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Festschrift für Martin Prinzhorn

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Edited by

Clemens Mayr
Leibniz-Zentrum Allgemeine Sprachwissenschaft

Edwin Williams
Princeton University

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Preface: Two perspectives on Martin Prinzhorn

Clemens Mayr & Edwin Williams

Leibniz-Zentrum Allgemeine Sprachwissenschaft, Princeton University

The colleague's perspective Legendary is Martin Prinzhorn's success in managing for two and a half decades an ongoing presence of generative syntax for the students in Vienna with very sharply limited resources until recent years. He accomplished this in part by marshaling a stream of scholars and teachers from around the world to amplify his own personal efforts. Some of these became his soldiers, returning often, though Martin himself would not like to be linked with the authority and blind loyalty that soldiering implies.

Martin has been especially talented at identifying junior professors on the rise, and recruiting them for duty in Vienna. He presents them with students enthusiastic to learn as much as they can in the time available. He also presents them with magical Vienna, and points thereabouts. In addition, in the earliest years, starting well before the internet, he established crucial but informal links to other universities. I remember traveling as a part of a Vienna "team" of five to Budapest in the mid nineties, to give talks and meet the people there, all organized by Martin without funding. He also introduced linguists from around the world to each other. Many of the people in this volume I met for the first time in Vienna, or re-established contact with them there. We will always have Vienna.

I won't say that Martin Prinzhorn's instincts in linguistics are impeccable, only that they coincide strongly with my own, and where they do not, I should take note, and so should you. He has long urged narrowly focused syntacticians to look to phonology and semantics for inspiration, or at least for intellectual fellowship. He has long promoted a broadened perspective for generative linguistics, including philosophy and cognitive science. And he has long sought to wake us all up to the interconnectedness of the arts and the sciences, and to the possibility of finding congenial minds in the remotest quarters. I am sure that I am not alone among the contributors to this volume, first, in admitting that I have failed in great measure to live up to these calls to action, but second, in realizing that such a voice as his is needed now more than ever. Lead on, Martin! Take us further!

The student's perspective I am certain that each of the 17 former students of Martin Prinzhorn who contributed to this volume—the number would be even higher if birthdays did not come with a date and by consequence festschrifts did not come with a strict deadline

attached—has heard things like: “It’s interesting that you, too, graduated from the linguistics department in Vienna,” usually followed by a question of the sort of “Why is it that so many students from one small department go on to pursue a career in linguistics?” Even Martin himself seems to be perplexed by this, as the following comment of his once made to me makes clear: “I don’t get it. Why do they [his students (eds.)] all want to become linguists? It’s not like that will help them become doctors.”

The answer to these questions, I think, must have something to do with the atmosphere at the department in Vienna. It is characterized by a unique form of intellectual curiosity resulting from two slightly contradictory features: on the one hand, one encounters quite strong assumptions about the nature of the object under study, and on the other hand one finds a sense of not taking life and oneself too seriously. Consequently as a student, one attends in-depth seminars on advanced topics and at the same time gets to spend valuable time with the teacher at the *Heurigen* or the *Café*. And to be honest, I am not so sure which of these two is more crucial, because *durchs Reden kommen d’Leut zam* (‘by talking people find common ground’).

I am sure, however, that the ambivalence of the department is a reflection of Martin’s character—the linguist and the art-critic, the city resident and the countryside dweller, the teacher and the friend. So, the answer to the questions above must be “That’s because of Martin”, because after having met him, no one wants to become a doctor anymore.

Clitic *denn* and *wh*-movement*

Josef Bayer

Universität Konstanz

1. Functions of German *denn*

The German word *denn* derives from Old High German *thanne* ('then') (cf. Abraham 1991, Wauchope 1991, Wegener 2002). According to Abraham (1991), it was first a local adverb which later on could also serve as a temporal adverb. Afterwards it acquired the more abstract function of marking a causal antecedent (*post hoc, ergo propter hoc*). This reduction to a higher level of abstraction is iconically related to the weakening of the vowel /a/ to /e/, phonetically corresponding to [ɛ] or even [ə]. *Dann* as a temporal adverb as well as *denn* as a clause linker for a logical antecedent¹ in the sense of *because* are still part of contemporary German. The point of interest for the present purpose is that already in Old High German *denn* had developed also into a discourse particle (DiP) that is confined to questions, polar as well as *wh*-questions.²

- (1) a. Hast du denn Zwiebeln gekauft?
have you DENN onions bought
'Did you happen to have bought onions?'

* Comments by Yvonne Viesel, Clemens Mayr and Edwin Williams as well as by an anonymous reviewer were very helpful. Thanks to a large number of fellow linguists who provided judgements that greatly enhanced my confidence in the present story, and to Marc Meisezahl for technical help. This work was supported by DFG-grant BA 1178/9-1. It is devoted to Martin Prinzhorn, without whose work the world would have missed some of its finest linguistics.

- (i) Karl kam nicht zu der Versammlung denn er hatte Zahnschmerzen
Karl came not to the meeting because he had tooth.pain

²For many speakers, (1c) is out, but not for all. We will return to this fact which gains importance in the present contribution.

- b. Wer hat denn Zwiebeln gekauft?
 who has DENN onions bought
 ‘Who bought onions? (I’m wondering)’
- c. *Gerlinde hat denn Zwiebeln gekauft.
 Gerlinde has DENN onions bought

The DiP’s semantic contribution to questions is a rather vague contextualization that links the interrogative meaning to some common ground shared (or believed to be shared) by the speaker and the interlocutor. This was already seen by Otto Behaghel, see Behaghel 1928: 115, who provides for the disapproval question *Wo bleibst du denn so lange?* (‘where stay you DENN so long?’) the paraphrase “Unter den **so benannten Umständen** (emphasis, JB) solltest du längst da sein“ (‘Under such and such circumstances, you should long be back’). The DiP *denn* shares with other *d*-words the property of being a deictic expression. Thus, (1a) is close to ‘Did you buy onions under these circumstances (that I, the speaker, assume are known to both of us)?’, and (1b) is close to ‘Who under these circumstances (that ... are known to both of us) bought onions?’ with possible further interpretations of various sorts such as ‘Who {on earth / the hell / to my surprise} bought onions?’ What is informally referred to as ‘these circumstances’ is supposed to be known to the addressee as part of the common ground, a fact that explains why *denn* is not felicitous in true out-of-the-blue questions, see König 1977.

Denn is fine in polar and constituent questions but – for many speakers including myself – must not be used in assertives as in (1c). Why is this so? Perhaps the grammaticalization of *denn* has developed asymmetrically. Its more progressive development took place in the syntax of questions but not in the syntax of assertives. Such clause-type dependent diachronic developments occur frequently.

In spoken German, *denn* as a DiP, but not in its other functions, can undergo reduction to a clitic. This enclitic element, *-dn* or *-n*, and its syntactic role has been described by Grosz (2005), Weiß (2002), Bayer (2012) and others. Weiß (2002) and Bayer (2010, 2012, 2013) claim that in Bavarian, *-n* has become obligatory in genuine *wh*-questions but remains optional in polar questions.³ Once it is obligatory, it stops making a semantic contribution to sentence meaning and shifts toward a pure question marker.

(2) *Bavarian*

- a. Wo wohnst-n du?
 Where live-N you
 ‘Where do you live?’
- b. ??Wo wohnst du?

³See Lehmann 2002: 124 for the process of “obligatorification”. Hack (2009) finds in her study of Rhetoromance questions close particle correspondences between Bavarian *-n* and *pa* (derived from Latin *post*) in Northern Italian dialects; *pa* is obligatory in *wh*-questions in Badiot, Marèo and in Gherdëina, with a concomitant loss of its original meaning. In Gherdëina, the grammaticalization of *pa* is more advanced than in the other dialects. Here *pa* is obligatory in *all* questions, i.e. also in polar questions. Pankau (2017) identifies, on the basis of dialect grammars, Thuringian *enn* as an obligatory question particle in both *wh*- and polar questions.

(2a) lacks the contextualization effect noted above. Clear evidence for this is that *-n* is (i) obligatory and (ii) semantically empty. Thus in Bavarian, *-n* may also occur in out-of-the-blue-questions. (2b) is more or less ungrammatical, unless the question is used in special functions such as echo questions, which are arguably not “real” questions. Bayer (2010) identifies the Bavarian clitic *-n* as a *wh*-agreement marker. This would explain why Bavarian shows the phenomenon of *wh*-drop. For details see Bayer 2010, 2012, 2013.

Let me emphasize that the present article excludes these special properties of clitic *denn* in Bavarian. What we are dealing with here is the optional and semantically stable clitic form *-n* that occurs in run-of-the-mill colloquial German.

Confusions often arise from the fact that there are speakers of German for whom *denn* is still an adverb close to the temporal adverb *dann* but with a tendency towards *schließlich* (‘finally’ ‘consequentially’).⁴ The language of these speakers is usually of a northern variety. For them, *denn* can appear also in assertives. Here are some examples.⁵

- (3) und **dann** bin ich noch mal reingegangen und diese stellen
 and then am I yet once returned and these parts
 wurden knallrot, sonnenbrand und nach ein paar tagen
 became flaming.red sun.burn and after a few days
 ging es weg das rote und die flecken blieben
 went it away the red.one and the spots remained
 sehr weiss bin sofort zum dermatologen gegangen und
 very white am immediately to.the dermatologist gone and
 er hat **denn** die weißfleckenkrankheit diagnostiziert.
 he has DENN the white.spot.illness diagnosed
 ‘... and then finally he diagnosed vitiligo.’
<http://www.hautarztzentrum-kiel.de/dermatologie/vitiligo/>
 27-04-2017

- (4) als er **denn** endlich Kenntnis erlangte.
 once he DENN finally knowledge obtained
 ‘... once he was finally informed.’
<https://www.welt.de/politik/deutschland/article118444403/Projekt-Ruecktritt-Wann-muss-ein-Minister-gehen.html>

- (5) So, ich bin **denn** mal weg.
 Ok I am DENN once away
 ‘Ok, I’m gone for a while.’
<http://www.ariva.de/forum/so-ich-bin-denn-mal-weg-300763>
 27-04-2017

⁴See also the use of *denn* in conditional clauses studied in Csipak & Zobel 2015.

⁵(3) is quite revealing because it shows that the writer has command over both *dann* and *denn*; this confirms to the suspicion that there is a subtle albeit real semantic difference between the two.

- (6) Im Frühjahr, als er **denn** endlich fand, dass er gar nichts ...
 in.the spring when he DENN finally found that he at.all nothing
 ‘In spring, as he finally realized the he could not ... anything ...’
 G. Willard (1852), Die Geschichte der Vereinigten Staaten von Nordamerika.
- (7) Nachdem ihr **denn** die Voraussetzungen für die Trophäe
 after you DENN the prerequisites for the trophy
 oder den Erfolg erfüllt habt, ...
 or the success fulfilled have
 ‘After you have finally fulfilled the prerequisites ...’
<http://www.easyguide.de/xbox360/red-deadredemption/guides/komplettloesung/111/>
 27-04-2017

We will shortly return to this role of *denn*. Before doing so, however, we will discuss the role of *denn* as a Q(uestion)-sensitive discourse particle.

2. *Denn* as a question sensitive discourse particle

In its function as a Q-sensitive DiP, *denn* appears naturally in root-clauses, i.e. in genuine utterances. In theories of clause structure that opt for a syntactization of illocutionary force, the highest CP-layer contains information about clause type and illocutionary force. Assuming that this layer licenses the DiP, it has been proposed by Bayer & Obenauer (2011) that Force probes a clause-type related feature of the DiP and thus integrates the DiP semantically into the expression of illocutionary force. The result is that the basic semantic function of a *wh*-question can, in addition to *denn*, be systematically modified by application of different Q-sensitive DiPs such as *nur* (lit. ‘only’), *schon* (lit. ‘already’) and *wohl* (lit. ‘well’). They trigger an elaborate fine-tuning of the *wh*-question.

A challenge is that *denn* can arise in embedded clauses which are clearly not interrogative.

- (8) Welches Bild glaubst du dass er denn von mir haben könnte?
 which picture believe you that he denn of me have could
 ‘Which picture/impression do you believe he could have of me?’
http://www.marsvenus.de/search.php?search_author=Lola&sid=0fe369faf60ccfd8c76eee167638b51f
 17-11-2011

The example is interrogative but the clause in which *denn* appears is not. If it were, it would be incompatible with the verb *glauben*. One conclusion could be that the DiP can be licensed unboundedly. As Bayer & Obenauer (2011) have argued, this conclusion is likely to be unwarranted. The problem is the status of constructed examples like (9). It is also telling that such examples have so far not been found in corpora.

- (9) (*)Welche Leute glauben, dass er denn ein falsches
 which people believe that he DENN a wrong
 Bild von mir haben könnte?
 image of me have could
 ‘Which people believe that he could have a wrong impression of me?’

The reason could be that they are ungrammatical. But if they are, their ill-formedness is subtle. In my early stages of this research, I frequently came across speakers who claimed that questions of type (9) were fine. Bayer et al. (2016) present an experimental investigation, their experiment I, that demonstrates a significant difference between examples of type (8) and of type (9). The explanation follows from the theory of cyclic *wh*-movement by which the *wh*-phrase in (8) moves first to the left edge of the *dass*-clause before it moves on to the matrix clause.⁶ In this case, the intermediate copy of the *wh*-phrase can act as the local licenser of the Q-sensitive DiP in the embedded clause. This local licenser connects to the force layer of the root clause by virtue of the A-bar chain formed with the *wh*-phrase terminating in the root clause. In (9), this is not possible because the *wh*-phrase has been moved from the matrix clause and not at all from the embedded clause. Thus, the DiP in the embedded clause remains without a local licenser. But if the explanation is as straightforward as this, why should the difference between type (8) and type (9) be so “subtle” that it requires an elaborate Magnitude Estimation (ME) investigation? One reason could be that the speaker/hearer resorts to the independent adverbial interpretation of *denn* that is distinct from a Q-sensitive DiP as shown in (3) through (7) of the last section. Even if a speaker does not use the northern variety of German, his/her competence may still embrace the possibility of the more liberal interpretation of *denn*.⁷ In this case, (9) could have a completely different syntactic analysis with *denn* being interpreted as the adverb we saw in the examples in (3) through (7). The occurrence of *denn* in the embedded clause would then have no relevance for the composition of the interrogative meaning at all. The following section will show how the interpretation can be narrowed down to the intended DiP-reading in a more efficient way.

⁶For structural representations of these two cases see (17) below.

⁷German has more Q-sensitive DiPs than *denn*. Bayer et al. (2016, 2.2.3) show that the interpretation of the ambiguous particles *schon* and *nur* varies systematically with long versus short *wh*-movement. This suggests that the interpretational subtlety connected with *denn* could be rooted in this particular lexical item.

3. *Denn* as a clitic⁸

As we have already indicated in section 1, *denn* may in the spoken language undergo reduction to the allegro form *-dn* with the deletion of the vowel or to the genuine clitic form *-n* that is found in Bavarian and adopts extra properties there (see Bayer 2010, 2012, 2013). The following examples are visibly not from Bavarian speakers. Throughout, *-n* is semantically the same as the standard German non-clitic DiP *denn*.

- (10) Wieso is'n das eigentlich so'n Drama?
 why is-N this actually such-a drama
 'Why is this actually such an affair?'
<https://forum.golem.de/read.php?28013,1469050>
 01-05-2017
- (11) Wann kommt'n nochma n Freetrack, Du kleiner Sittenstrolch?
 when comes-N again a freetrack you little molester
 'When will there be another freetrack, you little molester?'
<https://www.facebook.com/kollegah/posts/653617284678075>
 01-05-2017
- (12) Schahatz? wo hast'n dit LSD hinjepackt?
 treasure where have.2SG-N this LSD away.packed
 'Honey, where did you store away this LSD?'
<https://www.mixcloud.com/HousePirat/schahatz-wo-hast-n-dit-lsd-hinjepackt/>

In sharp contrast to the DiP *denn*, the adverbs *dann* and *denn* do not undergo reduction/cliticization.

