Zu-Infinitivals and Sentential Structure in German

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This paper has three main goals: The first is to offer an adequate analysis of infinitival complements with zu in German from a comparative point of view. The second is to present the empirical evidence in favor of the head-finalness of all instances of IP in German which is provided by a principled analysis of "zu"-infinitivals. The third is to claim that all instances of CP are head-initial in German, therefore excluding zu as the head of C. Throughout the paper we will see that German turns out to be more similar to related languages such as English, Dutch, and Scandinavian, than it may appear at a first glance, and that it is possible to account for (most of) the differences among these languages by means of well-motivated parametric choices.\(^a\)

0. Introduction.

In the last decades, linguistic research has considerably developed in the so-called framework of principles and parameters thanks to comparison of related and unrelated languages. This comes as no surprise in a theory that aims to discover the universal principles underlying the language faculty. In this perspective, the study of certain (relatively) minimal variations allows us a deeper understanding of the general principles that underlie certain similarities among related languages and, at the same time, provides us with a deeper insight into the parameters responsible for the differences among them.

This paper will focus on German infinitivals with zu. The analysis provided

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for other well-studied languages (such as English, Italian, etc.) will be assumed to be the most economical. It will be argued that it holds for German and can possibly be extended to other languages related to German, such as Dutch and the Scandinavian family. All the differences to be found across these languages will be reduced to the different directionality in building the VP and the IP projections, to independent properties of V-to-I movement, and to properties of the infinitival marker in each language.

In section 1, I will argue that, mutatis mutandis, the status of zu in German is completely parallel to that of to in English, an infinitival marker in the head of an infinitival IP. In section 2, I will turn to the categorial status of different types of infinitival complements in German arguing, among other things, that also in this language we can distinguish between the CP-status of control complements, the IP-status of raising complements, and the VP-status of ECM complements. In section 3, I will deal with a phenomenon that arises in German infinitivals and that apparently differentiates German from closely related languages, such as Dutch and English, namely the impossibility of wh- and relative infinitival complements. I will reduce this phenomenon to the intrinsic [-WH]-features of the null infinitival complementizer which selects the [-Tense] INFL; this turns out to be the case also in Scandinavian.

1. Zu as the head of IP

In this section, it will be argued that the infinitival marker zu is not a mere inflectional affix but an autonomous word, namely an infinitival marker which is the head of the infinitival IP.

1.1. The categorial status of zu

German derivational morphology contains several prefixes, but only two of them could be considered inflectional, namely zu and ge-. Although they are similar in that they both appear to form a discontinuous inflectional morpheme with a suffix (-en and -e),¹ as in zu machen (‘to make’), gemacht (‘made’, past part.), gegangen (‘gone’, past part.), some crucial differences must be drawn between them.

The morphemes ge-V-en for past participles are intrinsically dependent on each other and insertion of ge- depends on the verb it applies to, as shown by (1). On the other hand, insertion of zu obeys the selectional

features of the higher verb, as in (2), and can apply to all verbs, including modals and auxiliaries, as in (3). The suffix -en is autonomous from zu and appears in the bare infinitival form, which exists independently and is found in the complement of modals, causatives, etc. (4):

(1) a. sie hat das Buch (ge) übersetzt
    she has the book translated
b. wir sind zum anderen Ufer übersetzt
    we have to the other shore crossed

(2) a. sie versuchte, das Buch zu übersetzen
    she tried the book to translate
b. wir versuchten zum anderen Ufer überzusetzen
    we tried to the other shore to cross

(3) a. er versuchte, ein guter Kerl zu werden
    he tried a good guy to become
b. er versuchte, gewählt zu werden
    he tried elected to be
c. er glaubte, das Buch übersetzen zu müssen
    he thought the book translate to must

(4) a. sie muß das Buch übersetzen
    she must the book translate
b. wir wollen zum anderen Ufer übersetzen
    we want to the other shore cross

The word-dependent subregularities noticed in (1) for the rule inserting ge- are typical of morphological processes and contrast strikingly with the full regularity of zu insertion shown in (2)-(4), which is typical of syntactic processes. I take this to be evidence for the assumption that zu is not a morphological affix but an independent word.² Its functional property of signalling an infinitival complement makes it a good candidate to occupy the INFL position, on a par with its English cognate to.

