. *warum* ‘why’) or cases where the wh-item is part (subconstituent) of a bigger phrase.

The final part of our paper (section 5) dealt with analytic aspects. On the theoretical level, we discussed and reviewed several recent approaches to DFC phenomena, the one with the most far-reaching consequences being Bayer and Brandner (2008, 2010) and Bayer 2015 where DFCs are regarded as a “hybrid phenomenon” that involves different classes of wh-items with head-like or phrasal properties. We stucked with the more conservative analysis by Holler (2001) and Weiß (1998) resting on the assumption that in embedded wh-clauses a complementizer is always present and that it is its lexicalization (or erasure) which is subject to variation, both *between* and, due to grammatical factors, *within* varieties. On the basis of our empirical findings, we proposed three constraints that govern the presence of a complementizer, i. e. grammatical weight of the wh-item, its grammatical function (adverbial/predicative vs. subject/object), and animacy. It is plausible to assume that these constraints are violable and ordered, as it is the standard assumption within OT, yet the details and further implications have to be left to future research.

## A. Stimulus sentences used in the judgment study

Language	Critical sentences
German	wer (dass) dich verärgert hat. who.SUBJ that you.OBJ annoyed has
Dutch	wie (dat) je heeft geërgerd. who.SUBJ that you.OBJ has annoyed
Translation	‘...who has annoyed you.’
German	was (dass) dich verärgert hat. what.SUBJ that you.OBJ annoyed has
Dutch	wat (dat) je heeft geërgerd. what.SUBJ that you.OBJ has annoyed
Translation	‘...what has annoyed you.’
German	wen (dass) du gehört hast. who.OBJ that you.SUBJ heard have
Dutch	wie (dat) je hebt gehoord. who.OBJ that you.SUBJ have heard
Translation	‘...who you have heard.’
German	was (dass) du gehört hast. what.OBJ that you.SUBJ heard have
Dutch	wat (dat) je hebt gehoord. what.OBJ that you.SUBJ have heard
Translation	‘...what you have heard.’

Table 15: Critical sentences containing wh-items as simple arguments in the German and Dutch studies

Language	Critical sentences
German	welcher Bursche (dass) dich verärgert hat. which guy.SUBJ that you.OBJ annoyed has
Dutch	welke kerel (dat) je heeft geërgerd. which guy-SUBJ that you-OBJ has annoyed
Translation	‘...which guy has annoyed you.’
German	welches Gerücht (dass) dich verärgert hat. which rumor.SUBJ that you.OBJ annoyed has
Dutch	welk gerucht (dat) je heeft geërgerd. which rumor.SUBJ that you.OBJ has annoyed
Translation	‘...which rumor has annoyed you.’
German	welchen Burschen (dass) du gehört hast. which guy.OBJ that you.SUBJ heard have
Dutch	welke kerel (dat) je hebt gehoord. which guy.OBJ that you.SUBJ have heard
Translation	‘...which guy you have heard.’
German	welches Gerücht (dass) du gehört hast. which rumor.OBJ that you.SUBJ heard have
Dutch	welk gerucht (dat) je hebt gehoord. which rumor.OBJ that you.SUBJ have heard
Translation	‘...which rumor you have heard.’

Table 16: Critical sentences containing wh-phrases as complex arguments in the German and Dutch studies

Language	Critical sentences
German	wo (dass) du den Burschen geschlagen hast. where that you the guy hit have
Dutch	waar (dat) je de kerel hebt geslagen. where that you the guy have hit
Translation	‘... where you have hit the guy.’
German	wann (dass) du den Burschen geschlagen hast. when that you the guy hit have
Dutch	wanneer (dat) je de kerel hebt geslagen. when that you the guy have hit
Translation	‘... when you have hit the guy.’
German	warum (dass) du den Burschen geschlagen hast. why that you the guy hit have
Dutch	waarom (dat) je de kerel hebt geslagen. why that you the guy have hit
Translation	‘... why you have hit the guy.’
German	wie (dass) du den Burschen geschlagen hast. how that you the guy hit have
Dutch	hoe (dat) je de kerel hebt geslagen. how that you the guy have hit
Translation	‘... how you have hit the guy.’

Table 17: Critical sentences containing wh-phrases as simple adjuncts in the German and Dutch studies

Language	Critical sentences
German	mit was (dass) du den Burschen geschlagen hast. with what that you the guy hit have
Dutch	waarmee (dat) je de kerel hebt geslagen. wherewith that you the guy have hit
Translation	‘... with what you have hit the guy.’
German	wegen was (dass) du den Burschen geschlagen hast. because of what that you the guy hit have
Dutch	om welke reden (dat) je de kerel hebt geslagen. of which reason that you the guy have hit
Translation	‘... because of what you have hit the guy.’
German	mit welchem Stock (dass) du den Burschen geschlagen hast. with which stick that you the guy hit have
Dutch	met welke stok (dat) je de kerel hebt geslagen. with which stick that you the guy have hit
Translation	‘... with which stick you have hit the guy.’
German	wegen welchem Spruch (dass) du den Burschen geschlagen hast. because of which remark that you the guy hit have
Dutch	vanwege welke uitspraak (dat) je de kerel hebt geslagen. because of which remark that you the guy have hit
Translation	‘... because of which remark you have hit the guy.’

Table 18: Critical sentences containing wh-phrases as complex adjuncts in the German and Dutch studies

## B. Maps

The Maps in Figure 1, 2, 3 were created with the mapping tool provided by the online platform *Regionalsprache.de* (Bock et al. 2008-) (<https://regionalsprache.de/> [last accessed on 23 February, 2018]). For Figure 2 and 3, the base map of the *Kleiner Niederländischer Sprachatlas* (Veith et al. 2017) was used. All these maps can be accessed (and used) online via the following permalinks:

Map	Link
Figure 1	<a href="https://www.regionalsprache.de/Map/Yo0qdzIx">https://www.regionalsprache.de/Map/Yo0qdzIx</a>
Figure 2	<a href="https://www.regionalsprache.de/Map/hfH041w0">https://www.regionalsprache.de/Map/hfH041w0</a>
Figure 3	<a href="https://www.regionalsprache.de/SprachGIS/Map.aspx?shortUrl=M0iTB5Vg">https://www.regionalsprache.de/SprachGIS/Map.aspx?shortUrl=M0iTB5Vg</a>

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