- (13) Er is dann/*-n bergsteigen gegangen.
 he is then -N hiking gone
 'Then he went hiking.'

⁸There is an old debate about the syntactic status of particles as XPs or heads. Zwicky (1985) argues from the side of morphology that there is universally no category "particle", and that what has been called "particles" in German are adverbial words and never clitics. Grosz (2005) partially follows this line but takes the Viennese reduced form *dn* to be a phonological or prosodic clitic that is like the full form *denn* but nevertheless undergoes some movement to the left. I have argued against this view in various places giving arguments in favor of the head status of particles and the possibility that some of them may turn into clitics; *denn* is the prime candidate in this respect. In Bayer 2010, 2012, 2013, I have argued that in Bavarian *-n* may even turn into an agreement marker. A theory that takes DiPs to be adverbs, i.e. XPs, can hardly explain its grammaticalization path. Zwicky's counterargument is that German DiPs can be accented. However, this argument misses the important point that DiPs are historically derived from sources which usually coexist with their innovative off-spring. The most familiar example is *ja* as in *dass du JA deine Hausaufgabe machst!* ('Watch out that you do your homework!'). Here *ja* equals the adverbial "at any rate". A parallel alternation can be found with the element *doch*, the accented version of which is clearly adversative and is by all means distributed like a phrasal constituent. In their function as DiPs, these elements have a far more abstract meaning and are never accented. Thus, invoking accentuation is likely to lead to a wrong generalization about DiPs.

Since *-n* is sharply excluded as a clitic form of non-interrogative *denn* (or *dann*), one can be sure that the clitic form *-n* is unambiguously a representative of *denn* in its reading as a Q-sensitive DiP. Confusion with *denn* as an adverb similar to *dann* can be safely excluded. The next section will show what this insight can gain us for the study of DiPs in the dependent clause.

4. A mini-replication of Bayer, Häussler & Bader 2016

In Bayer et al. 2016, 97 students served as experimental subjects to judge questions with the DiP *denn* in the embedded clause under the conditions of long versus short *wh*-movement. The method was ME, see Bard, Robertson & Sorace 1996. The result of their Experiment 1 was a statistically significant difference between long and short extraction as previously exemplified by (8) and (9).⁹ Although there is the widely known stylistic disadvantage of long *wh*-movement, the values for short *wh*-movement were significantly worse than those for long *wh*-movement. Let us now see how the clitic form *-n* fares in the relevant test sentences.

(14) Wo meinst du, dass'n dein Nachbar so viel Geld her hat?
 where think you that-N your neighbour so much money from has
 ‘Where do you think that your neighbour has so much money from?’

(15) *Wer meint, dass'n dein Nachbar so viel Geld hat?
 who thinks that-N your neighbor so much money has
 ‘Who thinks that your neighbour has so much money?’

The judgments are built on responses from 50 native speaker linguists who were asked whether they detect a grammaticality difference between (14) and (15). The result is seen in (16).

(16) *Judgments of 50 subjects (raw scores)*

| (14) better than (15) | (15) better than (14) | no difference |
|-----------------------|-----------------------|---------------|
| 44 | 1 | 5 |

⁹Their Experiment 2 avoids the difficulty that some German speakers have with long-extraction by using so-called “partial movement”. In this version, (8) comes out as (i).

(i) Was glaubst du welches Bild er den von mir haben könnte?
 what believe you which picture he DENN of me have could
 ‘Which picture/impression do you believe he could have of me?’

The semantic effect is very close to the version with literal long movement, and the licitness of *denn* was equally proven in this case.

The result is clear enough. For those speakers who find (14) and (15) equally deviant, the explanation is that they do not tolerate *-n* in the embedded clause at all.

For them, *-n* can only appear in the matrix clause (*Wo meinst'n du, dass ...? Wer meint'n, dass ...?*). This is, of course, the unmarked case. It does not need to be debated here. Thus, these speakers do not count here because they show a ceiling effect. Importantly, only one speaker preferred (15) over (14). As I found out after asking him, for him the ban on long-distance extraction was obviously ranked far higher than any other constraint. The placement of *-n* was in this case too weak a signal to play any role.

The result is noteworthy because speakers are unlikely to have directly experienced constructions like (14). In fact, various speakers – all linguists – expressed their surprise about the relative well-formedness of the example. We can conclude that the contrast is real, and that most speakers have robust intuitions about it in the absence of conscious experience. Here are the standard syntactic representations of these examples:

- (17) a. *Wo meinst du* [_{CP} ~~*wo*~~ *dass'n dein Nachbar* ~~*wo*~~ *so viel Geld her hat*]?
 b. *Wer meint* ~~*wer*~~ [_{CP} *dass'n dein Nachbar so viel Geld hat*]?

The (relative) acceptability of *-n* in the dependent CP is obviously related to the fact that a *wh*-item has been moved out of the CP in which it was a clause-mate of *-n*. According to standard assumptions in generative syntax, the *wh*-element moves cyclically via the left edge (“*wh*-specifier”) of the CP-phase. No representation of the *wh*-phrase appears in the dependent CP of (17b). The *wh*-phrase is the subject of the matrix-clause. Thus, the *dass*-CP is non-interrogative throughout the derivation, and *-n* remains without a local licenser. Bayer & Obenauer (2011) as well as Bayer, Häussler & Bader (2016) argue that the Q-sensitive DiP must be probed by a feature of interrogativity in its minimal phase, which, given that the DiP is outside *v*P, must be CP. (17b) evades this restriction. The feature of interrogativity is too far away from *-n* to probe its corresponding feature. But how can (17a) succeed? The *dass*-CP is equally non-interrogative. If it were interrogative, it would clash with the selecting matrix predicate *meinen* (‘to be of the opinion’): **Du meinst* [_{CP} *wo (dass) dein Nachbar* ~~*wo*~~ *so viel Geld her hat*]. Nevertheless, the licensing of *-n* must come from the intermediate position that the *wh*-element *wo* has passed through according to standard assumptions and much independent evidence. As contradictory as it may look at first sight, the answer must be that the *dass*-CP is in a technical sense a *wh*-CP, albeit one whose *wh*-copy is uninterpretable. As Bayer & Obenauer (2011) and Bayer et al. (2016) argue, following Pesetsky & Torrego (2007), agreement must be disconnected from interpretability. If so, the *wh*-item *wo* can type the dependent CP as *+wh*, and the related uninterpretable clause type feature can probe the equally uninterpretable interrogative sub-feature inherent in the clitic *-n* (or the DiP *denn*). This local licensing is established in the derivation before the *wh*-item moves on to its ultimate landing site where it is interpretable (or in other words related to an interpretable *wh*-feature). The Q-sensitive DiP, here *-n*, is properly connected in the resulting *wh*-chain.

The technical details of the formal licensing of the DiP by means of probe-goal agreement cannot be presented here in more detail; they may, however, be looked up in Bayer, Häussler & Bader 2016. The important point is that the clitic version of *denn* offers a new look at the data on the distribution of the DiP *denn* in complex questions that

have been detected some years ago. Even a pilot experiment as the one presented here seems to be sufficient to convince us that experiment 1 of Bayer, Häussler & Bader 2016 can be replicated when we use the clitic *-n* instead of the full form *denn*. As we have seen, the full form *denn* has an adverbial competitor that is more or less neutral with respect to clause type and certainly neutral with respect to the root/non-root distinction. In addition, it cannot always be excluded that even speakers who do not use *denn* as an adverb have access to related grammars in which *denn* can be an adverb of this kind. With the clitic version *-n* that occurs in spoken German, we have found a way to exclude this artifact.

It would be a bit harder to replicate Bayer, Häussler & Bader's experiment 2, i.e. the one which is built on partial movement. Since *-n* can cliticize only to a functional head like *dass*, a genuine *wh*-phrase is not a proper host category. (8) would come out as (18), which is to my ears impossible.

- (18) *Was glaubst du [was für ein Bild'n der von mir haben könnte]?
 what believe you what for a picture-N he of me have could

Notice, however, that the deviance of this example comes from the morphosyntax of cliticization and has nothing to do with the semantic licensing of *-n*. This can be seen when we are allowed to resort to so-called “doubly filled COMP” as it is known from Bavarian. In Bavarian, there is the option of using *dass* in addition to the *wh*-phrase. Insertion of *dass* removes the morphosyntactic problem, and the example of partial movement returns to well-formedness.¹⁰

- (19) Was glaubst du [was für ein Bild [dass'n der
 what believe you what for a picture that-N he
 von mir haben könnte]]?
 of me have could

This shows that the option of the licensing of *-n* exists also under so-called partial movement, and it also shows that *-n* is a genuine clitic. As such, it can only cliticize to a functional head such as the complementizer but not to a phrase such as the *wh*-phrase *welches Bild*.

5. Conclusion

We started the current investigation with a recapitulation of the syntax and semantics of the German discourse particle *denn* as it occurs in questions. Bayer & Obenauer (2011), Bayer (2012), Bayer, Häussler & Bader (2016) and related work could demonstrate that *denn* as a Q-sensitive DiP can occur in embedded non-interrogative CPs under the condition that this CP hosts a local licenser which acts as a local probe of the DiP. This is the case in trans-clausal *wh*-movement. A potential problem of the data in the work mentioned could be that for certain groups of speakers the lexical item *denn* may also be used

¹⁰Clemens Mayr (p.c.) prefers (18) over (19). I suspect his idiolect excludes doubly filled comp and allows *-n* as a non-clitic allegro form.

as an adverb in non-interrogatives. It cannot be excluded that this possibility contaminates grammaticality judgements. As we were able to show here, there is a simple trick to escape such potential contamination: the clitic version of *denn*, 'n, as it occurs in quasi all varieties of colloquial spoken German is unambiguously derived from the Q-sensitive DiP *denn* and cannot at all be confused with the adverbial *denn*. Clitic versions of adverbial *denn* and likewise *dann* are thoroughly ungrammatical. It could be shown that native speakers have robust intuitions about the occurrence of the clitic 'n in embedded CPs. Although 'n is always a marked option in such a context (in comparison with its occurrence in root-questions), 'n is acceptable under the condition of trans-clausal *wh*-movement whereas it is consistently unacceptable in *wh*-questions whose *wh*-phrase originates in the root-clause.¹¹ We can conclude that the present results replicate those of Bayer, Häussler & Bader 2016 and strengthen their conclusion that *denn* in embedded clauses is novel evidence for cyclic *wh*-movement via SpecCP.

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¹¹It goes without saying that the clitic 'n would also be out in all other non-interrogatives. We show this with versions in (i). Since 'n cannot be interpreted here as the clitic version of the accusative pronoun *ihn* ('him'), these versions are unavailable and not even comprehensible:

- (i)
- a. *und er hat'n die weißfleckenkrankheit diagnostiziert.
 - b. *als er'n endlich Kenntnis erlangte.
 - c. *So, ich bin'n mal weg.
 - d. *Im Frühjahr, als er'n endlich fand, daß er gar nichts ...
 - e. *Nachdem ihr'n die Voraussetzungen für die Trophäe oder den Erfolg erfüllt habt, ...

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Josef Bayer
josef.bayer@uni-konstanz.de

Adjectival hydras: Restrictive modifiers above DP?*

Jonathan David Bobaljik

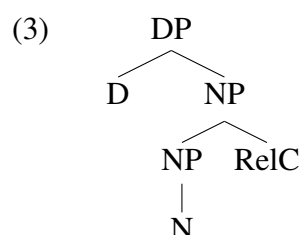
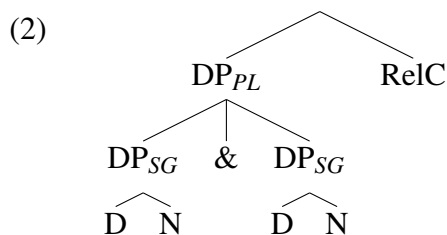
University of Connecticut & Leibniz-Zentrum Allgemeine Sprachwissenschaft

1. Introduction: Hydras and similar beasts

The example in (1) illustrates what Link (1984) dubbed a “hydra”—the relative clause appears to have two heads:¹

(1) [The Austrian_a and the Canadian_c who_{a+c} married each other] met in Cambridge.

Since it contains the reciprocal predicate *married each other*, the relative clause must restrict a plural nominal.² And since each of the conjoined DPs is singular, the interpretation suggests that the relative clause must be outside the conjoined DPs, as in (2). However, this presents a *prima facie* challenge to the notion that restrictive modifiers must attach to a projection of N below the determiner, as in (3).



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¹Such examples were first noted for extraposed relatives with split antecedents in Perlmutter & Ross (1970). See also Vergnaud (1974) and Jackendoff (1977) for early discussions.

²Examples such as (1) clearly may involve restrictive relative clauses, as in: *The Austrian and the Canadian who married each other left early, but the other Austrians and Canadians stayed late.*

As has been widely noted, this is not just a matter of a surface configuration that can be undone by reconstruction, for example. The plural-seeking predicate in the relative clause is uninterpretable if reconstructed into each conjunct:

- (4) *the Austrian_a who_{a+c} married each other . . .

While the classic RelC hydras are widely discussed in the literature, hydraesque modification also arises with post-nominal adjectives, at least in Romance.³ In examples like (5), the adjective takes scope over both nouns: its agreement is feminine plural, suggesting that it occurs outside of the conjoined, singular DPs (each of which has its own determiner).

- (5) a. la pianista y la artista austríacas [Sp.]
 the.FSG pianist.SG and the.FSG artist.SG austrian.FPL
 ‘the Austrian pianist and [the Austrian] artist’
- b. la femme et la fille intelligentes [Fr.]
 the.FSG woman.SG and the.FSG girl.SG intelligent.FPL
 ‘the intelligent woman and girl’

As with RC hydras, one can show that these can be restrictive modifiers, taking scope over both conjuncts:

- (6) Solo se invitó a la pianista y a la artista austríacas, no
 only SE invited DOM the.FSG pianist and DOM the.FSG artist austrian.FPL not
 a las otras pianistas y artistas [Sp.]
 DOM the.FPL other.FPL pianist.PL and artist.PL
 ‘Only the Austrian pianist and artist were invited, and not the other pianists and artists.’

Examples like (6) provide a challenge for theories of postnominal adjectives which place those adjectives somewhere below D. This includes theories that involve N-movement above an underlyingly prenominal adjective, as well as those that invoke phrasal remnant movement, as in Cinque (2010).⁴ The morphological form suggests that the adjective is higher than the determiner, modifying the coordination as a whole.

In the following pages, I consider three directions one might head in in capturing adjectival hydras. Facts considered here suggest that adjectival hydras are indeed more similar to RelC hydras than they are to RNR and other constructions with shared material. Yet extending existing accounts of traditional hydras to the adjectival construction is not without

³Jackendoff (1977, 191-2) also presents examples with PP modifiers: *the boy and the girl [with the same birthday]*.

⁴Examples like (5) are noted briefly in Cinque (2010, 88-90), but only with indefinite determiners, which he takes to be lower than D in (3). His account does not seem to generalize to examples with definite determiners, as in the examples here.

its challenges. In this squib, I call attention to some of these, but leave the ultimate analysis still open.