1.2. The structural position of zu

By means of the following two well-motivated assumptions: (a) zu is in I, parallel to English to; (b) V moves to I in German unlike in English, one can straightforwardly account for the distribution of zu. In the surface, this element always precedes that part of the verb that appears in verb-
second position in main clauses, as we can see in (5)-(7), whose S-structures are represented in (8)-(9):

(5) a. ich kann autofahren
    I can drive
b. ich versuche, autofahren zu können
    I try drive to can

(6) a. ich übersetze das Buch
    I translate the book
b. ich versuche, das Buch zu übersetzen
    I try the book to translate

(7) a. ich setze zum anderen Ufer über
    I crossed to the other shore across
b. ich versuche, zum anderen Ufer überzusetzen
    I tried to the other shore to cross

(8) a. [CP ich [C: [C-kann]] [IP t; [Γ [VP autofahren [v t; [t; t]]]]]]
b. [CP ich [C: [C-übersetzen]] [IP t; [Γ [VP das Buch [v t; [t; t']]]]]]
c. [CP ich [C: [C-setzen]] [IP t; [Γ [VP zum a. U. [v über t; [t; t']]]]]]

(9) a. [IP PRO [Γ [VP autofahren [v t; [zu [können]; i]]]]
b. [IP PRO [Γ [VP das Buch [v t; [zu [übersetzen]; i]]]]
c. [IP PRO [Γ [VP zum a. U. [v über t; [zu [setzen]; i]]]]

In (5)-(7), the (a) sentences are main clauses with verb-second word order. Their structure is given in (8) in which the finite verb is moved to C through I. In C, we find the modal in (8a), and the inseparable verb übersetzen ("translate") in (8b). In (8c), on the other hand, the separable prefix über remains in the VP while the verb setze is moved to C alone. The (b) sentences of (5)-(7) show an infinitival with zu. The derivation given in (9) is completely parallel to that assumed for main clauses, except for I-to-C movement which does not take place in unmarked embedded contexts. In (9a) the modal and in (9b) the whole inseparable verb übersetzen appear to move to I. In (9c), the separable prefix über remains in the VP while the verb setze moves to I.

Indirect evidence for the analysis of [zu + V] as an I at S-structure, is provided by the analysis of the so-called "remnant topicalization" of Webelhuth and Den Besten (1987). Following Chomsky's (1986) restriction of movement to minimal and maximal projections, they propose that starting from a basic structure like (10a), we can obtain (10b), in which the preposed VP does not contain the indirect object (dem Jungen), scrambling it out of the VP before fronting applies:

(10) a. gestern habe ich [VP dem Jungen das Buch gegeben]
    yesterday I to-the boy the book given
b. [VP t; das Buch gegeben] habe ich dem Jungen
    the book given I to-the boy

Webelhuth and den Besten also notice that in a subordinate clause with no verb-second, the tensed verb does not appear to be part of the VP at S-structure, since it cannot be fronted:

(11) a. ?getanzt glaub ich nicht, daß er hat
    danced-past part I don't think that he has
b. *getanzt glaub ich nicht, daß er gerne
    dances I don't think that he willingly
dances I don't think that he willingly

According to Webelhuth and den Besten, (11a) shows that VP movement out of an embedded clause is possible, leaving the tensed part of the verb in place. (11b), on the other hand, is impossible because the inflected verb moves to I and therefore cannot appear in the preposed VP. Jaqueline Guerón (p.c.) suggests that the contrast in (11) is not conclusive with respect to V-to-I movement. It could be possible in fact that after I-to-V movement, the inflected verb remains in VP but must be adjacent to INFL for the trace of the lowered affix to be locally governed. This restriction must be assumed for English, a well-known example of I-to-V language, in which an inflected verb can never appear in a topological VP, as shown in (12b):

(12) a. dance I think that he always does
b. *dances I think that he always
dances I think that he always

In (12a) the INFL morpheme is realized on the modal in INFL and the verb in VP can front. In (12b), instead, the tense morpheme is attached to the V in VP, and this cannot be fronted.

Our analysis of infinitivals with zu, however, provides strong support for the V-to-I movement at least in infinitivals. In English, to can appear alone governing an empty VP, as in (13a) taken from Zagona (1982, ex. (116a)). Its German counterpart is even unprocesisable:

(13) a. You shouldn’t play with rifles, because it’s dangerous to
b. du sollst nicht mit Wehren spielen, **weil es zu gefährlich ist
c. du sollst nicht mit Wehren spielen, **weil es gefährlich ist zu

The German counterpart of (13a) is impossible both in the case in which the infinitival complement is in the basic position (13b) and in the case in which it is extraposed (13c).

