

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.*

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 *-t*),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-t/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

¹ *-en* is the bare infinitival ending with no exception. Past participles of regular verbs have the form *ge-V-t*. Irregular verbs not only vary with respect to the presence of *ge*-, as will be shown below in the text, but also with respect to the appearance of the ending *-t* or *-en*.

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 übergesetzt
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-

² I will not take stand here on how inflectional rules interact with syntax. See Baker (1988), Chomsky (1988) among others. See also Pollock (1989) for an approach in which affixes are inserted directly at D-structure.

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 versuchte, zum anderen Ufer *überzusetzen*
I tried to the other shore to cross
- (8) a. [CP ich_j [C° [C° kann_i] [IP t_j [I° [VP autofahren [V° t_i] [I° t_j]]]]]
b. [CP ich_j [C° [C° übersetze_i] [IP t_j [I° [VP das Buch [V° t_i] [I° t' _j]]]]]
c. [CP ich_j [C° [C° setze_i] [IP t_j [I° [VP zum a. U. [V° über t_i] [I° t' _j]]]]]
- (9) a. [IP PRO [I° [VP autofahren [V° t_i] [I° zu [können_i] _i]]]]
b. [IP PRO [I° [VP das Buch [V° t_i] [I° zu [übersetzen_i] _i]]]]
c. [IP PRO [I° [VP zum a. U. [V° über t_i] [I° zu [setzen_i] _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 *setzen* 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 *setzen* 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 Weibelhuth 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 proposed 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 have I to-the boy the book given
b. [VP t_j das Buch gegeben] habe ich dem Jungen;
the book given have I to-the boy

Weibelhuth 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 glaube ich nicht, daß er hat
danced-past part I don't think that he has
b. *tanzt glaube ich nicht, daß er gerne
dances I don't think that he willingly

According to Weibelhuth 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 Guéron (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 topicalized VP, as shown in (12b):

- (12) a. dance I think that he always does
b. *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 unprocessable:

- (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 (1980):

- (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:³

- (15) [*t_j zu schreiben*] hat er [*den Bericht*]_j 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_j die berühmte Friedlandia* [_{CP} *t_j in Wien zu singen*]
because it the famous F. in Vienna to sing
versuchte
tried
c. *weil dieses Lied_i; die berühmte Friedlandia* [_{CP} *t_i 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 tried 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 the famous F. this song in Vienna
zu singen] verlangte
to sing expected

- b. **weil dieses Lied_i; die berühmte Friedlandia* [_{CP} *t_i in Wien*
because this song the famous F. in Vienna
zu singen] verlangte
to sing expected
c. **weil es_j die berühmte Friedlandia* [_{CP} *t_j in Wien zu singen*]
because it the famous F. in Vienna to sing
verlangte
expected
d. *er verlangte die Prüfung nicht zu machen*
(a) *he didn't expect 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 [\pm 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-

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 licencing 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.

³ 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.

final, as in (8), because V and I are string-adjacent.⁵ On the other hand, the assumption of *zu* in I° as in (9) allows us to check V-to-I movement in infinitives, as argued above. Considering recent studies on verb movement in various languages, it appears that we can roughly formulate two implicational universals: a) if lexical verbs move to I, then also auxiliaries and modals do; b) if infinitives move to I, then also finite verbs do.⁶ Since the strongest empirical evidence for V-to-I movement we have found so far in German is for infinitives, it seems safe to assume that this movement applies in embedded finite clauses as well. Furthermore, for some version of the least effort principle of Chomsky (1988, and class lectures, Fall 1990), a derivation with V-to-I movement in the syntax appears to be more economical than a derivation with affix hopping in the syntax plus V-to-I movement at LF⁷ and is probably preferred by the child if no evidence for the contrary is found.

The syntax of *zu*, therefore, provides empirical evidence and theoretical support for the head-finalness of IP and for V-to-I movement in embedded clauses in German.⁸ This is a welcome result since several interesting hypotheses are based on the head-finalness of IP in German, but, as far as I know, no direct evidence had been given for it.

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

⁵ On the other hand, if one assumes IP to be head-initial, as Travis (1984) does, V-to-I movement must be ruled out in V-final clauses and *zu* must be taken as an affix, contrary to what we have argued for in 1.1. Travis's approach faces other empirical and theoretical problems, as argued by Schwarz and Vikner (1989).

⁶ Pollock (1989) shows that in English, only auxiliaries in finite clauses move and in French, all verbs move in finite clauses while in infinitives only auxiliaries do. Belletti (1988) shows that in Italian verb movement is generalized in finite and infinitival clauses.

⁷ Chomsky (1988) assumes V-to-I movement to take place at LF necessarily after downward movement of the affix in order for the affix to c-command its trace.

⁸ Cf. the already mentioned Webelhuth and den Besten (1987), and also Schwarz and Tomaselli (1988), among others.

- because he it not has know can
(because he hasn't been able to know it)
- b. ohne es haben wissen *zu* können
without it have know to can
(without having been able to know it)

Von Stechow and Sternefeld (1988), while agreeing with my proposal of V-to-I movement in infinitives, 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 infinitives 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 I° 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 I°. 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
(that you needed to get up a bit earlier)

In (19), the auxiliary *hättest* belongs to the matrix clause. The occurrence of the infinitival with *zu* between the auxiliary and the modal is parallel to the occurrence of the infinitival lexical verb in (18a) above. The question here is why the prefix *auf* must be attached to the raised infinitival in (19a) and cannot remain in the VP in (19b), on a par with verb second clauses.