2. Multidominance I: RNR and shared agreement

One approach might try to relate the postnominal adjectives to Right-Node-Raising constructions. In some constructions (and subject to some speaker variability), RNR constructions can show *summative agreement*: shared elements in RNR can be plural, when the agreement controllers in the unshared conjuncts are singular (see Moltmann 1992, Otaki 2010, Grosz 2015, Shen 2017, in progress, among others):

- (7) a. [Sue's proud that *Bill* ___] and [Mary's glad that *John* ___] **have** travelled to Cameroon. (Grosz 2015, 6)
- b. Der Gustav ist stolz, dass die *Tina*, und der Otto ist froh, dass der *Tom*,
the Gustav is proud, that the Tina, and the Otto is happy, that the Tom,
nach Nigeria reisen **werden**.
to Nigeria travel **will.PL**
'Gustav is proud that Tina, and Otto is happy that Tom, will[PL] travel to Nigeria.' (Grosz 2015, 9)
- (8) John's and Mary's students are a couple.⁵ (Shen in progress)

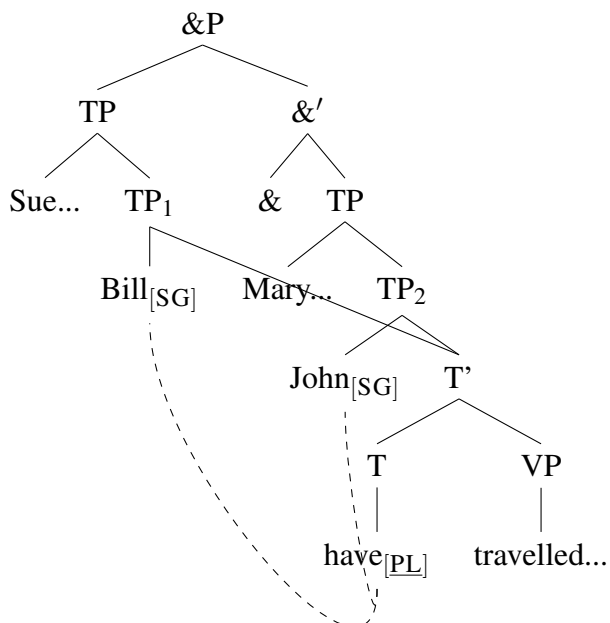
Grosz's account capitalizes on the agreement relations that hold between the agreeing element that is shared and the multiple, singular controllers of agreement.⁶ A simplified version of Grosz's account of (7a) is given in (9):

⁵The predicate 'are a couple' is intended to ensure this refers to one student each of John and Mary.

⁶Shen (2017, in progress) investigates the varied patterns of agreement that arise in NP-internal sharing constructions cross-linguistically, and contrasts these with the clausal examples, including (8), but also the more widespread pattern in (i), where a plural shared noun is excluded:

- (i) This tall and that short student(*s) are a couple.

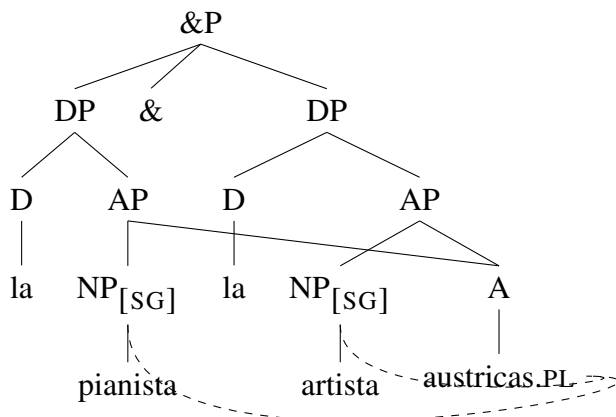
Shen argues that multidominance/shared agreement within NP yields singular agreement, as in (i), where the demonstratives agree in number with the head noun, while in clausal sharing, such as Grosz's RNR constructions, summative agreement (may) obtain. Shen attributes this to the different ways in which number is represented on N and T.

(9) *Grosz (Simplification)*

The key point in this analysis is that the shared auxiliary *have* enters into agreement dependencies (dashed lines) with two singular controllers. In the morphology, this is realized in the same manner as if the controller of agreement were a coordination of two singulars [*Bill and John*], as in (10). Importantly, though, *there is no coordinated NP at any point in the syntactic representation in (9)*.

(10) [*Bill and John*] **have** travelled to Cameroon.

That the postnominal adjectival examples involve agreement might be an initial reason to pursue an agreement-sharing direction, for example, as in (11).

(11) *Sharing*

Nevertheless, Grosz provides an argument that RNR and hydras have distinct behaviour and should not be assimilated to one another. Specifically, Grosz argues that the RNR cases

which he analyzes as multiple agreement apparently fail to admit the kinds of predicate that require a syntactically represented plural subject. He offers (p.31) the following contrast—licensing of *each other* is possible in relative clause hydras' split antecedents (as we have seen, see also (12a)), but (apparently) not in the RNR construction (12b):⁷

- (12) a. I saw the linguist yesterday, and I'll meet the philosopher tomorrow, [_{RC} who hate each other]
 b. *[The dean is sad that this linguist_I], and [the head of the department is disappointed that this philosopher_p] hate each other_{I+p}.

Grosz's observation provides us with a diagnostic we may now apply to the adjectival hydras. Under Grosz's approach, a simple multi-dominance structure with a shared adjective as in (11) should show plurality only in the morphology, but, like Grosz's RNR case, should fail to be licit if the shared material requires a syntactically or semantically plural antecedent. As we have just seen, such configurations distinguish RNR from real hydras. In French and Spanish, as in English, there are complex adjectival expressions, such as *mutually exclusive, dependent on one another* that meet this criterion: they may not occur as a modifier or predicate of a singular noun:

- (13) a. #That assumption is mutually exclusive.
 b. *el teorema mutuamente excluyente [Sp.]
 the.MSG theorem.MSG mutually exclusive
 c. *[Cette propriété mutuellement exclusive] doit être testée. [Fr.]
 this.FSG property.FSG mutually exclusive.FSG should be tested.

Yet these adjectives do participate in the adjectival hydra construction, as in (14):

- (14) a. el teorema y el axioma mutuamente excluyentes [Sp.]
 the theory and the axiom mutually exclusive
 'the mutually exclusive theory and axiom'
 b. el teorema y el axioma dependientes uno del otro [Sp.]
 the theorem and the axiom dependent one of.the other'
 'the theory and axiom dependent on one another.'
 c. (?) Cette propriété et cette caractéristique mutuellement exclusives ... [Fr.]
 this property and this characteristic mutually exclusive
 ... doivent être testées simultanément.
 should be tested simultaneously

⁷I admit to not fully sharing the judgment here, although I agree with the direction of contrast: the collective predicate with RNR seems much less accessible than with hydras, where it is unobjectionable. But see Moltmann (1992) and Otaki (2010) for examples where syntactic plurality does appear to be licensed in RNR.

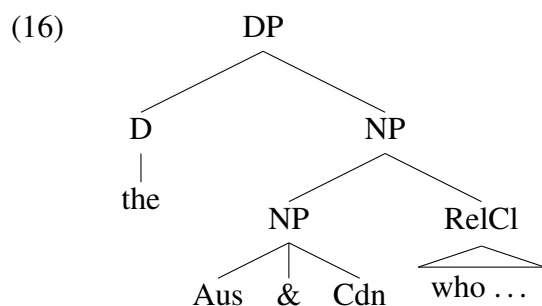
For completeness, (15) shows that these examples can involve clearly restrictive modification:

- (15) Hay muchos teoremas y axiomas en el artículo, pero [[solo el teorema y
have many theorems and axioms in the article but only the theory and
el axioma] mutuamente excluyentes] son problemáticos. [Sp.]
the axiom mutually exclusive are problematic
‘There are many theorems and axioms in the article, but only the mutually exclu-
sive theorem and axiom are problematic.’

These examples thus seem to show that the postnominal plural adjectives, modifying conjoined singular DPs, pattern with relative clause hydras in permitting semantically plural-seeking modifiers, and not with RNR-type summative agreement.

3. Extending RelC hydras

An alternative approach would generalize any of various recent approaches to hydras (see, e.g., Zhang 2007, Fox & Johnson 2016), treating the adjectives as reduced relative clauses. Unlike Grosz’s RNR cases, and Shen’s nominal-internal number mismatches, the approach to hydras and extraposed RCs in Zhang (2007) and Fox & Johnson (2016) does involve a constituent that is a coordination of two nouns (to the exclusion of the determiner), providing a host for modification. That is, their approach to (1) involves a derived constituent with a single, shared determiner, as in (16) (along with a semantics for coordination that yields the correct interpretation, i.e., not a self-marrying dual-citizen):



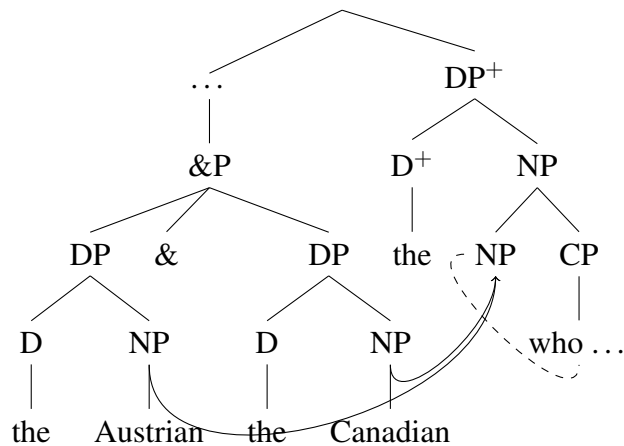
The question is how to derive this constituent, and to account for the apparently ‘extra’ determiner in the second conjunct. We start by reviewing a rather intricate account of hydras, noting some potential issues, and then turn to a simpler account, which appears to work empirically, but which may undermine other established generalizations in the literature.

3.1 Multidominance II: Covert coordination and ATB QR

Fox & Johnson (2016), adapting a proposal in Zhang (2007), propose an analysis of hydras in which the constituent in (16) is derived via an application of across-the-board QR, building on earlier ideas about QR and about the derivation of extraposed relative clauses.

Their analysis is intricate, and I will not do justice to it here, but a brief summary of the derivation is sketched in (17). First, they assume that the pronounced determiners in each conjunct are uninterpreted. After the conjunction is created, the two NPs (one from each conjunct) undergo across-the-board QR, to the position where their combination merges with the relative clause, and to which the semantically interpreted determiner (D^+) is then added. Although I have not prevented their motivations here, note that QR of the restriction, but without the determiner/quantifier, is an independent component of their approach to QR (see also Johnson 2012). With the assumption that *the* is the kind of determiner that triggers QR (and with a proposed semantics for *and*), they end up with an interpreted (but unpronounced) constituent (DP^+), in which the modifier is beneath the interpreted D, but outside the coordinated NPs, yielding the right semantics.

(17) *ATB movement of N*



Adjectival hydras could be readily assimilated to this structure if the post-nominal adjectives in Romance could be simply reduced relative clauses. If this were the case, as various readers of an earlier draft observed, then those post-nominal adjectives that cannot appear in predicate positions should be excluded from the hydra construction. Zheng Shen and Gabriel Martínez Vera note that this seems incorrect at first blush for Spanish. The plural adjective *previos* ‘former’ enters into the hydra construction in (18a), but a (reduced) relative clause source is implausible, since *previo* cannot occur in predicate position (18b):

- (18) a. El presidente y el vicepresidente previ-o-s son amigos.
the.M.SG president and the.M.SG vice.president former.-M-PL are friends
‘The former president and (former) vice-president are friends.’
b. *El presidente es previo.
the.M.SG president is former.M.SG
‘The president is former.’

By contrast, though, an anonymous reviewer suggests that corresponding examples are degraded in Italian. When the adjective cannot be predicative (and thus cannot be the basis of a reduced relative clause), it cannot participate in the adjectival hydra construction:

- (19) a. l' occhio e l' orecchio sinistri
 the.SG eye and the.SG ear left-M.PL
 'the left eye and ear'
 b. *L' occhio è sinistr-o.
 the.SG eye is left-M.SG
 'The eye is left.'

At this stage of inquiry, then, the facts are unclear, but (18) remains as an apparent challenge to reducing all post-nominal adjectival hydras to reduced relative clauses.

3.2 Empty determiners

A final direction to consider is one that posits a different kind of mismatch between the pronounced structure and the structure in (16) needed for interpretation. Note that even setting aside QR, a component of the Fox & Johnson (2016) analysis just cited was the assumption that the pronounced determiners (including quantifiers) in hydras are not in fact the semantically contentful determiners, but are lower, morphological copies of the determiner. On the model of *determiner doubling* in languages like Swedish (as in (20)), they suggest a structure like (21), where μ is a semantically vacuous copy of the higher determiner.⁸

- (20) den gamla mus-en
 the old mouse-DEF
 'the old mouse'