Furthermore, while it is possible in German to front the VP leaving a definite object in clause internal position, as in (10b), this is not possible
with an infinitival with zu, as in (14), quoted by McKay (1985) from Huber (1986):

(14) *zu schreiben hat er mich den Bericht ermuntert
to write has he me the report encouraged

Under our hypothesis, there is no possible derivation for the fronted element zu schreiben in (14): it cannot be an I, since X's cannot go to a Spec position; it cannot be a VP from which den Bericht is scrambled, since, as we claim, zu schreiben is in I; and it cannot be a CP, since den Bericht could not have been scrambled out of a CP boundary.

The minimal contrast that arises between (14) and (15), which show the complement of clause union predicates, further confirm our hypothesis: 1

(15) [zu schreiben] hat er [den Bericht] versucht
to write has he the report tried

It is well-known that in clause union constructions, scrambling of pronouns (16b) and full NPs (16c), as well as other properties such as wide scope negation (16d), can apply over the CP-boundary of the complement clause:

(16) a. weil die berühmte Friedlandia [CP dieses Lied in Wien
because the famous F. this song in Vienna
zu singen] versuchte
 to sing tried
b. weil es die berühmte Friedlandia [CP ti in Wien zu singen]
because it the famous F. in Vienna to sing
tried
versehute
tried

(17) a. weil die berühmte Friedlandia [CP dieses Lied in Wien
because this song the famous F. in Vienna
zu singen] versuchte
 to sing tried

d. er versuchte die Prüfung nicht zu machen
(a) he didn't try to do the examination
(b) he expected not to do the examination

The same is not possible in the complement of other classes of verbs such as the factive verbs ermuntern ('encourage') in (14) above, and verlangen ('expect') in (17) below:

(17) a. weil die berühmte Friedlandia [CP dieses Lied in Wien
because this song the famous F. in Vienna
zu singen] versuchte
 to sing tried

d. er versuchte die Prüfung nicht zu machen
(a) he didn’t try to do the examination
(b) he expected not to do the examination

Contrasting (16), in which the matrix verb is a clause union trigger, with (17), in which it is not, we observe the following: The (a) sentences show the unmarked word order; the (b)-(c) sentences respectively display pronoun fronting and NP-scrambling over a CP boundary, while the (d) sentences show the effects of wide scope negation. Whatever the correct analysis of clause union may be, we learn from (16b) that, in this case, scrambling exceptionally applies over what appears to be a CP-boundary. 4

Turning now to (15), after scrambling has applied, the CP is fronted. Our analysis, excluding the possibility for an infinitival with zu to be a VP, can straightforwardly account for the contrast between (14)-(15), which would otherwise be mysterious if we took the preposed constituent to be a VP.

To summarize, I have based my account of the position of zu on the well-motivated assumptions that zu is in I, supported by comparison with English to, and that V moves to I in German (contrary to English), indirectly supported by the "remnant topicalization" facts. The complete parallelism with the English cognate to, makes the assumption that zu is in I the least costly in a framework that has as ultimate goal the study of UG properties. As for the second assumption we must notice that the appearance of V in C only implies that I can be used as an intermediate position for V-movement, not necessarily that V moves to a [±Tense] I to receive inflectional features in all kinds of clauses. In principle, we cannot check if V moves to I in a configuration where VP and IP are both head-

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1 This phenomenon has received much attention in the literature starting from Evers (1975) for Dutch, Thiersch (1978) for German. Cf. also McKay (1985), Grewendorf (1987), among others, for more recent analyses.

4 Even if clause union were to be analysed as CP-deletion, and the preposed constituent were an IP — which I doubt for the same reasons of PRO licensing that we have seen for zu-infinitivals in general — our analysis would hold without problems in that it would still be the IP-projection that is fronted, not the VP.
1.3. Some residual problems

There are two well-known properties of the German verbal complex that this analysis leaves unexplained. However, to my knowledge, no competing analysis has offered a solution for them. In this section I will only point them out and leave them for future research.

As is well-known, when a modal is in the present perfect, it does not appear as a regular past participle but as an infinitive and, in embedded clauses, the word order of the verbal complex is “Aux V Mod”, instead of the expected “V Mod Aux”. Furthermore, in finite clauses, such as (18a), the auxiliary hat (‘has’) carries the inflectional features, while in an infinitival clause, such as (18b), zu does not appear on the auxiliary, but on the modal:

(18) a. weil er es nicht hat wissen können

Von Stechow and Sternefeld (1988), while agreeing with my proposal of V-to-I movement in infinitivals, claim that the contrast in (18) is evidence against V-to-I movement in finite embedded clauses. According to them, zu, being a word, cannot be lowered, whereas finite morphological features can be assigned by government of InfL into V. It is not clear, however, how the contrast in (18a-b) can be derived by the simple stipulation of V-to-I in infinitivals and I-to-V in finite clauses. The greater difficulty is not how to analyse (18a), in which the reanalysed complex wissen können could be adjoined to P after the auxiliary hat has moved into it. The conceptual problem for von Stechow and Sternefeld’s analysis, as well as for ours, is how to derive (18b) through movement of können into P. In fact, if the verbal complex is structured (and it would be undesirable to assume that it is flat, for a number of reasons that cannot be reviewed here), the most prominent head should be the auxiliary, regardless of the linear order. The possibility of moving the modal while leaving the auxiliary in place should lead to a minimality violation of some sort.