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

- (20) a. dat hij wel wat vroeger op heeft hoeven te staan
 b. dat hij wel wat vroeger heeft hoeven op te staan
 that he somewhat earlier has needed up to get

I think that further inquiry on the internal structure of the verbal complex in these cases will probably shed some light on these questions which I therefore leave for future research.

2. *Zu-infinitivals: IPs vs. CPs*

If *zu* is the head of IP, *zu*-infinitivals must at least be IPs. However, comparison with English (and possibly some uniformity requirement inside the lexicon saying that all clausal complements, regardless of the [\pm Tense] value of their Infl, are CP unless otherwise specified, as argued by Grimshaw (1979)) suggests that they are full clauses, therefore CPs. In this section we will see that the hypotheses formulated for English also hold for German. The differences can once again be derived by independent properties of the two languages.

2.1. *Raising complements*

It has been claimed in the literature (cf. Ebert (1975), Thiersch (1978), Webelhuth (1985)), that there is no NP-movement in German on the basis of the lack of NP-movement in passives. However, the fact that an NP can and sometime must receive case in its VP-internal position does not necessarily imply that NP-movement is not possible (or even obligatory) in certain other cases.

Raising predicates such as *scheinen* ('seem'), also display the well-known properties that trigger NP-movement of the subject of the embedded infinitival. The subject of *scheinen* does not receive a Θ -role. (21a) is grammatical because the expletive *es* appears in the main clause subject position (cf. also Cardinaletti (1990)), (21b) is ruled out because a full NP appears in this position, (21c) is grammatical because the full NP is raised from the infinitival subject position, receiving Case and Θ -role in the usual way:

- (21) a. weil es scheint, daß Johann ein guter Kerl ist
 because it seems that Johann a good guy is
 b. *Johann scheint, daß er ein guter Kerl ist
 Johann-Nom seems that he a good guy is
 c. Johann scheint ein guter Kerl zu sein
 Johann-Nom seems a good guy to be

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 extraposed.

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.⁹ 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

⁹ This observation has independently been made by Fanslow (1989).

to suppose so is that PRO must be protected by the CP-projection from proper government by the matrix verb.¹⁰ 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, \emptyset 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
 b. er hat versucht, (*um) sie zu retten
 he has tried her to save

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.¹¹ Furthermore, on a par with adverbial clauses in German, they are preferably extraposed.

¹⁰ I am not really concerned on the status of the empty subject of control infinitivals. What is relevant to the point here is that a distinction between control and raising must be independently drawn in German as well.

¹¹ This was shown in Giusti (1986). Wilder (1988) independently argues for this conclusion.

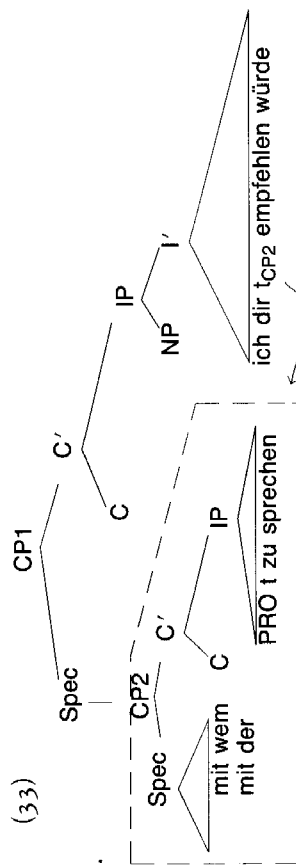
Our discussion up to now has shown that there is no evidence for an infinitival complementizer in German. But this does not necessarily mean that German infinitival clauses have no CP. Empirical evidence for the assumption of a CP in English infinitivals is the occurrence of wh-elements in clause initial 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 me 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 you recommend would
 (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_i möchte [_{VP} t_i 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 extraposed, (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_i für morgen muß [_{t_i} das Buch lesen]
because Johann for tomorrow must the book read
(36) a. *weil Maria_i nicht scheint, [_{t_i} das Buch zu lesen]
because Maria not seems the book to read
b. weil Maria_i nicht versuchte, [PRO_i 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 I, 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 extraposition 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 wem 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

¹⁴ 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, \emptyset (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, \emptyset (um) einzuladen
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 *di/de* are in COMP while *to* is in AUX (namely I). Among other things, they notice that wh-infinitivals cannot have *di/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 *di/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 bravo 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-complements¹⁵ as *di/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

ping clauses. Fourth, it misses the parallelism with Mainland Scandinavian which also displays the lack of wh-infinitivals.

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 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-infinitivals, it cannot leave its place to a wh-element:

(45) a. *jag vet inte vad (att) köpa (Sw.)

b. *jeg ved ikke hvad (at) købe (Da.)
I know not what to buy

The complete parallelism in Swedish and Danish with respect to the lack of wh-infinitivals 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 infinitivals 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, wen mit dem Präsidenten sprechen (*zu) lassen
I don't know who with the president speak to let

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

I take wh-infinitives without *zu* such as (i) as idiomatic VPs.

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 complementizer¹⁶ 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-infinitivals are; on the other hand, in Swiss German doubly-filled CPs in embedded finite clauses, but no wh-infinitivals, 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 woa ned wann (daß) dea Xavea kummt (Bavarian)

(47) a. non so quando (*che) viene Gianni (Italian)

b. mi no so 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 [\pm WH],[\pm 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

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.

¹⁷ Cf. Bayer (1984) for the analysis of Bavarian as a doubly-filled COMP language.

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

(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 you recommend would
(that is the woman with whom I recommend you to talk)

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 recommended

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-infininitives, since we do not find it in Scandinavian, where wh-infininitives are not permitted, and we find it in Italian, which also has wh-infininitives. 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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