- (21)
-
- ```

 graph TD
 DP --> D
 DP --> muP["μP"]
 D --- the["the"]
 muP --> mu["μ"]
 muP --> NP
 mu --- DEF
 NP --- N

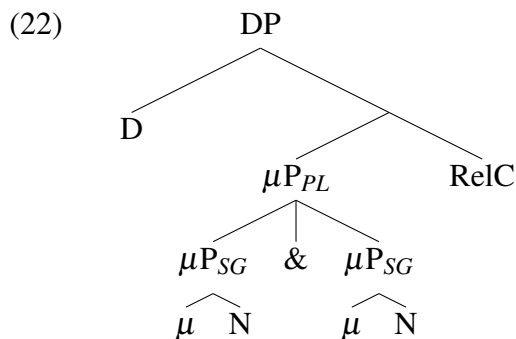
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If the pronounced definite determiners in Romance are instances of  $\mu$ , rather than D, then the structure of adjectival hydras could involve coordination of  $\mu$ P. The plural restrictive modifier can be attached outside the coordination of two singular  $\mu$ s (matching the surface string) but still beneath (unpronounced, but interpreted) D, as required, restricting the complement of the semantically contentful determiner:<sup>9</sup>

<sup>8</sup>Their  $\mu$  is similar to Cinque's *d*, although Cinque proposes that only indefinite determiners are in the lower projection.

<sup>9</sup>A reviewer notes that an analysis of RelC hydras along these lines is suggested in Cecchetto & Donati (2015). Danny Fox raises the question of whether the determiners must be identical in the adjectival hydra construction, as is held to be the case for RelC hydras (Moltmann 1992). This is clearly an important ingredient in choosing among analyses, but I do not have the data to hand to answer this.





A reviewer notes the Romanian example in (23), from Cinque (2004, 134) (attributed to Carmen Dobrovie-Sorin), illustrating that the adjectival hydra construction also occurs with the suffixal definite article in Romanian, which could be seen as spelling out  $\mu$  rather than D:

- (23) [ soț-ul                      și soți-a                      ] precauți nu fac mai mult de un  
 husband-the.M.SG and wife-the.F.SG careful-PL not make more than one  
 copil  
 child

Positing that the position in which determiners are pronounced does not align with their interpreted position resolves (albeit somewhat by brute force) the semantic issue with the structure in (2), without the complexities of QR. However, I suspect that pushing this line will have the eventual cost of being forced to the position that the overtly pronounced determiners are *never* in D, but are always lower exponents.<sup>10</sup> This then raises the question of why hydras can only be formed with post-nominal adjectives, and why pre-nominal adjectives should not be allowed to precede the pronounced determiners which are, by hypothesis in the low  $\mu$  projection: *\*austríacas la pianista y la artista*. To the extent that extraposition, but not fronting, of relative clauses is independently attested, the approach in (17) could provide an independently motivated account of this restriction. Without an account of the pre-/post-nominal asymmetry, the  $\mu$  approach also appears to overgenerate in undesirable ways.

#### 4. Conclusion

In sum, we are left with a puzzle. Postnominal adjectives in Romance belong to the hydra family. Analyses incorporating multidominance open up a rich landscape of analytic possibilities for taming these exotic beasts. Within this landscape, postnominal adjectives appear to pattern with relative clauses, semantically restricting pluralities, and thus not exhibiting the kind of purely morphological plurality shown in RNR constructions. The analytic tools are available to characterize these, while still maintaining that restrictive modifiers of nouns are lower than the (semantically interpreted determiner), although these approaches require

<sup>10</sup>I would hazard a guess that Swedish hydras can be formed where even the higher element in (23) is doubled: *the old mouse and the young cat which chased each other...*

non-trivial departures from the surface order. Neither of the directions considered, however, seems fully satisfactory. While we may attempt to reduce the adjectival hydras to the regular kind, there is still work to be done in coming to grips with their semantics and syntax: for each challenge resolved by extending one of the current approach to hydras, a new one emerges to take its place.

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Jonathan David Bobaljik  
jonathan.bobaljik@uconn.edu

# Ja Doch!

Daniel Buring

University of Vienna

Meine Damen und Herren: die Sprache! Sie ist ja ein Wunderwerk, vom geringsten Worte zum gewichtigsten Gefüge. Verbindet Sie doch uns alle, den nobelsten wie den gewöhnlichsten Manne, mit Gott selbst. Und ja doch auch mit den Weibern.

Kevin von Humboldt (1771–1842)

Kevin von Humboldt, younger brother of Wilhelm and Alexander, is certainly the least remembered of the brothers Humboldt, so much so that many scholars seem to dispute his very existence.<sup>1</sup> Yet, KvonH. ('Keven Aitch'), as he liked to be called, was on to something his brothers weren't: that small words are every bit as important as the biggest sentence. And his own usage in the above quote gives us a clear indication of which small words he was most fond of: <ja> and <doch>. What better way then, to honor reknown Kevinologist and linguistic Particularist Hans Martin Prinzhorn than with a treatise on KvonH's favorite particles.

The meaning of discourse particles like <ja> and <doch> in German has been the subject of intense research during the past decade and a half. In this paper I would like to propose and explore a particular, I believe novel, meaning for the particles <ja> and <doch>.

## 1. <Ja>

Starting with <ja>, my proposal is given in (1).

- (1) **ja p** signals that speaker and addressee are
- in an equally good epistemic position to utter **p**, and
  - equally liable to draw joint attention to *p* (the content of **p**)

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<sup>1</sup>Despite clear indications to the contrary in Alexander's diary ('wieder Skat unter Brüdern gekloppt') and Wilhelm's address to the Prussian Academy ('back when we Humboldt brothers were still touring the South as a skiffle trio').

(1) expresses the USE CONDITIONS (or FELICITY CONDITIONS) for sentences with *<ja>*. Speaking loosely, speaker and addressee must both believe *p* (position) and be ready to assert *p* (are liable to).

### 1.1 Basic concepts and cases

It should be evident how (1) relates to the common observation that *<ja>* serves as a **marker of old or uncontroversial information**: if speaker and addressee are in position to propose to assert a proposition *p*, they both must be aware (or convinced) that *p*. Conversely, *<ja>* is infelicitous where obviously the addressee does not share the belief that *p* and is thus *a fortiori* not about to assert it:<sup>2</sup>

- |     |                                                                |     |                                                                                |
|-----|----------------------------------------------------------------|-----|--------------------------------------------------------------------------------|
| (2) | Q: Who won?                                                    | (3) | A: That's a rabbit.                                                            |
|     | A: #Peter hat ja gewonnen.<br>Peter has JA won<br>'Peter won.' |     | B: #Nein, das ist ja ein Hase.<br>No that is JA a hare<br>'No, that's a hare.' |

What is perhaps less clear is what I mean by 'draw joint attention to *p*': if speaker and addressee already believe that *p*, isn't *p* by definition part of their joint attention?

I would like to suggest that there are at least two ways in which a mutually believed proposition can still be brought to joint attention. First, the participants may not be aware that they both believe *p*; more precisely, given what (1) states, the speaker assumes the addressee is not aware that *p* is a mutual belief. For example, if the speaker just found out a (not so secret<sup>3</sup>) secret of the addressee's:

- (4) [D, skimming through the Kippenberger catalogue, to M]  
Du wirst ja in diesem Buch erwähnt!!  
you become JA in this book mentioned  
'Hey, you're mentioned in this book.'

Second, *p* might in fact be a public and mutual belief, but not have been paid attention to in the present conversation. That is, I assume there to be a subset of the Common Ground (the set of mutually held beliefs), namely those propositions which are mutually realized to

<sup>2</sup>Exx. (8b/c) from Zimmermann (2011), translation corrected; note that B's reply in (3) is possible to the extent that A had previously agreed that the object in question was a hare, e.g. if A is a child.

<sup>3</sup>If it is a secret the addressee is not likely to want to share, the use of *<ja>* is infelicitous. Thus, if I just deduced that you are the UNA bomber, and hence that you are probably about to kill me, adding *<ja>* to my utterance of (i) makes me sound blissfully unaware of the seriousness of my situation:

- (i) Du bist (# ja) der UNA Bomber!  
you are JA the UNA bomber

This is, I would argue, because the addressee is, or at least was, prior to my utterance, not disposed towards entering that proposition to the JABs, defined in (5), even though they were of course epistemically perfectly equipped to.

be currently relevant to the conversation, that is, on which reasoning relevant to the present conversational goals should be based. Let us call these JOINTLY ATTENDED-TO BELIEFS, or JABs for short.

- (5) The JOINTLY ATTENDED-TO BELIEFS (JABs) are those propositions which are taken (by all participants) to be relevant premises for reasoning at the present point in the conversation

Crucially, something might be mutually known (and known to be known), yet not have been recognized as relevant to the issue at hand, so not a JAB.

While JABs are admittedly tailored with an eye towards modelling the meaning of *<ja>* and its kin, I do not feel too guilty for using such a notion. It seems to me that, once we agree that it is in principle possible to felicitously ‘re-assert’ (or reassure ourselves of) a mutually believed fact —with or without particles like *<ja>/<doch>*—, some distinction between shared public beliefs (the Common Ground) and ‘beliefs currently in play’ (my JABs) has to be made. Asserting a *<ja>* sentence is a particularly apt way to get a proposition from the former to the latter.

I should point out that, even if I am correct in claiming that everybody needs to admit some distinction between the Common Ground and what I call JABs here, this does not automatically entail the analysis for *<ja>* proposed above. I am not claiming that it is part of the lexical meaning of *<ja>* that it transfers, as it were, a proposition from the Common Ground to the JABs; rather, (1) says that both speaker and addressee are, in short, ready to do so. This will become crucial later on. The reader should also note that (1) just states the particular conditions that *<ja>* adds to an assertion of *p*. In asserting *<ja p>* the speaker moreover does add *p* to the JABs, just as they would by asserting plain *<p>*.

## 1.2 Surprise *<ja>*

One crucial aspect that sets (1) apart from similar suggestions in the literature is that it has no trouble with the so-called SURPRISE USE of *<ja>*, illustrated in (6).

- (6) a. Du bist ja wieder da!  
       you are JA again there  
       ‘You’re back!’
- b. Na so was. Die Tür ist ja offen!  
       PRT such what the door is JA open  
       ‘Go figure! The door is open.’

Such uses have been seen as problematic for the view that *<ja>* is essentially a marker of known information. But I think there is a straightforward response to that: utterances of the sentences in (6) are indeed only felicitous if their propositional content is verifiable by both the speaker and the addressee. (6b) for example is infelicitous if the speaker is talking to a remote addressee on the phone. That is to say, even though such sentences can

express acknowledgement or even surprise that  $p$  is the case, they cannot be used to *inform* someone that  $p$ . This is why  $\langle ja \rangle$  is possible in such contexts, even though it does not serve as a reminder.

This brings us to a question, though: if  $p$  is not only known, but even paid attention to by the addressee already at the time of utterance (i.e. it is among the JABs; and how wouldn't it be, given that they just discovered it), then what is the point of asserting yet again that  $p$ ?

But crucially, this question is entirely independent of  $\langle ja \rangle$ : (6) could equally well be uttered *without*  $\langle ja \rangle$  in the joint discovery scenario. The effect, in either case, is to express the speaker's surprise. I will not speculate on why that is so, but simply note it as the SURPRISE AXIOM: asserting  $p$  when  $p$  is obvious to all at the time of utterance has the effect of expressing speaker's surprise at  $p$ .<sup>4</sup>

With this in mind, let us look at a slightly trickier example of the surprise use of  $\langle ja \rangle$ :

- (7) Du bist ja verletzt!  
 you are JA injured  
 'Jeez, you're injured!'

(7) may be used to draw the addressee's attention to the fact that they are injured, seemingly in violation of the epistemic clause (a) of (1). I submit, though, that the speaker is in fact behaving linguistically as though the addressee *were* aware of  $p$  (and hence about to assert it). One could call this an instance of *flouting* the use conditions of  $\langle ja \rangle$ , perhaps for reasons of politeness: without  $\langle ja \rangle$ , the utterance would clearly indicate that one takes the addressee to be ignorant of  $p$ .

In support of this idea, note first that there is, again, a clear aspect of mutual knowledge in this use. If the addressee weren't in a position to verify  $p$ , such an utterance would be infelicitous. If A opens B's mail and finds a notification that B won the lottery, A cannot inform B by saying (8).

- (8) [opening your mail] Du hast (# ja) die Lotterie gewonnen.  
 you have JA the lottery won  
 'You won the lottery!'

---

<sup>4</sup>It is also due to the Surprise Axiom that it sounds strange to express a joint discovery about oneself, as in (i):

- (i) [upon entering the room] Ich bin (# ja) wieder da.  
 I am JA again here  
 '(Wow,) I'm here again.'

With  $\langle ja \rangle$ , (i) seems felicitous only if, say, the speaker had just been unexpectedly teleported back from a remote location.

The reason (i)—unlike (6a)—does not express surprise *without*  $\langle ja \rangle$  is of course that (i)—unlike (6a)—could also be used to *inform* the addressee that  $p$ .

In fact, the felicity of such informing uses already declines, it seems to me, if the addressee is presumed to not have been aware of *p* before, cf. (9).

- (9) Man hat Dir (#ja) ein ‘Hau mich!’ Schild auf den Rücken geklebt!  
 one has you JA a ‘Hit Me!’ sign on the back taped  
 ‘They taped a ‘Hit Me!’ sign to your back.’

On the other hand, merely assuming that the addressee *might* be aware that *p* is not a sufficient condition for using *<ja>*. While this would directly explain (7) (as well as the alternative utterance of *<Du bist verletzt. Wusstest du das?>* or *<Weißt du, dass du verletzt bist?>*, ‘Did you know that you’re injured?’), it wrongly predicts (8) to be as natural as (10), which it clearly isn’t.

- (10) a. Du hast die Lotterie gewonnen. Wusstest du das?  
 you have the lottery won knew you that  
 ‘You won the lottery, did you know that?’  
 b. Weisst du, dass du die Lotterie gewonnen hast?  
 know you that you the lottery won have  
 ‘Are you aware that you won the lottery?’

Similarly, that the addressee is in a position to directly verify that *p* *after* the utterance—which would also explain (7)—cannot be sufficient as the same would go for (9): once told, the addressee would be in a privileged position to verify and assert that they have said sign on their back.

Thus it seems to me that the best analysis, even of cases like (7), is to assume that the speaker is presenting *p* as something the addressee is aware of, even if they are not convinced that the addressee really is.

### 1.3 No *<ja>* in repetitions

The suggested meaning for *<ja>* also goes some way towards explaining an otherwise curious fact about its distribution, namely that it cannot be used for confirmations:

- (11) A: Wir gehen durch dick und dünn!  
 we go through thick and thin  
 B: (Jawoll!) Wir gehen (# ja) durch dick und dünn!  
 indeed we go JA though thick and thin  
 ‘Indeed! Through thick and thin!’

Why should this be so if *<ja>* merely marked information as already shared? If, on the other hand, part of *<ja>*’s meaning is that the addressee (i.e. A in (11)) is equally likely to assert the proposition so marked, it is clear why this cannot work in (11): A is *not* likely

to confirm their own statement by repeating it (nevermind that epistemically they are of course in a position to).<sup>5</sup>

## 2. <Doch>

It is regularly suggested that <doch> is basically <ja> plus some sense of contrariety; both share the element of common or previous knowledge. I would like to suggest a variant of this approach against the background of the meaning of <ja> proposed in (1), as given in (12).

- (12) **doch p** signals that speaker and addressee are
- a. in an equally good epistemic position to utter **p**, and
  - b. the addressee is not about to add *p* to their JABs (though they could)<sup>6</sup>

### 2.1 Basic cases: corrective reminder

(12) accounts straightforwardly for the most common—or, at any rate, most discussed—use of <doch>, the ‘corrective reminder’, illustrated in (13).

- (13) A: Tina könnte heute auf die Kinder aufpassen.  