Another potential problem for our proposal is provided by the position of the separable prefix with respect to the infinitival with zu in the complement of so-called epistemic modals such as brauchen:

(19) a. daß du ein bißchen früher nicht hättest aufzustehen brauchen, that you a bit earlier not had up-to-get needed

b. *daß du ein bißchen früher nicht auf hättest zu stehen brauchen that you a bit earlier not up had to get needed

(19) suggests that the separable prefix criticizes onto its verb, if this is moved to I, a string adjacent position. After criticization the whole infinitival I containing aufzustehen is further raised to the higher verbal complex, a mechanism that is not at all clear, as we just noticed above. Notice that obligatory criticizations is a language specific property of German, since the Dutch parallels of (19) are both acceptable, as shown in (20):

218
In German, an infinitival clause may always remain in place, as shown in (22) but a raising complement must do so, as shown in (23).

(22) a. weil Johann ein guter Kerl zu sein versucht
    b. weil Johann versucht, ein guter Kerl zu sein
       because Johann tries a good guy to be

(23) a. weil Johann ein guter Kerl zu sein scheint
    b. *weil Johann scheint, ein guter Kerl zu sein
       because Johann seems a good guy to be

The impossibility of (23b) can be reduced to ECP. If the infinitival complement in (23) is a raising complement, its subject position contains a trace which must be directionally governed by the matrix verb, as Koster (1984) independently assumes for Dutch. On the other hand, in a control complement such as the infinitival in (22), the empty subject does not need to be directionally governed and the infinitival complement can be extraproposed.

Ian Roberts (p.c.) suggests that this analysis of scheinen as a raising predicate predicts the impossibility of an anaphor as experiencer, as is actually the case:

(24) a. Johann scheint mir, ein guter Kerl zu sein
    b. Gianni mi sembra essere un bravo ragazzo
       (John seems to me to be a good guy)

(25) a. *Johann scheint sich ein guter Kerl zu sein
    b. *Gianni si sembra essere un bravo ragazzo
       (John seems to himself to be a good guy)

Rizzi (1986) derives the contrast between (24b) and (25b) in Italian from a requirement on chains. The subject NP and its trace form an A-chain. The anaphor, having the same index as the NP-trace in the infinitival subject position enters this chain which is thus assigned two cases and two Θ-roles and is consequently ruled out. (25a) shows that the same is true for German, supporting our extension of the classical analysis to German raising predicates.* Having independent reasons to assume the IP status of the complement of scheinen allows us to test the constituency of other infinitival complements.

2.2. Control complements

The contrast in (22)-(23) reminds us of the well-known difference between control (CP) and raising (IP) complements. A theory-internal reason

* This observation has independently been made by Fänselow (1989).
to suppose so is that PRO must be protected by the CP-projection from proper government by the matrix verb. The argument is quite straightforward, but needs some discussion, since it has often been contradicted in the literature (cf. Tappe (1984), Koster (1984)). As a matter of fact, we apparently have no empirical reason to assume a CP-projection for German infinitivals, since there is no overt infinitival complementizer, and no infinitival wh-complements in this language.

Let us examine the case of complementizers first. In German there appears to be no counterpart of English for, Italian di, etc.

(26) a. I would like for John to read the book
    b. ho cercato di leggere un libro
    c. ich habe versucht, das Buch zu lesen

Van Riemsdijk (1985) assumes that um, on a par with Dutch om, is an infinitival complementizer. But a closer comparison with Dutch om shows that um is a preposition.

(27) a. hij heeft het land verlaten om haar te redden
    he has the country left her to rescue
    b. hij heeft om haar te redden het land verlaten
    he has her to save the country left

(28) a. hij heeft geprobeerd, (om) haar te redden
    he has tried her to rescue
    b. *hij heeft om haar te redden geprobeerd
    he has her to save tried

(29) a. er hat das Land verlassen, um sie zu retten
    he has the country left her to save
    b. *er hat um sie zu retten das Land verlassen

(30) a. er hat (*um) sie zu retten versucht
    he has tried her to save
    b. er hat versucht, (um) sie zu retten

May and Koster (1981) show that there are two occurrences of om: the preposition that embeds a purpose clause which does not have to be extraposed, as in (27), and the complementizer that is optional and introduces a control complement which must be extraposed, as in (28). In (29)-(30) we see that infinitivals with um pattern with prepositional infinitivals with om in that they are adverbial clauses. Furthermore, on a par with adverbial clauses in German, they are preferably extraposed.