 ‘Tina could watch the kids tonight.’
- B: Tina ist doch im Urlaub.  
 T. is DOCH in vacation  
 ‘(But) Tina is on vacation.’

Taking into consideration that Tina is on vacation, A wouldn’t have made the suggestion in (13): B’s utterance entails the falsity of (an implication of) A’s. But, unlike in other approaches (Egg 2010, Repp 2013), this is not part of the lexical meaning of <doch> proposed here. A chain of reasoning has to apply first: A (in (13)) believes *p* to be true (meaning of <doch>, in particular (12a)), *p* is relevant to the problem at hand (else B wouldn’t assert it), which means that somehow A must be behaving as though they are not considering *p*

<sup>5</sup>Things are different if the first utterance already contains <ja>.

- (i) A: Da bist du ja schon wieder! B: Da bin ich ja schon wieder.  
 there are you JA already again      there am I JA already again  
 ‘There you are again! — There I am again.’

In this case, it seems to me that B is essentially making their utterance in parallel to A’s, not as a reply to A’s. Accordingly, <ja> in B’s utterance is not licensed because of A’s utterance, but by the common ground *prior* to that. All participants were equally likely to utter *p* previous to A’s utterance, and they all do so, independently, as it were, of each other.

<sup>6</sup>The addition in parentheses is meant to enforce the presupposition of ‘add’, namely that *p* is not among the JABs already. Note that if <doch> is used in a declarative, this will follow automatically, since the point of the speaker’s utterance is to add *p* to the JABs.



already, which, *a fortiori* implies that A is not about to introduce *p* to the JABs. Note that <doch>, on this account, does not add much to the content of B's utterance, except for the implication that A, too, would have been in a position to assert *p*; this seems reasonable, given that a reply without <doch> —<Tina ist im Urlaub>— would be equally felicitous here, except that it does not insist (though it allows) that A also was aware of *p*.

In contradistinction, replacing <doch> with <ja> in (13) jeopardizes felicity:

(14) A: Tina könnte heute auf die Kinder aufpassen.  
'Tina could watch the kids tonight.'

B: Tina ist ja im Urlaub.

T. is JA in vacation

'(You know,) Tina is on vacation.'

B's reply in (14) seems to convey agreement with A's suggestion, as though the content of B's reply were supporting it. This directly follows from clause b. of <ja>'s meaning in (1): speaker and addressee are equally liable to enter *p* into their JABs. If this were the case, then A would have to see the fact that Tina is on vacation as supporting their proposal that she watch the kids; or at the very least they should see the same relevance of it to the issue at hand as speaker B (e.g. the kids are where Tina vacations).<sup>7</sup>

## 2.2 Topic broaching uses of <doch>

(12) is sufficiently weak to encompass a different use of <doch>, which can be found, among other places, discourse initially.

(15) Du hast doch so eine Akku-Bohrmaschine...  
you have DOCH such a battery powered drill  
'You own a battery powered drill, don't you?'

The utterer of (15) is entering a mutually known proposition into the JABs. In fact, they might have used <ja> instead of <doch> in the same situation (though to my ears a wee bit less felicitously). But crucially, the use of <doch> signals that there is no expectation at all that the addressee would have seen this coming, as it were. The speaker is broaching a new topic (say, maybe: can I borrow your drill?) by way of introducing a known fact. As a matter of politeness, they signal that the fact is not new, as well as the fact that there is no expectation that the addressee would have been expected to bring up the matter.

<sup>7</sup>A popular strategy in the literature is to leave the corresponding aspect of <doch>'s meaning to implicature: by not explicitly signalling that we are in a situation in which the addressee wouldn't utter *p* (which could have been done by using <doch> instead of <ja>), I (the speaker) implicate that we *are* (not not) in a situation in which the addressee would utter *p*. Put yet more simply, the opposite of <doch>'s 'the speaker isn't about to enter *p* into the JABs' gets added to the meaning of <ja> by implicature.

I feel that this line of argument puts too much burden on conventionalized pragmatics, which is why I directly added clause b. to (12).

### 2.3 Informative ('surprise') <doch>

Similar to the surprise <ja> uses from sec. 1.2, there are uses of <doch> in utterances which seem to track a joint discovery, rather than a reminder to the addressee, such as those in (16).

- (16) [discussing what a third party said earlier]
- a. Der führt doch was im Schilde!  
he leads DOCH what in the shield  
'He's up to something!'
  - b. Hier/ Da stimmt doch was nicht.  
here there tunes DOCH what not  
'Something about this doesn't feel right.'

According to <doch>'s meaning in (12), these should mean that the addressee has the same epistemic basis for uttering the sentences as the speaker, but isn't about to. Clearly, like the parallel <ja> sentences, those in (16) require that the addressee, too, can verify *p* to the same degree that the speaker can: uttered in a non-reminder context, the speaker either comments on some feature of the joint speech situation, or on something the addressee previously said. <Doch>'s meaning that the addressee isn't about to utter *p* here leads to an implication of conjecture: *p* is not a compulsory conclusion from the mutually accessible facts. Either its relevance is not beyond doubt (in which case the addressee, though aware of it, may not see the need to utter it), or its validity is less firm (in which case the addressee might be more hesitant to go out on a limb, as it were, by asserting that *p*).

I think this characterizes fairly well the difference between (16) and the parallel <ja> sentences in (17) (when uttered in a non-reminder scenario), which sound much more like 'we're just discovering this simultaneously', their naturalness increasing the more *p* describes something that has been considered as a possible outcome all along.

- (17) a. Der führt ja was im Schilde!  
b. Hier stimmt ja was nicht.

## 3. <Doch> in non-declaratives

This section argues that <doch> scopes over the sentence type of its host sentence, by observing the effects it has in non-declaratives. To the best of my knowledge, <ja>, at least when unstressed, is restricted to declaratives and so won't play a role in this section.

### 3.1 <Doch> in adhortatives

The proposed meaning for <doch> also shows up in sentence types other than declaratives, and looking at those turns out to be quite instructive. Take (18), from Karagjosova (2004; her (4.7), p.82).

- (18) A: Nur Dienstag oder Mittwoch ginge für mich in Ordnung.  
 only Tuesday and Wednesday went for me in order  
 ‘Only Tuesday or Wednesday would work for me.’
- B: Nehmen wir doch den Dienstag.  
 take we DOCH the Tuesday  
 ‘Let’s take Tuesday, then.’

Adding <doch> to an adhortative like in (18B) gives it a more jovial, suggestive feel. I would like to argue that the speaker, B, in this case expresses that the addressee, A, has as much reason to suggest ‘Let’s meet on Tuesday’ as the speaker (which, since A did in no way urge Tuesday over Wednesday, must not be a strong preference). In addition, A is *not* in fact expected to utter it, since they obviously delegated the decision to B (hence it would be odd to use <ja> here).

Particularly instructive in this connection is the contrast between (18B) and (19B), which is my concoction (as an alternative reply to (18A)).

- (19) B: Wir nehmen (# doch) den Dienstag.  
 we take DOCH the Tuesday  
 ‘Tuesday it is, then!’

While (19B) without <doch> makes for a perfectly fine (and not overly authoritative) reply, addition of <doch> is infelicitous (unless one accommodates that A should know that Tuesday was already agreed upon). Why should this be, given that (18B) and (19B) appear to convey the same proposition?

I would like to propose that, while (18B) implies that A would equally likely have made the *suggestion* to pick Tuesday, (19B) implies that A would equally likely have *decided* to meet Tuesday. Now, if B *suggests* to meet on Tuesday, as in (18B), they could coherently and with the same confidence suggest Wednesday, so the use of <doch> in B is compatible with an equal preference for Tuesday and Wednesday by A and by B. B *picking* Tuesday in (19B), on the other hand, means they are *not* picking Wednesday, so the implication added by <doch> is that A would have equally likely picked Tuesday; but that is clearly not the case in the scenario in (18).

On the other hand, (18B) cannot possibly be understood as indicating what (19B) does: that A should have known we are on for Tuesday. Why is that? Simply because, I would argue, suggestions are generally odd as reminders: If A and B had agreed on Tuesday before the dialogue in (18), it would be odd for B to say <Nehmen wir den Dienstag>.<sup>8</sup> Adding <doch> would only aggravate this, by indicating on top that not just B, but also A could have ‘re-made’ that suggestion.

<sup>8</sup>Or rather: it would signal that B chooses to pretend there was no prior setting of the meeting time, maybe so as to not remind A again of their declining memory.

If this line of reasoning is correct, it points to an important fact about the semantics of *<doch>*: that it scopes over the sentence type. (18B) and (19B) quite arguably express the same proposition, that we will take Tuesday; but (19B) asserts it, while (18B) suggests it. Accordingly, *<doch>* in (18B) expresses that the addressee could equally well have suggested it, but wasn't about to, while (18B) expresses that the addressee could equally well have asserted it (but wasn't about to).

### 3.2 *<Doch>* in imperatives

*<Doch>* works especially well in imperatives used as offers or suggestions (rather than orders):

- (20) a. Setzen Sie sich doch!  
           sit     you self DOCH  
           ‘Have a seat!’
- b. Ruf sie doch an!  
           call her DOCH on  
           ‘Call her, why don’t you!’

This makes sense if one thinks that the content of an imperative is essentially a deontically modalized proposition (Kaufmann 2012): you, too, want to sit down (but couldn't make that suggestion, since it's *my* office); you, too, know you should call her (but won't say that, because you are too shy to).

Even most imperatives used as directives tolerate *<doch>*, which adds a flavor of ‘it is in your best interest (after all)’: deep down you know that you should do this (but you weren't going to).

- (21) a. [police chase] Bleiben Sie (doch) stehen.  
                           remain you DOCH stand  
                           ‘Stop (for crissake)!’
- b. Sei (doch) still!  
           be DOCH quiet  
           ‘Shut up (already)!’

On the other hand, using *<doch>* would be impossible if the police officer wanted to warn an unsuspecting passer-by against walking into a crime scene, or for you to hush a friend when you just realize that the enemy is listening: in neither case is the addressee aware of the necessity to stop/shut up (much less to say so).<sup>9</sup>

<sup>9</sup>There is a subtlety here which I cannot fully address at this point: the use of *<doch>* really implies that the addressee knows ‘I *ought to* to this’ rather than just ‘I am *required* to do this’, i.e. the modal background seems to have to be *buletic*; only in this way does the ‘you know you should’ implication follow. My sense is that this should ultimately be related to the fact that self-directed imperatives like *<Bin ich mal nicht so!>* oder *<Seien wir großzügig!>* —roughly: ‘Let’s not be that way/be generous’— can never express an ‘external’ requirement. I have to leave further exploration of this for a future occasion.

Additionally, of course, even if the requirement *is* in fact known, <doch> is only possible if there is reason to assume that the addressee is not presently aware that it is relevant; this leads to an implication that the addressee has violated the requirement. This goes without saying in the examples in (21), but makes itself felt in (22).

- (22) [mountain climber to another] Schau (doch) nicht nach unten!  
 look DOCH not to down  
 ‘Don’t look down!’/‘Don’t be looking down!’

<Doch> adds to (22) an, otherwise absent, implication that the addressee just did, or is about to, look down.

For this reason, the only class of imperatives that categorically disallow <doch> are general rules and orders.<sup>10</sup>

- (23) a. [sign in zoo] Klopfen Sie (# doch) nicht an die Scheibe!  
 knock you DOCH not on the glass  
 ‘Don’t knock on the glass!’  
 b. [highway sign]  
 Bleiben Sie (# doch) rechts von der durchgezogenen Linie.  
 stay you DOCH right of the solid line  
 ‘Stay to the right of the solid line!’

There is, as in the case of exhortatives, an instructive contrast with declaratives used directly. Without <doch>, (24) can be used interchangeably with (21b) to shut up an adversary addressee, whereas adding <doch> makes (24) incoherent (in contradistinction to (21b)).

- (24) DU bist (# doch) still!  
 you are DOCH quiet  
 ‘You, shut up!’

The difference, I would like to suggest, is that (21b) with <doch> says, by clause (12a), that the addressee is epistemically ready to order themselves to shut up, which means they know that they should (‘you know you should shut up, but you won’t’; the addressee might not in fact think so, but that, at any rate, is what the speaker insinuates by using <doch>). (24), on the other hand, says, that the addressee is epistemically ready to *assert* that they are, or will be, quiet (#‘you know you’re shutting up, but you won’t’).<sup>11</sup>

<sup>10</sup>Signs may contain <doch>, as long as they express weaker modalities than obligation:

- (i) [billboard] Lassen Sie doch mal so richtig die Seele baumeln.  
 let you DOCH once so real the soul dangle  
 ‘Unwind completely!’

<sup>11</sup>Generally, if one expected the addressee to not just know, but be ready to *concede* the point, one wouldn’t use an imperative; this would motivate why <ja> is generally odd to use in imperatives.

## 4. &lt;Ja&gt;/&lt;doch&gt;

I have opted in this paper for meanings of <ja> and <doch> which make them incompatible: <ja p> implies that the addressee is liable to say **p**, <doch p> implies that they aren't. In certain cases, however, it seems that the two particles are interchangeable:

- (25) Ich geh (ja / doch) schon!  
 I go JA DOCH already  
 'I'm already gone.'

(25) could be uttered, for example, if your class starts right after mine ends, and I see you enter the class room, while I am still talking to students. Without particles, I can use it to acknowledge that I saw you and to inform you that I will be out of here momentarily, as per our agreement. Adding the particles, however, adds a note of annoyance. It would be unjustified if you just entered with a smile on your face; it suggests that you said something like <Are you still in here?!>, or are deliberately making excessive noise etc.

Since this effect occurs with both <ja> and <doch> it must be connected to their shared meaning component, namely that you are in an equally good epistemic position (as I am) to assert that I am leaving. Since there is no sense of surprise connected to (25) even with the particles, this cannot be a joint discovery scenario, so it must be that you previously knew that I would leave when you arrive.

Now for the case of <ja>, we get a further implication that you were about to say that I am leaving; this is the source of the annoyance flavor: I am implying that you were about to remind me to leave. Things don't improve with <doch>, because now I express that you will *not* assert *p*, and that it is not in our JABs, that is, something in your behavior indicates that you forgot about *p*.

Although a very similar effect arises in either case, and <ja> and <doch> seem equally felicitous, I believe there is a slight difference nevertheless, in that <doch> suggests more strongly that there was something in your behavior pushing me to leave. If you did nothing of the sort, <ja> may seem unjustified, but <doch> is, to my ear, borderline infelicitous. Similarly in (26):

- (26) a. Das geb ich doch / ja zu!  
 that give I DOCH JA to  
 'Look, I admit that!'  
 b. Das weiß ich ja / doch.  
 that know I JA DOCH  
 'Don't you think I know that?'

While the use of <ja> suggests that your inquiry wouldn't have been necessary, <doch> actually implies that you made a mistake in thinking that I do not admit to it/know it. I think this jibes well with the reasoning above.

## 5. Summary and outlook

In this squib I suggested a new meaning for the particles <ja> and <doch> and outlined how it could account for some of their various uses. The main innovation, I think, is that <ja/doch> do not primarily relate to the knowledge of the participants, but to their disposition to utter something. Ultimately I would think that the a-conditions (about the participants' epistemic state) should be reducible to this, as the special status of the JABs would be, hopefully, but this has to await a future occasion. Your 70th birthday for example.

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Daniel Buring  
daniel.buring@univie.ac.at





## On a difference between Italian, and English and French present participle relatives\*

Guglielmo Cinque

Ca'Foscari University of Venice

### 1. Introduction

Italian differs greatly from English and French in the use of present participles in 'reduced' relative clauses (RCs). Its *-ant/-ent-* present participles are a tiny subset of the *-ing* and *-ant* present participles of English and French.

Here I will try to characterize the classes of verbs that have a productive present participle in Italian (building on Benincà & Cinque 1991) and consider how Italian renders those English and French present participles that cannot be rendered with present participles in Italian.

### 2. What replaces the non-existent present participles of Italian

I start with the second question. While both English and French can use a present participle in such 'reduced' relative clauses as (1a,b)<sup>1</sup>, Italian cannot (1c):

- (1) a. That noise? It's some boys **playing** outside. (Felser 1999, 88 fn. 56, after Declerck 1981, 138)  
b. Ce bruit-là? C'est des enfants **jouant** dehors.  
c. Quel rumore? \*Sono dei bambini **giocanti** fuori.

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\*I thank Paola Benincà, Richard Kayne and Clemens Mayr for their helpful comments on a previous draft of the paper.

<sup>1</sup>And possibly German, which also allows for present participles of activity and subject-experiencer stative verbs in 'reduced' RCs:

- (i) a. Diese drei [in ihren Büros arbeitenden] Männer (Cinque 2010, 54)  
These three in their offices working men  
'these three men working in their office'  
b. Er ist ein [sein Studium seit langem hassender] Student (Cinque 2010, 54)  
he is a his study since long hating student  
'He is a student who has been hating his studies for a long time.'

Italian renders the present participles of (1a,b) with a periphrasis that apparently involves a finite restrictive relative clause (see (2)).

- (2) Quel rumore? Sono dei bambini **che giocano fuori**.  
 ‘That noise? It’s some boys who are playing outside.’

The difference between (1a,b) and (2) is actually part of a larger difference between Italian and English and French, one suggesting that the apparent finite restrictive relative in (2) may actually not be a genuine relative clause. In all of the contexts in (3) and (4), which also involve present participles in English and French and which are demonstrably not relatives, Italian uses again what looks like a finite relative clause. See (5).

- (3) a. I saw him running at full speed. (Kayne 1975, 126)  
 b. She met him coming out of the movies. (Kayne 1975, 126)  
 c. She is there weeping like a willow.
- (4) a. Je l’ai vu courant à toute vitesse. (Kayne 1975, 128)  
 ‘I saw him running at full speed.’  
 b. Elle l’a rencontré sortant du cinéma. (Kayne 1975, 128)  
 ‘She met him coming out of the movies.’  
 c. Elle est là pleurant comme une Madeleine. (Kayne 1975, 128)  
 ‘She’s there weeping copiously.’
- (5) a. L’ho visto che correva/\*corrente a tutta velocità.  
 ‘I saw him that he.was.running/running at full speed.’  
 b. L’ha incontrato che usciva/\*uscende dal cinema.  
 ‘She met him that she.was.coming/coming out of the movies.’  
 c. Lei è là che piange/\*piangente come una disperata.  
 ‘She is there that she.is.weeping/weeping desparately.’

French, in addition to the present participle cases in (4), also has a variant which looks like the Italian finite relative clause in (5). See (6).

- (6) a. Je l’ai vu qui courait à toute vitesse. (Kayne 1975, 126)  
 ‘I saw him that he.was.running at full speed.’  
 b. Elle l’a rencontré qui sortait du cinéma. (Kayne 1975, 126)  
 ‘She met him that he.was.coming out of the movies.’  
 c. Elle est là qui pleure comme une Madeleine. (Kayne 1975, 126)  
 ‘She is there that she.is.weeping copiously.’

Indeed, (6) as well as (5), have however been shown to be constructions differing from genuine relative clauses in a number of ways. For example, they cannot but ‘relativize’ subjects, and allow the ‘Head’ to be cliticized or passivized (see Kayne 1975, 126-129,

Radford 1975, 1977, §3.3, Graffi 1980, Guasti 1988). Different analyses have been proposed for these constructions, which are often referred to as ‘pseudo-relatives’. In addition to the works just cited, see, among others, Declerck 1981, 1982, Guasti 1992, 1993, Rizzi 1992, Cinque 1995, Felser 1999, Casalicchio 2013a,b, 2015, Cecchetto & Donati 2015, and for a recent overview of the literature Graffi 2016.

If they are not genuine relative clauses involving A-bar movement to Spec,CP within DP, what kind of empty category fills the subject position of the *che/qui* clause?

Paduan, a dialect closely related to Italian, appears to provide direct evidence that the subject of the *che* clause in (5) contains a small *pro* (on the *qui* clause in (6), see §5 below). In finite contexts Paduan, in contrast to Italian, has obligatory subject clitics for 2nd singular and 3rd singular and plural persons and a small *pro* for the other persons (see Benincà 1994, 16 note 1). In contexts corresponding to those in (5), which contain 3rd person subjects a subject clitic is obligatory. The same would obtain with 2nd person singular subjects. See (7).<sup>2</sup>

- (7) a. Lo go visto ch\*(el) coreva.  
 him I.have seen that he ran  
 ‘I saw him running.’
- b. La lo ga incontrà ch\*(el) veniva fora dal sinema.  
 she him has met that he came out from the cinema  
 ‘She met him coming out of the cinema.’
- c. La ze là che \*(la) pianze a diroto.  
 she is there that she cries like a willow  
 ‘She is there weeping like a willow.’

If the constructions in (5) contain a small *pro* in subject position rather than a variable bound from Spec,CP, then the apparent restriction to the relativization of subjects follows directly as (non arbitrary) small *pro* is impossible in object position (Rizzi 1986 and Cattaneo 2007).

This opens up the possibility that the apparent finite relative clause in (2) could also be a pseudo-relative, although in this case one cannot show it clearly because of the existence of a distinct genuine relative clause modifying the Head NP. (Witness the possibility of it apparently relativizing also an object, as shown in (8).)

<sup>2</sup>In the same contexts, no subject clitic is required (or in fact possible) with 1st singular and plural and 2nd plural subjects (for the simple reason that no such person subject clitics exist in Paduan). See (ia,b), which plausibly contain a small *pro*, as the corresponding Italian sentences:

- (i) a. I me ga visto che corevo.  
 they me have seen that I.ran  
 ‘They saw me running.’
- b. I ne/ve ga visto che corevimo/corevi.  
 they us/you have seen that we/you<sub>pl</sub> run  
 ‘They saw us/you(pl.) running.’

I thank Paola Benincà for originally pointing out to me the obligatoriness of the subject clitic in Paduan in the contexts in (7), and for providing the relevant examples.

- (8) Quel rumore? Sono dei bambini che abbiamo mandato fuori prima.  
‘That noise? It’s some boys that we sent outside earlier.’

Indeed, in Paduan, in a sentence corresponding to (2), the subject clitic is optional in contrast to (7). (More precisely, I would claim, obligatory in the pseudo-relative structure, just as in (7), and impossible in the genuine restrictive relative clause structure.)<sup>3</sup> See (9).

- (9) Sto rumore? Ze dei tozi che (i) zuga fora.  
this noise? it’s some boys that (they) play outside  
‘This noise? It’s some boys playing outside.’

### 3. Classes of verbs that have a present participle

Consider now the first question: what classes of verbs have a productive present participle in Italian that can be used in ‘reduced’ RCs? As mentioned above, most verb classes do not have a present participle. To see this, one must be sure that a genuine verbal present participle in *-a/ent-* form is involved rather than an adjective in the same *-a/ent-* form.<sup>4</sup> Two diagnostics which clearly distinguish verbal participles in *-a/ent-* from adjectives in *-a/ent-* are 1) the possibility of hosting clitics (available with finite and non-finite verbal forms but not with adjectives<sup>5</sup>) and 2) the possibility, in the case of present participles derived from transitive verbs, of licensing a direct object (again available with finite and non-finite verbal forms but not with adjectives).<sup>6</sup>

If we apply one or the other of these diagnostics it becomes clear that of the Vendlerian classes of verbs, neither activity nor achievement nor accomplishment verbs can form present participles (*\*i bambini cavalcanti un cavallo* ‘the children riding a horse’; *\*gli aerei atterrantivi* ‘the planes landing there’; *\*gli studenti ultimanti la loro tesi* ‘the students terminating their dissertation’), nor can semelfactives (*\*il bambino tossenteci addosso* ‘the child coughing over us’). This leaves verbs designating states, though Benincà

<sup>3</sup>As shown by the ungrammaticality of a resumptive clitic in the relativization of a subject (ia) or object (ib) in ordinary restrictive relative clauses in Paduan:

- (i) a. Un professore che (\*el) gaveva dedicà la vita ala scola se gà ritirà.  
‘A teacher that (he) had devoted his life to school has retired.’ (Benincà & Cinque 2014, 260)  
b. Ze dei tosi che (\*i) gavemo mandà fora prima. (Paola Benincà, p.c.)  
‘It’s some boys that them we have sent outside earlier.’

<sup>4</sup>A similar distinction between verbal and adjectival present participles is made for Dutch by Bennis & Wehrmann (1990), for English and Hungarian by Laczkó (2001), for Swedish by Thurén (2006) and for English and Hebrew by Meltzer-Asscher (2010). As noted in Burzio (1986, Chapter 4, note 64) *-a/ent-* can also form nouns (*amante* ‘lover’, *assistente* ‘assistant’, etc.).

<sup>5</sup>Cf. Benincà & Cinque (1991, §2.3). This contrast was also noted by Luigi Burzio and Luigi Rizzi.

<sup>6</sup>Another diagnostic distinguishing *-ant/-ent-* verbal present participles from *-ant/-ent-* adjectives noted for Italian in Benincà & Cinque 1991, 608 is the possibility for the participle, but not for the adjective, to be modified by discontinuous negative adverbs, suggesting (optional) raising of the participles to a position higher than that occupied by adjectives (also see Siloni 1995, §3.1 on French present participles): *le regioni non <più> comprendenti <più> aree a statuto speciale* ‘regions not comprising any longer areas with special statutes’ vs. *le regioni non <più> autosufficienti <\*più>* ‘the regions not selfsufficient any longer’.

& Cinque (1991) note that verbs designating permanent states but not those designating temporary states give rise to present participles, as shown by minimal pairs like (10).<sup>7</sup>

- (10) a. L'unica regione comprendente una sola provincia è la Valle d'Aosta.  
'The only region comprising only one province is the Valle d'Aosta.'
- b. \*L'unico studente comprendente il problema è Gianni.  
'the only student understanding the problem is Gianni.'

Yet, not all verbs designating permanent states (stative verbs) can form present participles. The verbs that cannot include verbs of knowledge (*\*gli studenti conoscenti/sapenti il cinese* 'the students knowing Chinese'), verbs of possession (*\*le persone aventi/possedenti una seconda casa* 'people having/owning a second house'), verbs of existence (*\*le specie esistenti/viventi* 'the species existing/living there'),<sup>8</sup> subject or object experienter verbs<sup>9</sup> (*\*le persone amanti/prediligenti/preferenti/tementi il mare* 'people loving/preferring/fearing the sea'; *\*i cibi piacenti a Gianni* 'the food appealing to G. '; *\*le sole cose preoccupanti/disturbanti/disgustanti Gianni* 'the only things worrying/disturbing/bothering G. ') stative measure verbs<sup>10</sup> (*\*le strade misuranti 5 metri di larghezza* 'streets measuring five meters of width'; *\*vestiti costanti più di 1000 euro* 'clothes costing more than 1000 euros'), and stative usages of 'promise/threaten' verbs<sup>11</sup> (*\*le case promettenti di/minaccianti di non resistere ai terremoti* 'the houses promising to/threatening not to resist earthquakes').

The only predicates that seem to derive present participles productively (at least in the more formal variant of Italian) appear in first approximation to belong to the following classes:<sup>12</sup>

<sup>7</sup>As noted there, the reading in (10b), but not that in (10a) is compatible with the progressive periphrasis, as expected of activities and states, respectively:

- (i) a. Lo studente sta comprendendo il problema.  
'The student is understanding the problem'
- b. \*Questa regione sta comprendendo una sola provincia.  
'This region is comprising only one province.'

<sup>8</sup>*Le specie esistenti/viventi* 'the existing/living species' are possible but here *esistenti/viventi* are adjectives, as shown by their incompatibility (apparent in the text) with clitics and with the discontinuous negative adverbs mentioned in fn.6 (*\*le specie non esistenti/viventi più* 'the species not existing/living any longer').

<sup>9</sup>Cf. Benincà and Cinque 1991, 604, and on these classes of verbs Belletti & Rizzi 1988 and Rothmayr 2009, §3.3.

<sup>10</sup>Cf. Rothmayr 2009, §4.3.

<sup>11</sup>Cf. Prinzhorn 1990, §3.2 and Rothmayr 2009, §3.4.

<sup>12</sup>(11b-d) are from Benincà and Cinque (1991, 605f.). The following cases not involving such classes of verbs appear to be fixed bureaucratic expressions:

- (i) a. gli aventi diritto (the having the right)  
b. nave battente bandiera panamense (Benincà & Cinque 1991, 608) (a ship flying a Panama flag)  
c. i senatori componenti la commissione giustizia (cf. Benincà & Cinque 1991, 605) (the senators composing the justice committee)

- (11) *Transitive stative verbs with Location subjects and inanimate Theme objects*<sup>13</sup>
- a. gli alimenti contenenti glutine (google) [cf. il glutine è contenuto in molti alimenti]  
‘the foods containing gluten’ [cf. ‘gluten is contained in many foods’]
  - b. una regione comprendente tre province [cf. tre province sono comprese nella regione]  
‘a region comprising three provinces’ [cf. ‘three provinces are comprised in the region’]
  - c. un quadro raffigurante il giudizio universale [cf. il giudizio universale raffigurato nel quadro]  
‘a painting portraying the Last Judgment’ [cf. ‘the Last Judgment portrayed in the painting’]
  - d. la statua riprodotte il volto della donna amata [cf. il volto... è riprodotto nella statua]  
‘the statue reproducing the face of the beloved woman’ [cf. ‘the face... is reproduced in the statue’]
- (12) *Transitive stative verbs with inanimate Agent subjects and inanimate Theme subjects*
- a. gli elementi caratterizzanti il sistema [cf. il sistema è caratterizzato da questi elementi]  
‘the elements characterizing the system’ [cf. ‘the system is characterized by these elements’]
  - b. le parole designanti oggetti (Benincà & Cinque 1991, 605) [cf. oggetti designati da parole]  
‘words designating objects’ [cf. ‘objects which are designated by words’]
  - c. termini indicanti grandi quantità [cf. ‘le quantità che sono indicate da questi termini’]  
terms indicating big quantities [cf. quantities which are indicated by these terms]
  - d. la montagna sovrastante il paese (Benincà & Cinque 1991, 607)  
‘the mountain dominating the village’  
[cf. il paese è sovrastato dalla montagna  
‘the village is dominated by the mountain’]

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d. i richiedenti asilo (the/those requesting asylum)

e. stante l’attuale congiuntura (Benincà & Cinque 1991, 608) (staying the present condition)

<sup>13</sup>Cf. Jackendoff (1972,31) based on Gruber (1965): “In *The circle contains the dot*” it is not clear which NP is the Theme and which is the Location. But “*The dot is contained in the circle*” has the preposition *in*, an unmistakable mark of a Location phrase, so *the dot* must be the Theme.”

- (13) *Intransitive stative verbs with Theme subjects and Location oblique objects*
- a. i docenti afferentivi  
'the teachers being on the rolls there'
  - b. le persone e le cose appartenentivi  
'persons and things belonging there'
  - c. ... da ciocche disponentisi simmetricamente ai lati (google)  
'... by locks arranged symmetrically on the side'
  - d. i compensi spettantici (Benincà & Cinque 1991, 609)  
'the rewards due to us'

#### 4. Restrictions on present participles

Present participles of the above verbs in reduced RCs in Italian appear to be subject to certain derivational restrictions (which need to be elucidated). The implicit subject can apparently be the subject of an unaccusative verb (cf. (14)), but not the subject of a passive verb (cf. (15a))<sup>14</sup>, or the subject of a raising verb (cf. (15b)):<sup>15</sup>

- (14) a. Le conseguenze derivantine  
'the consequences deriving from it'
- b. il denaro restantemi (Benincà & Cinque 1991, 609)  
'the money remaining to me'
- (15) a. \*gli oggetti essentivi rappresentati  
'the objects being represented there'
- b. \*un quadro sembrante/apparente raffigurare un paesaggio umbro  
'a painting seeming/appearing to represent an Umbrian landscape'

<sup>14</sup>This is possibly due to the non-existence of a present participle of the verb *essere* 'be' in Italian.

<sup>15</sup>In contrast with English and German, where it is apparently possible. See (i) and (ii):

- (i) A student appearing to be witty was accepted in the program (Burzio 1981, 230) (... seeming to be witty... is slightly less good – Jamie Douglas, p.c.).