Our discussion up to now has shown that there is no evidence for an infinitival complementizer in German. But this does not necessarily mean that German infinitival clauses have no CP. Empirical evidence for the assumption of a CP in English infinitivals is the occurrence of wh-elements in clause initial position, but this does not seem to be the case in German, as shown by (31):

(31) a. *ich weiß nicht, was zu kaufen
    I don’t know what to buy
    b. *das ist die Frau, mit der zu sprechen
    that is the woman with whom to talk

Van Riemsdijk (1985), however, notices that infinitival relatives can be found pied-piped in the complementizer of a finite relative clause as in (32b). The same is also true of wh-complements as in (32a):

(32) a. ich weiß nicht, was zu kaufen du mich gebeten hast
    I don’t know what to buy you asked
    (I don’t know what you asked me to buy)
    b. das ist die Frau, mit der zu sprechen ich dir empfehlen würde
    that is the woman with whom to talk I recommend you
    (that is the woman with whom I recommend you to talk)

Van Riemsdijk proposes that the wh-element is moved to the embedded COMP first, and then the whole clause, functioning as a wh-element itself, is moved to the COMP of the finite clause triggering the V-final word order. A revised version of it in the light of a two-bar CP is the structure in (33):

A major objection to this analysis (cf. Haider (1985), Giusti (1986), Grewendorf (1986), among others), is that, in German a substructure of (33), namely CP2, is ruled out in cases such as (31). However, if the contrast in (31)-(32) can be derived from different properties of the context
in which they appear, as we will claim in section 3, we can save van Riemsdijk’s analysis, which provides, as it stands, strong empirical evidence for the claim that the CP projection is present in infinitivals with zu, despite the fact that it is almost never filled by overt material.12

2.3. Infinitivals without zu

Bare infinitives are found embedded under modals and auxiliaries and, as ECM-complements, embedded under lassen (‘let’) and perception verbs. Let us take the absence of zu to be evidence for the VP-status of this kind of complements:

(34) a. ich lasse [vp Maria das Buch lesen]
    I let Mary the book read

b. ich möchte [vp t₁ das Buch lesen]
    I would-like the book read

Lassen and perception verbs are Exceptional Case markers, while modals and auxiliaries appear to be raising predicates.13 The presence of a subject position in VP is an independently motivated assumption in most current literature (cf. Kuroda (1986), Koopman and Sportiche (1987), Sportiche (1988) among others) and is independently motivated for German, as is argued by Giusti (1990).

Interestingly enough, VP-complements share two properties with raising (IP) complements. Due to the fact that in both cases the embedded subject position must be directionally governed by the matrix verb, they cannot be extrapoosed, (cf. also 1.2. above):

(35) a. *Johann hat gestern nicht gelassen, [Maria das Buch lesen]
    Johann has yesterday not let Maria the book read

b. *weil Johann; für morgen muß [t₁ das Buch lesen]
    because Johann for tomorrow must the book read

(36) a. *weil Maria; nicht scheint, [t₁ das Buch zu lesen]
    because Maria not seems the book to read

b. weil Maria; nicht versuchte, [PRO; das Buch zu lesen]
    because Maria not tried the book to read

12 Notice that our proposal is compatible with any alternative analysis that takes the wh-element to at least pass through the infinitival Spec of CP.
13 If the modal is taken to assign a Θ-role to the subject the raising analysis for the complement of modals should be excluded. However, one can assume that the Θ-role of a modal is assigned compositionally. In any case, if bare infinitivals turned out to be IPs with a null 1, our analysis would still hold, since the claim is that the presence of zu depends on the feature selection of the matrix verb. Modals would be taken to select a null morpheme in the embedded INFL, contrary to raising verbs.

Due to the fact that this type of infinitival complement lacks a CP-projection, no pied-piping construction can arise, even if the subject position of the ECM-complement in (37b) remains in place to satisfy the requirement of government from the matrix verb:

(37) a. *das Buch [das Maria lesen] Johann ließ, kenne ich nicht
    the book which Maria read Johann let I don’t know

b. *das Buch [das lesen] Johann Maria ließ, kenne ich nicht
    the book which read Johann Maria let I don’t know

c. *das Buch, [das lesen] Maria muß, kenne ich nicht
    the book which read Maria must I don’t know

(38) a. *das Buch [das zu lesen] Maria scheint, kenne ich nicht
    the book which to read Maria seems I don’t know

b. das Buch [das in einer Stunde zu lesen] Maria versucht hat,
    the book which in an hour to read Maria tried has
    kenne ich nicht
    I don’t know

The different behaviour of raising and control complements with respect to extrapoosition and pied-piping reinforces our proposal to assume a CP-projection for control complements.