- (ii) a. der [die Wahlen verloren zu haben scheinende] Kanzler (Fanselow 1986, 352)  
the [the elections lost to have seeming] chancellor
- b. der [über seine Ufer zu treten drohende] Fluss (Fanselow 1986, 352)  
the [over its bank to overflow threatening] river

While unaccusative and passive past participle reduced RCs are possible in Italian, Burzio (1986) notes the impossibility of reduced past participle RCs for unaccusative and raising verbs in English (*\*A student arrived yesterday*, and *\*A man seemed to know the truth* (*ibid.* 191) – also see Stanton (2011, 61) (with certain exceptions: *the recently arrived letter* (Kayne 1994, 99), although not, for him, *\*the letter arrived recently... ?the leaf fallen from the tree* (Douglas 2016, 196)) and for raising verbs in Italian (*\*Un ragazzo sembrato conoscere Maria* 'A boy seemed to know Maria') (*ibid.* 194).

## 5. The subject of present participle reduced RCs

I take the subject of present participle reduced RCs in Italian to be PRO. This is also the case in German, which provides direct evidence for this conclusion. See the discussion in Cinque 2010, 55f. on past participle reduced RCs, based on Fanselow's (1986), which I summarize here, adding data on present participle reduced RCs (also see Cecchetto & Donati 2015 for the same conclusion concerning present participle in reduced RCs, within a different analysis).

As noted in Fanselow 1986, 'floating' distributive phrases like *einer nach dem anderen* 'one after the other' agree in Case with the DP with which they are construed. See (16a,b).

- (16) a. Wir<sub>Nom</sub> haben Maria<sub>Acc</sub> einer<sub>Nom</sub>/\*einen<sub>Acc</sub> nach dem anderen geküsst.  
 we have Maria one after the other kissed  
 'One after the other, we kissed Maria.'
- b. Maria<sub>Nom</sub> hat die Männer<sub>Acc</sub> einen<sub>Acc</sub>/\*einer<sub>Nom</sub> nach dem anderen geküsst.  
 Maria has the men one after the other kissed  
 'Maria kissed the men one after the other'

As Fanselow further observes, if such floating phrases are construed with the PRO subject of an infinitive, they invariably bear nominative Case. This is particularly evident in such cases as (17), where the controller of PRO bears a different Case:

- (17) Weil ich die Männer<sub>Acc</sub> überzeugte, PRO Renate  
 as I the men convinced Renate  
 einer<sub>Nom</sub>/\*einen<sub>Acc</sub> nach dem anderen zu küssen,...  
 one after the other to kiss,..  
 'As I convinced the men to kiss Renate one after the other,..'

Now, what we observe in the reduced relative clause case is that the floating distributive phrase also appears in nominative Case, irrespective of the Case borne by the Head with which it is construed:<sup>16</sup>

- (18) a. Wir sahen die [einer<sub>Nom</sub>/\*einen<sub>Acc</sub> nach dem anderen angekommenen]  
 we saw the one after the other arrived  
 Studenten<sub>Acc</sub>  
 students  
 'We saw the students who arrived one after the other.'

<sup>16</sup>I thank Gisbert Fanselow for providing the relevant judgments. Roland Hinterhölzl marginally accepts the accusative variant, though preferring the one with the nominative.



- b. Wir sahen die [einer<sub>Nom</sub>/\*einen<sub>Acc</sub> nach dem anderen ankommenden]  
 we saw the one after the other arriving  
 Flüchtlinge<sub>Acc</sub>  
 migrants  
 ‘We saw the migrants who arrived one after the other.’

This clearly points to the presence of a PRO with which the floating distributive phrase is construed, for both past and present participle reduced RCs.<sup>17</sup>

Another possible piece of evidence for the presence of PRO, at least for present participle RCs, comes from a contrast in French pseudo-relatives noted in Guasti 1988. She reports that her informants accept *qui* pseudo-relatives with 3rd person clitics (cf. (19)) but not with 1st and 2nd person clitics (cf. (20)).<sup>18</sup>

- (19) a. Pierre la/le voit qui parle à Jean (= (44), (46) of Guasti 1988)  
 P. her/him sees that speaks to J.  
 b. Pierre les voit qui parlent à Jean  
 P. them sees that speak to J.
- (20) a. ?/\*Pierre nous voit qui parlons à Jean (= (49)-(50) of Guasti 1988)  
 P. us sees that we.speak to J.  
 b. ?/\*Pierre vous voit qui parlez à Marie  
 P. you<sub>pl</sub> sees that you<sub>pl</sub>.speak to M.

The fact that non-3rd person agreement on the verb of the pseudo-relative is impossible suggests, as Guasti (1988, §4) herself proposed, that *qui* (in the absence of an operator raised to its left with which it agrees inheriting its feature specification)<sup>19</sup> has a default

<sup>17</sup>That past and present participles occur in identical structures is also Burzio’s (1981,231f) conclusion based on the fact that they can be coordinated, as in examples like (i)

- (i) Everyone [currently studying SPE] and [invited to the reception] must carry identification.

He also takes both as small clauses with a PRO subject.

<sup>18</sup>I have restricted attention here to 1st and 2nd plural persons clitics as the judgments are clearer (Dominique Sportiche, p.c.) owing to the fact that their inflections on the pseudo-relative verb are clearly distinct from those of 3rd persons (1st and 2nd singular verbal inflections, on the other hand, are not as clearly distinct from 3rd person inflections, pronunciation-wise).

<sup>19</sup>As in non-restrictive relative clauses (Guasti 1988, 47):

- (i) a. Moi, qui suis toujours la première à monter dans le bus, cette fois je l’ai raté.  
 ‘I, who am always the first to enter the bus, this time I missed it’  
 b. Nous, qui jouons du piano, nous avons reçu un prix.  
 ‘We, who play the piano, have received a prize’  
 c. Venez ici vous, qui êtes toujours les meilleurs.  
 ‘Come here you, who are always the best’

3rd person feature, able to license a 3rd person small *pro* in the subjacent subject position but not a 1st or 2nd person small *pro*.

As Guasti (1988, 45) further observes, this asymmetry disappears when present participles are involved (see (21)), which suggests that a different empty category is licensed, which is compatible with all persons.

- (21) a. Pierre le/la/les voit parlant à Jean (= (51) of Guasti 1988)  
 P. him/her/them sees speaking to J.
- b. Pierre nous voit parlant à Jean (= (54) of Guasti 1988)  
 P. us sees speaking to J.
- c. Pierre vous voit parlant à Marie (= (55) of Guasti 1988)  
 P. you<sub>pl</sub> sees speaking to M.

It cannot be a trace of the clitic in an exceptional case-marking configuration like that shown in (22).

- (22) Pierre le<sub>i</sub>/la<sub>i</sub>/les<sub>i</sub>/nous<sub>i</sub>/vous<sub>i</sub> voit [<sub>XP</sub> t<sub>i</sub> parlant à Jean]  
 P. him/her/them/us/you<sub>pl</sub> sees talking to J.  
 ‘P. sees him/her/them/us/you<sub>pl</sub> talking to J.’

The reason is that XP (as noted in Kayne 1975, Chapter 2, note 75 and Kayne 1981, 202) is an island for extraction, just like the corresponding pseudo-relative (cf. (23a,b)), and unlike the bare infinitive complement of verbs of perception (see (23c) – adapted from Burzio 1986, 301):

- (23) a. \*La fille que<sub>i</sub> je l'ai vu embrassant t<sub>i</sub>.  
 the girl that I him-have seen embracing
- b. \*La fille que<sub>i</sub> je l'ai vu qui embrassait t<sub>i</sub>.  
 the girl that I him-have seen that embraced
- c. Il libro che<sub>i</sub> l'ho visto leggere t<sub>i</sub> è Moby Dick.  
 the book that him I-have seen read is M.D.  
 ‘The book which I saw him read is M.D.’

The island character of the present participle phrase and of the pseudo-relative in (23a,b) (as well as of the Italian equivalent of (23b) – Burzio 1986, 300) is arguably due to the island character of object secondary predicates (cf. Kayne 1975, 128f.). Indeed, even simple AP object secondary predicates appear to be islands (in Italian).<sup>20</sup> See (24).<sup>21</sup>

As Dominique Sportiche (p.c.) tells me, for him in fact both agreement with 1st/2nd person (more formal) and with 3rd person (more colloquial: *Moi, qui est...*) are possible.

<sup>20</sup>Richard Kayne pointed out to me (p.c.) that in English extraction of a DP is apparently possible (*The blood that they saw him covered with was not his own*) as is generally the case with DP extraction out of adjuncts, Extraction of a PP, however, is worse (*The blood with which they saw him covered was not his own*) when compared with the acceptable *the coat with which they covered him*. This is reminiscent of the DP/PP contrast mentioned in Chomsky 1986, 32, crediting Adriana Belletti with the observation, which I

- (24) a. \*Il sangue di cui tutti l'hanno visto [coperto t] era il suo.  
 the blood with which everybody saw-him covered was his own
- b. \*L'uomo con cui<sub>i</sub> abbiamo visto Maria [ furiosa t<sub>i</sub> ]  
 The man with whom we saw Maria furious
- c. \*Questo è l'unico lavoro di cui vedo anche Mario [ stanco t<sub>i</sub> ]  
 this is the only work of which I-have-seen even M. tired

It cannot be an A-bar bound trace either, otherwise the following should also be possible:<sup>22</sup>

- (25) \*Je l'ai rencontré Jean emmenant au cinéma (Kayne 1981, 201)  
 I her-have seen J. taking to the movies

This leaves PRO as the most plausible candidate for the subject of such present participles (cf. Kayne 1981).<sup>23</sup>

interpreted in Cinque 1990, Chapter 3 as involving genuine extraction in the case of PPs and A-bar binding of *pro* in the case of DPs.

<sup>21</sup>As opposed to the small clauses following verbs of thinking (which appear to be exceptional case-marking configurations containing individual-level APs rather than the stage-level APs of the small clauses following *see* or *meet*):

- (i) a. il politico a cui<sub>i</sub> la pensavamo [ vicina t<sub>i</sub> ]  
 the politician to whom her.we.thought close  
 'the politician that we considered her close to'
- b. il figlio di cui<sub>i</sub> tutti la ritenevano [ orgogliosa t<sub>i</sub> ]  
 the son of whom all her.considered proud  
 'the son that everybody considered her proud of'

I assume for (24) a configuration where the object secondary predicate is merged in an adjunct position higher than the object (... [ AP [ DP [ V ] ] ] ) and is crossed over by the verb which has crossed over the object. In OV languages this order is displayed directly (though the object may also scramble above the object secondary predicate). See (ii), from Japanese, and also Shibagaki 2011, 145, 190:

- (ii) Taroo-ga nama-de katuo-o tabeta. (Koizumi 1994, 35)  
 Taroo-Nom raw bonito-Acc ate  
 'Taroo ate the bonito raw.'

<sup>22</sup>Hazout (2001) (pace Siloni 1995) also analyses Hebrew and Standard Arabic participial relatives as involving no operator movement.

<sup>23</sup>Additional evidence that the overt Head of present participle RCs is merged externally rather than being raised from within the RC, with PRO as the internal Head may come from the following contrast mentioned to me by Richard Kayne (p.c.) *?the only headway that appears/seems to have been made vs. \*the only headway appearing/seeming to have been made*. Here the latter contrasts with (i) of fn.15, which is well-formed as it involves no idiom chunk Head. However he accepts *The only headway being made these days is in their heads*.

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Guglielmo Cinque  
cinque@unive.it

# **Finiteness and V2 in second language acquisition: Longitudinal evidence from two late learners of German\***

Christine Czinglar

University of Kassel

## **1. Introduction**

During my studies at the Department of Linguistics in Vienna in the 1990s, Martin Prinzhorn introduced me to generative linguistics and created a stimulating environment by inviting international researchers such as Hagit Borer, Irene Heim, Henk van Riemsdijk and Edwin Williams to teach courses at the university. As a graduate student, I gave a tutorial on his lecture *Einführung in die spezielle Grammatiktheorie*, which was essentially an introductory course to generative syntax. His idea was to introduce one specific grammar theory properly, to enable students to really work with it. He expected students to be able to familiarize themselves with other theories of grammar on the basis of his introduction. And he was right: my Viennese education enabled me to bring together the results of studies from generative, functional and usage-based theories of L2 acquisition in my thesis on the age factor in the acquisition of verb placement in German (Czinglar 2014). Martin was always interested in the architecture of functional categories and how it can be used to describe morphosyntactic phenomena in different languages and varieties, including learner varieties. In this squib, I reanalyze some of Czinglar's (2014) data to investigate the detailed developmental sequence of the acquisition of finiteness and V2 in two late, but nevertheless fast, L2 learners of German. I will argue that their development can be explained by the functional architecture provided by universal grammar (UG).

## **2. The L2 acquisition of finiteness and V2 in German**

In German main clauses, there are two verb positions: The finite verb (in bold face) is always in V2 position ( $C^\circ$  in generative accounts of clause structure) and the infinite verb at the end of the clause ( $V^\circ$  in a right-headed VP) as in (1a). If the clause-initial

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constituent (in SpecCP) is not the subject, the order of the subject and the finite verb is inverted to preserve the V2 property as in (1b). These properties of German are not evident in clauses like (1c), which superficially display a simple SVO order and are very common in spoken and written German (Hinrichs & Kübler 2006). There is an asymmetry between main and embedded clauses in German, as the finite verb appears in the clause-final position in embedded clauses, as in (1d) below.

- (1) a. Martin **hat** gestern Rotwein getrunken.  
 Martin has yesterday red wine drunk
- b. Gestern **hat** Martin Rotwein getrunken.  
 yesterday has Martin red wine drunk
- c. Martin **trinkt** Rotwein.  
 Martin drinks red wine
- d. dass Martin Rotwein getrunken **hat**.  
 that Martin red wine drunk has

Due to these properties, German is analyzed as a SOV language with the V2 property in the main clause (Koster 1975): Every clause in German is represented by a left-headed CP, under which some right-headed Split-IP projections (Pollock 1989) and a right-headed VP projection are embedded (Ludwig et al. 2012, Vainikka & Young-Scholten 2011).

The following developmental sequence has been established for late L2 acquisition, i.e. for learners who start to acquire German at the age of about five years or more (Clahsen et al. 1983, Haberzettl 2005, Meisel 2013, Vainikka & Young-Scholten 2011):

- (2) *Developmental sequence for verb placement in German, based on Meisel (2013)*
- Phase I: SVO order (Adv-SVO)
- Phase II: Verb bracket with infinite verbs in clause-final position (OV/XV)
- Phase III: V2 with subject-verb inversion (a) in *wh*-questions, (b) with fronted objects (topicalization), (c) with fronted adverbials
- Phase IV: Finite verbs in clause-final position in embedded clauses

Both in L1 and untutored L2 acquisition, learners start out using nonfinite verbal forms (mostly infinitives, sometimes stems and participles) instead of finite verb forms (Dimroth et al. 2003, Rothweiler 2006, Tracy & Thoma 2009). In L1 and early L2 acquisition there is a strong correlation between the morphological marking of finiteness and word order: Infinite verbs stay in VP, whereas finite verbs raise out of VP. In late L2 acquisition, functional morphology and verb placement are typically not as tightly connected.

The first step of the acquisition of verb placement involves the OV order of lexical verbs (Phase II), which can only be seen in periphrastic verb constructions: the finite functional verb (e.g. an auxiliary or a modal) and an infinite lexical verb as in (1b) form the *verb bracket* in German, which embraces not only objects, but also inverted subjects, negation and other VP adverbials (XV). In contrast to lexical verbs, functional verbs are



separate instantiations of semantic and morphological finiteness, which helps especially late L2 learners to acquire finiteness (Dimroth et al. 2003). Functional and lexical verbs also behave differently with respect to subject-verb agreement (SVA) and verb placement (Parodi 2000, Schimke 2009): adult L2 learners use functional verbs almost always in the finite form, more likely with correct SVA and in a raised position to the left of negation, whereas lexical verbs also appear in the nonfinite form and with preverbal negation.

Haberzettl (2005) argues convincingly that not the verb raising out of VP, but the inversion of subject and verb is the relevant milestone for the acquisition of V2 in German (Phase III). Usually, late L2 learners acquire verb raising some months before they acquire inversion (Haberzettl 2005). Late L2 learners acquire inversion in three steps: first, inversion in *wh*-questions, then inversion with topicalized objects, and as a last step, inversion with adverbs/adverbials in declarative main clauses (Clahsen et al. 1983, Diehl et al. 2000). Jordens (2006) argues that the acquisition of auxiliaries plays a key role in the acquisition of inversion in Dutch, as learners use the structure *X heb/heeft* ‘X have/has’ as a mechanism for topicalization. Hence, Dimroth (2009) argues that functional verbs, and especially auxiliaries, have a bootstrapping function in the acquisition of inversion.