Up to this point we have shown that it is possible to analyse German infinitival clauses with no specific assumption that is not independently needed. In the next section we will deal with certain phenomena that apparently contradict this claim.

3. The (non-)occurrence of wh-infinitivals across languages

As we saw in (31)-(32) above, German does not allow wh-elements in an infinitival CP, as in (39c) and (40c), (unless this functions as a wh-element itself, as in (32) above and (48) below). Cognate languages such as English and Dutch, however, do not display this restriction, as in (39a-b) and (40a-b):

(39) a. I don’t know who to talk to

b. ik weet niet met wie te praten

c. *ich weiß nicht, mit wen zu sprechen

(40) a. that is a woman to talk to

b. dat is een vrouw om mee te praten14

c. *das ist eine Frau, mit der zu sprechen

The null operator that we find in English and Dutch is excluded in German in both finite and infinitival clauses:

(i) *das ist eine Frau, ᵃ (daß) ich einladen will
    that is a woman I want to invite
This striking difference between these closely related languages has led some linguists (cf. Tappe 1984) Koster 1984 among others, for German and Dutch respectively) to attribute a specific structural property to German infinitivals such as the lack of the CP projection, giving up what seems to be two successful trends of research, namely that there are no construction-specific principles and that certain wide-spread constructions, such as infinitival clauses, should be derivable from the same universal principles across languages. Since we have also provided empirical evidence for a CP-structure in German infinitivals in the previous sections, we will provide an analysis here that does not do away with it.

A similar attempt was made in the Seventies by researchers such as Esau (1973), Reis (1973), Ebert (1975), Kohrt (1975) who proposed that zu is a complementizer lowered to VP at some point of the derivation. In the present theory such an approach is not viable since a lowering rule from C to I is not independently motivated. More recently, Wilder (1988, 1989) proposed that zu fills a head-final CP and that the infinitival verb moves to C in this construction. Also this solution is not satisfactory to my mind, in that it cannot generalize the head-initialness of CP in German to all kinds of clauses and does not constrain the V-to-I- to-C movement to main clauses (and to the complement of bridge verbs), as seems to be the case in finite clauses.

In this section, an alternative account will be offered which also tries to capture the intriguing pattern provided by the Scandinavian family. In 3.1, the hypothesis that zu is in C will be considered and rejected. In 3.2, it will be argued that in infinitivals with zu, C is filled with a non-overt complementizer as it is in English control structures without for (cf. Kayne 1975), Emonds (1987), among others. This non-overt complementizer has the feature [WH] and cannot be the head of a wh-complement. But it does not block wh-insertion in its Spec in the pied-piping case, where the infinitival is not assigned wh-features.

(ii) *das ist eine Frau, Ø (um) einzeladten
that is a woman to invite

There is only a limited number of cases embedded under haben (*have*) and sein (*be*) or modifying the indefinite pronoun etwas (*something*), that appear to display a null operator strategy, as in the following:

(iii) ich habe ein Buch zu lesen
I have a book to read

(iv) das Buch ist zu lesen
the book is to read

(v) ich suche etwas zu lesen
I look for something to read

These cases are clearly not instances of typical relative clauses and should be given an explanation that takes into account the contrast with (i)-(ii). Cf. van Riemsdijk (1982), Haider (1984).

3.1. Some comparative evidence

Comparison with languages that have well attested infinitival complementizers, such as Italian and French, shows that zu cannot be in this position.

Kayne (1975, 1981) and Rizzi (1982) argue that one difference between Italian and French on the one hand and English on the other is that did/de are in COMP while to is in AUX (namely I). Among other things, they notice that wh-infinitivals cannot have did/de in French/Italian (41a), but appear to have to in English (41b). The same can be observed of zu in pied-piping clauses (41c), although not in wh-complements (41d):

(41) a. non so dove (*di) andare
b. I don’t know where to go
c. ich weiß nicht wohin zu gehen ich dir empfehlen sollte
I don’t know where to go I should recommend to you
d. *ich weiß nicht, wohin zu gehen

Another difference they notice is that raising complements, having no COMP, do not have did/de in French/Italian (42a), but display to in English (42b), which is assumed to be in AUX. The same is true of zu (42c):

(42) a. Gianni sembra (*di) essere un bravio ragazzo
b. John seems to be a good guy
c. Johann scheint ein guter Kerl zu sein

Assuming that zu is in a head-final C, as Wilder does, has the advantage of deriving the lack of wh-complements with zu, but raises several problems. First, under this analysis also raising complements end up having a CP; this leads Wilder to a reformulation of ECP that is not independently needed. Second, this approach stipulates that zu, qua complementizer, is the only one that triggers a head-final CP (even if zu, qua preposition, triggers a head-initial PP), and that zu is the only complementizer that can coexist with a V in COMP (while finite complementizers never can) at the same time allowing a wh-element in Spec CP in the pied-piping case (a configuration which never occurs in German finite clauses). Third, it misses the generalization that German patterns with English and incorrectly places German on a par with Italian and French without explaining why zu cannot freely drop in wh-complements as did/de and why it does not drop in pied-

15 Giusti (1986) and Wilder (1988) notice that it is possible in certain cases to rescue a wh-infinitival dropping zu:

(i) ich weiß nicht, was (*zu) tun
I don’t know what to do

(ii) was (*zu) tun ist unklar
what to do is unclear
piping clauses. Fourth, it misses the parallelism with Mainland Scandinavian which also displays the lack of wh-infinitivials.

As Platzack (1986) shows, Swedish patterns with Italian and French, while Danish and Norwegian pattern with English and German, with respect to the position of the infinitival marker:

(43) a. jag har försökt (att) inte köpa boken (Swedish)
    I have tried not to buy the-book
b. han verkar (*att) vara en trevlig typ
    he seems to be a good guy

(44) a. jeg har prøvet ikke *(at) købe bogen (Danish)
    I have tried not buy book-the
b. han lader til at være en flink fyr
    he seems to be a good guy

Swedish att, in (43a), introduces the infinitival clause (it precedes the negation inte), can be deleted and, in (43b), cannot appear in the complement of raising predicates, proving to be a complementizer. In (44a), Danish at is more embedded in the structure (follows the negation ikke), cannot be deleted and must appear in raising complements, as in (44b), proving to be an inflection marker. Notice that Danish and Swedish are consistently head-initial and there is no way to analyse at in Danish as being in C à la Wilder. Notice also that even if Swedish att can optionally delete in non-wh-infinitivials, it cannot leave its place to a wh-element:

(45) a. *jag vet inte vad (att) köpa (Sw.)
    I know not what to buy
b. *jeg ved ikke hvad (at) købe (Da.)

The complete parallelism in Swedish and Danish with respect to the lack of wh-infinitivials shows that the position of the infinitival marker is not directly relevant to this phenomenon.

In Giusti (1986), however it is noticed that relative clauses are not possible in infinitivials without zu, and that even wh-complements are more acceptable the shorter or the more idiomatic they are:

(iii) *das ist eine Frau mit der (zu) sprechen
    that is a woman with whom to talk
(iv) *ich weiß nicht, wenn mit dem Presidenten sprechen (*zu) lassen
    I don’t know who with the president speak to let

The judgments vary among speakers and clearly show that zu cannot simply drop (or fail to be inserted) as a complementizer would be expected to do.

The complete parallelism in Swedish and Danish with respect to the lack of wh-infinitivials shows that the position of the infinitival marker is not directly relevant to this phenomenon.

3.2. An alternative account

One possibility which comes to mind would be to assume (as it is argued in Giusti (1986)) that the non-overt infinitival complementizer acts as an overt element for the doubly-filled COMP Filter, which applies in full generality to German and Scandinavian, but not to Dutch. But the correlation of doubly-filled CP in finite clauses with wh-infinitival complements makes the wrong predictions: in English doubly-filled CPs in finite clauses are not possible, while wh-infinitivials are; on the other hand, in Swiss German doubly-filled CPs in embedded finite clauses, but no wh-infinitivials, are allowed.

There have been several attempts in the literature to overcome the theoretical inadequacy of the doubly-filled COMP filter of Chomsky and Lasnik (1977). Most of them appeal to some restriction on feature assignment to the clause (given that this filter never applies in matrix clauses) and to some Spec-head agreement requirement (cf. Taraldsen (1986), Fukui and Speas (1986), Giusti (1988), Rizzi (1991)). In any case, it cannot be the effect of a very deep parameter, since closely related languages such as German and Bavarian,17 Italian and Veneto, differ in this respect, the standard languages permitting only one element in non-matrix CPs, the dialects having doubly-filled COMPS:

(46) a. ich weiß nicht wann (*daß) der Xaver kummt (German)
    b. i wo ned wann (daß) seja Xavea kummt (Bavarian)
(47) a. non so quando (*che) viene Gianni (Italian)
    b. mi no no quando che el vien Zani (Veneto)
    I don’t know when (that) John comes

Luigi Rizzi (p.c. 1988) suggests that if a complementizer like daß in Bavarian, or che in Veneto, can occur as the head of a [+WH]-CP with a wh-element in Spec, this means that it can bear [+WH]-features. If it is assigned only [-WH]-features in the lexicon, it can never appear in the head of a [+WH]-CP, as in Standard German or Standard Italian. The same would be for the feature [+REL]. In Bavarian relative clauses, one can find a lexical complementizer wo or a non-overt complementizer (cf. Bayer (1984)); in Standard German, only a non-overt complementizer can bear the feature [+REL].

Under this analysis the choice for [+WH],[±REL]-features has to be learned for each complementizer in the lexicon, the unmarked possibility being [-WH], [-REL]. This should apply to non-overt infinitival

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16 The assumption of a non-overt infinitival complementizer is needed in more familiar cases such as English control structures without for, (cf. Kayne (1978), Emonds (1987) among others). Therefore, I will not argue for the adequacy of such an assumption here.

complementizers as well. Languages which permit wh-infinitivals, such as English and Dutch, allow the silent infinitival complementizer to be compatible with [+WH], [+REL]-features; languages which do not allow wh-infinitivals such as German, Danish, and Swedish do not.

In pied-piping infinitivals, seen in (32) and repeated here as (48), the infinitival clause does not receive [+WH] or [+REL]-features and the non-overt infinitival complementizer can occur. The wh-element in the Spec of CP therefore does not agree in wh-features with the head, but contributes to qualify the whole infinitival clause as a wh-element in the Spec of the higher clause:

(48) a. ich weiß nicht, was zu kaufen du mich gebeten hast
I don’t know what to buy you me asked
(b) das ist die Frau, mit der zu sprechen ich dir empfehlen würde
that is the woman with whom to talk I you recommend would

The infinitival clause in the Spec CP of the finite embedded clause functions as a whole wh-phrase, even if its head is not [+WH] much in the fashion of how nice in (49):

(49) how nice a boy is he?

a boy in (49) is not a wh-word, and it is not assigned wh-features by anything. However, it is modified by a wh-modifier how nice and can be pied-piped in Spec CP, functioning as a wh-phrase.

This also captures the following contrast that appears in main clauses:

(50) a. *was zu kaufen weiß ich nicht.

what to buy know I not

b. was zu kaufen hast du mir empfohlen?

what to buy have you to me recomended

In (50a) the higher CP is not marked as [+WH], since (50a) is not a question. The infinitival CP, on the other hand receives [+WH] features from the matrix predicate. The sentence is therefore ruled out on a par with (41d) above. In (50b), instead, the higher CP is [+WH] since it is a matrix question, and the infinitival CP is [+WH] and the sentence is ruled in on a par with (41c) above.

The same reasoning holds for relative clauses, as in (48b). [+REL]-features are assigned to the finite CP not to the infinitival one, which is in the complement of empfehlen. But the relative phrase can move to Spec CP so that the whole infinitival CP functions as a relative phrase, once it is moved to the Spec CP of the finite clause.

It is not clear what triggers pied-piping of an infinitival complement. This property of German cannot be reduced to the impossibility of straight

wh-infinitivals, since we do not find it in Scandinavian, where wh-infinitivals are not permitted, and we find it in Italian, which also has wh-infinitivals. To my knowledge, there has been no tentative in previous literature to reduce this phenomenon to other properties of German and I will also leave it for future research.

3.3. Conclusions

Relating the doubly-filled COMP to lexical properties of specific complementizers can look like a significant weakening of the original hypothesis proposed by Chomsky and Lasnik (1977) and subsequent literature. But this is simply required by a broader knowledge of the data which shows that the possibility of a doubly-filled COMP cannot rely on other independently motivated parameters. With respect to the learnability issue, following Berwick (1985), we can imagine that the unmarked choice for a complementizer is to have the feature [-WH] only. A subset of languages will provide the child with evidence for [+WH] features for each complementizer, including the silent ones.

As Chomsky (1988) notices, it seems theoretically desirable and empirically correct that variation among languages is to be reduced to lexical (and not structural) properties of the language. In this paper, we have reduced all the differences among infinitival clauses in various languages to the features lexically assigned to the infinitival complementizer and to very general principles that constrain X'-theory with respect to the directionality parameter and V-to-I movement.

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