In embedded clauses, late L2 learners usually start out using SVO orders in German and it takes them a long time to acquire Phase IV – the clause-final position of the finite verb (Müller 1998). Many untutored adult learners do not acquire Phase IV or even Phase III at all (Clahsen et al. 1983, Klein & Dimroth 2009).

In this squib, I will tackle the following research questions: do both late L2 learners investigated go through the developmental sequence in (2) and if so, how fast? What is the relationship between morphological finiteness (subject-verb agreement), verb raising over negation and V2 in these successful and fast learners? Do functional verbs bootstrap the acquisition of inversion and V2? And how does the morphosyntactic development map onto the functional projections provided by UG?

### 3. Corpus and methodology

The longitudinal data discussed in this paper are part of the corpus DaZ-AF (Czingerlar 2014, Dimroth 2008, Pagonis 2009). The DaZ-AF corpus documents the spontaneous speech of two half-sisters, Nastja and Dasha, during their first 18 months in Germany. The two sisters grew up together in a highly educated family in St. Petersburg and moved to Cologne together with their mother, when Nastja was 8;7 (NAS/8) and Dasha was 14;2 years old (DAS/14). Neither of the two sisters spoke German (apart from what they had learned in an 8-hour crash course in German as a Foreign Language), but the older sister already spoke English. In Cologne, they had attended a regular German school according to their respective ages: NAS/8 an elementary school and DAS/14 a gymnasium. They continued to speak their L1 Russian as their family language. Nastja and Dasha were recorded weekly, often on the same day, during separate recording sessions in spontaneous interaction with a native German speaker.

Of the 65 (DAS/14) and 63 (NAS/8) recordings in the DaZ-AF-corpus, 21 recordings per learner were analyzed spanning the whole period of observation. As both learners used only a few verbs apart from the copula, and the development of the first verb forms

is documented in Dimroth 2008, no recording was taken from the first month of exposure (ME). Three to four recordings were selected from ME 02 to 05 and one recording from ME 06 to ME 17, based on their comparability (same day of recording, same interlocutor, no other tasks, no other speakers present).

The whole DaZ-AF-corpus was transcribed in the CHAT-format as defined in CHILDES (MacWhinney 2000). All transcriptions used for this study were triple-checked with the recordings (once by the author). Utterances which were unintelligible, incomplete with respect to the verb or not spontaneously produced were excluded. Additionally, about 25% of all utterances were discarded as potential prefabricated chunks, i.e. combinations of a finite verb and X appearing in the same form at least 30 times in the whole corpus, such as *ich weiß nicht* ‘I don’t know’, *weißt du* ‘(do) you know?’, *es gibt/gibt es* ‘there is (existential)’, *da ist* ‘there is (locative)’, *das ist* ‘this is’ and *ich glaube/glaube ich* ‘I think’.

Main verbs were coded as auxiliaries or modal verbs in periphrastic constructions with infinite verbs as in (3c), as copula (*sein* ‘be’ and *werden* ‘become’) and as lexical verbs, e.g. in (3a,b). Semi-lexical verbs are mostly modals without infinitives and possessive *haben* ‘have’. For this squib, the form of the main verb was additionally coded following Ludwig et al. (2012): Nonfinite forms are coded as [-t], e.g. root infinitives as in (3a), and forms with a nonagreeing ending, as in (3b), are coded as [-agr], with a nonexisting form [-f], e.g. overgeneralizations in (3c).

- (3) a. *ich lesen den nicht immer.* [-t, -agr, +f]  
 I read-INF this-ACC not always  
 ‘I do not always read this.’ (ME 09, NAS-31.cha)
- b. *dann alle menschen sagt* [er ist schlecht] [+t, -agr, +f]  
 then all people-PL say-3S [he is bad]  
 ‘Then all the people say he is bad.’ (ME 06, DAS-23.cha)
- c. *das kann ich nicht eh@fp verstehen.* [+t, +agr, -f]  
 that can-3S\*I not filled.pause understand  
 ‘That I can/could not understand.’ (ME 06, DAS-23.cha)

To evaluate whether a form or structure is acquired, a correctness ratio was calculated based on the correct realization in obligatory contexts on the basis of Brown (1973), i.e. 90% correctness in at least five obligatory contexts. For this study, only declarative main clauses containing a verb form were analyzed (declarative contexts). All main clauses were coded with respect to the position of the main verb: V1, V2-SVO, V2-INV and V3. For the acquisition of the V2 property, only inversion contexts were consulted, i.e. clauses that (should) display inversion, hence V2-INV and V3. As the clausal architecture of copular clauses is often assumed to be different from other verbs, e.g. the lexical phrase is a NP not a VP (Williams 1980), and they also behave differently with respect to finiteness in L1 acquisition (Czinglar et al. 2006), copulas are excluded from all V2-related calculations. So are the V2-clauses that are embedded under bridge verbs (like *sagen* ‘say’ or *denken* ‘think’). Hence, the clause *er ist schlecht* ‘he is bad’ in (3b) was excluded from calculating the V2-inversion ratio for both reasons. Embedded clauses

were also coded for the position of the finite verb, but copular clauses were included in the count (Cztinglar 2014).

#### 4. Results

Both learners acquire finite verb morphology and SVA in main clauses very fast. Surprisingly, they do not use many root infinitives; most of their verbs are finite from the start. From ME 02 onwards, Nastja produces only 18/3094 (0.58%) and Dasha only 25/2276 (1.1%) infinite verbs in V2 contexts, e.g. the root infinitive in (3a). Dimroth (2008) shows that they largely acquire the present tense paradigm in the first two months of exposure (ME), both in the same order: first, the endings for 1<sup>st</sup> and 3<sup>rd</sup> person singular *-e* and *-t*, then 2<sup>nd</sup> person singular *-st*, and then 1<sup>st</sup> person plural *-en*. Only the productive use of the 1<sup>st</sup> person plural suffix *-en* starts one month (NAS/8) and two months (DAS/14) later.

Most of their main verbs agree correctly with the subject: In ME 02 already, 86.08% (NAS/8) to 92.13% (DAS/14) of the main verbs in declarative V2 contexts show correct SVA, although the form itself might not always be target-like, as in (3c). A few agreement errors like (3b) persist, but Nastja reaches over 95% correctness in ME 03 and almost 100% in ME 05, and Dasha does so in ME 05 and ME 11 respectively. In total, the error rate for SVA is very low: 1.87% of 3094 (NAS/8) and 4.75% of 2276 (DAS/14) main verbs in declarative contexts. The table in (4) shows that the results for “light” verbs (Parodi 2000) are mixed, but functional verbs (i.e. auxiliaries and modal verbs with infinitives) exhibit the lowest error rates:

(4) *SVA error rate and verb type in main clause declaratives (V2 contexts)*

| % SVA error rate | “Light” verbs (Parodi 2000) |             |              |             | Lexical verbs |
|------------------|-----------------------------|-------------|--------------|-------------|---------------|
|                  | AUX+INF                     | modal+INF   | semi-lexical | copula      |               |
| NAS/8            | 0.00% (495)                 | 0.00% (311) | 0.61% (489)  | 3.95% (760) | 2.41% (1039)  |
| DAS/14           | 2.05% (293)                 | 3.92% (332) | 7.08% (438)  | 3.45% (550) | 5.88% (663)   |

Both learners use SVO (Phase I) from the start and acquire the verb bracket and OV/XV order with infinite verbs in the VP (Phase II) after four months of exposure. In total, DAS/14 uses the verb bracket with a head-final VP in 531 of 570 (93.16%) and NAS/8 in 820 of 865 obligatory contexts (94.79%). Dimroth (2008) shows that both learners acquire postverbal negation very fast, although in their L1 Russian negation precedes the finite verb: Nastja produces only four instances of preverbal negation with lexical verbs and starts to place the finite verb before the negation from ME 02 onwards. Dasha does not use preverbal negation at all: she starts to use postverbal negation in ME 04 and begins to use it productively in ME 05 (Dimroth 2008).

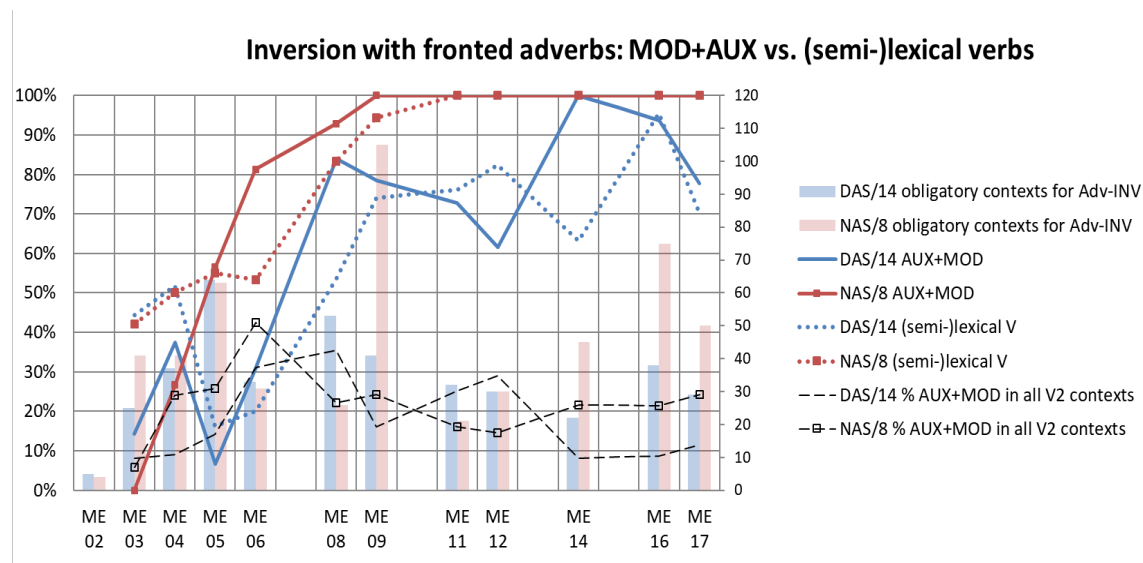
The first two steps of Phase III a–b are acquired equally fast: only 10% of all utterances are *wh*-questions, but they almost all show correct verb placement (including

inversion). In ME 05, both learners have already acquired inversion with topicalized objects, such as the accusative pronoun *das* ‘that’ in (3c), but also other pronouns, NPs and even clausal complements. In total, Nastja uses inversion with topicalized objects in 93.16% of 190 obligatory contexts, and Dasha resorts to V3 only in 2/143 cases.

The last step of acquiring finiteness, i.e. subject-verb inversion with fronted adverbials (adverbs, adverbial PPs, NPs and clauses) in declarative contexts is more demanding for both learners: Nastja’s overall correctness rate is 81.58% of 532 obligatory contexts and Dasha’s is 54.65% of 419 cases. They both use inversion as in (5a,c) and V3 as in (5b,d) in free variation with the same adverbs or adverbials with similar meaning.

- (5) a. und dann **kommt** die Dascha. (ME 03, NAS-10.cha)  
and then comes the Dasha
- b. und dann du **machst** apfelsaft. (ME 05, NAS-17.cha)  
and then you make apple juice
- c. so jetzt **kannst** du deine wohnung beschreiben. (ME 03, DAS-09.cha)  
so now can you your flat describe
- d. jetzt ich **kann** spielen. (ME 02, DAS-06.cha)  
now I can play

(6) *V2-Inversion with fronted adverbials according to verb type*



While Nastja acquires inversion with fronted adverbs in nine months, Dasha reaches over 90% correctness only once (in ME 16) and one month later the correctness rate drops down to 64% again. Hence, Dasha does not fully acquire inversion during the 18 months of observation. The figure in (6) shows that both learners start to front adverbials in ME 03 and produce inversion with lexical verbs. In ME 04, they begin to use more auxiliaries and modal verbs with infinitives in V2 contexts, i.e. in declarative main clauses in

general. At the same time, inversion with fronted adverbs (Adv-INV) increases, especially with functional verbs. From ME 06 onwards the inversion rate becomes higher for auxiliaries and modals than for lexical verbs. Interestingly, Dasha's use of inversion with fronted adverbs decreases sharply in ME 05, when she starts to use a lot of object topicalizations, almost all with correct inversion. After ME 05 her inversion rate for fronted adverbials goes up again, with a stronger tendency for auxiliaries and modals. Adv-INV with functional verbs reaches over 90% correctness in ME 14 and 16, before it drops again.

The acquisition of verb placement in embedded clauses (Phase IV) takes as long as acquiring Adv-INV (Phase IIIc) for both learners: they start out with nontarget-like SVO orders in embedded clauses. In ME 03 they begin to use finite verbs in clause-final position, but it takes Nastja until ME 09 to reach 90% correctness, and Dasha's correctness rate peaks in ME 16 (84.38%) and drops again in ME 17 (60.61%).

## 5. Discussion and Conclusion

The results show that both learners acquire verb placement according to the developmental sequence specified in (2). They both start with Phase I and acquire Phase II very quickly, in four to five months of exposure: unlike the much slower adult L2 learners documented in the literature, they almost never use root infinitives or place the finite verb before negation and produce few agreement errors. In line with the results of Parodi (2000), there are fewer agreement errors for auxiliaries and modal verbs than for lexical verbs. But upon closer inspection, the error pattern is not just driven by being a "light" vs. a lexical verb: DAS/14 shows the highest error rate for semi-lexical verbs, mostly because she has difficulties with the inflectional paradigm of modal verbs in the beginning, and they simply appear first in bare form and only later with infinitives. Also, both learners show relatively high error rates with the copula, which are mainly due to postverbal subjects and complex coordinated subject NPs.

The development from Phase I to II can be associated with two changes in the phrasal architecture: first, although they start with the phrase structure of an SVO-language like English, they switch to a head-final VP after four months of exposure. Second, only one month later, they both master verb raising to a head-initial functional phrase (assuming a Split-IP e.g. AgrP): being base generated in a functional head like Agr<sup>o</sup>, auxiliaries and modal verbs with infinitives are in an agreement relation with the subject in SpecAgrP, which explains their low agreement error rate. These functional verbs draw the learner's attention to the function of Agr<sup>o</sup> and facilitate the raising of finite lexical verbs, which also explains their placement before negation.

During the first five months of exposure, both learners also acquire Phases IIIa and IIIb: they produce V2 structures involving subject-verb inversion, whenever a *wh*-phrase or an object (originating in VP) is fronted to the beginning of the clause. Questions necessarily entail a CP-structure and both learners also use the CP-projection for topicalized objects from the start. Dasha's development is particularly interesting in this respect: she starts to productively front adverbials in ME 03 with an inversion rate of over 36% (N=25), which goes up in ME 04 to 49% (N=37), but drops dramatically to 14% (N=64) in ME 05, when she starts to use a lot of object topicalizations (N=29), 97% of which is with inversion. It seems that Dasha's interlanguage grammar in ME 05

hypothesizes a CP structure in declaratives only for fronted objects, while fronted adverbials are adjoined to the Split-IP-structure (e.g. TP), as they would be in an SVO-language. After ME 05, Dasha's inversion rate for adverbials starts to go up again.

Whereas the acquisition of Phases II–IIIb is fast for both learners, they clearly differ in rate for Phases IIIc and IV. While subject-verb agreement and verb raising are already in place for both learners in ME 05, there are big differences between the two learners regarding the acquisition of V2 inversion. The younger learner, Nastja, acquires V2 with inversion after nine months of exposure (in ME 09), while Dasha's correctness rate reaches 95% only in ME 16 and then drops under 90% again. While inflectional morphology plays a key role for verb raising, it does not for V2 with inversion. Rather, the acquisition of inversion seems to be driven by the acquisition and use of functional verbs, as suggested by Jordens (2006) and Dimroth (2009): inversion rates with auxiliaries and modal verbs are constantly higher than with (semi-)lexical verbs for both learners.

The last phase (IV) of the developmental sequence in (2) is acquired by both learners exactly at the same time as Phase IIIc: in ME 09 for Nastja, and in ME 16 for Dasha, although her highest correctness rate for the clause-final positioning of the finite verb in embedded clauses is only 84.38%, and not 90%, during the period of observation. This is not a coincidence: only when the full acquisition of verb placement in embedded clauses forces the two learners to switch to a head-final Split-IP (e.g. AgrP and TP), they are forced to project a CP for every main clause to ensure the V2 position of the finite verb.

The tight relation between Phase IIIc and IV has not been observed in the literature on adult learners, as the L2 grammar of adults either fossilizes before they acquire these properties, or adults proceed so slowly that longitudinal studies rarely capture these late developments. This shows how important it is to investigate late learners in extensive longitudinal studies. Studies involving the most natural kind of data (spontaneous speech) and methodologically sound calculations of correctness ratios in obligatory contexts deliver important results for theory building in L2 acquisition.

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Christine Czinglar  
christine.czinglar@uni-kassel.de



# Derivations as representations: News from the computational frontier\*

Thomas Graf

Stony Brook University

## 1. Introduction

Ever since McCawley (1968) one of the fundamental questions of linguistic theory has been whether formalisms should be construed as derivational or representational in nature. The former focuses on how structures are built in an incremental fashion from pre-defined atoms via structure-building operations, whereas the latter considers all possible structures and filters out the ill-formed ones via constraints. Even within Minimalism, proposals span the gamut from Strict Derivationalism (Stroik 2009, a.o.) all the way to the purely representational Mirror Theory (Brody 2000). Rather than adjudicating between the two, this squib presents several computational arguments in support of a more pragmatic view that I call *representational derivationalism*. Representational derivationalism recognizes that both approaches have unique advantages and synthesizes them into a unique perspective of syntax that opens up several new research venues.

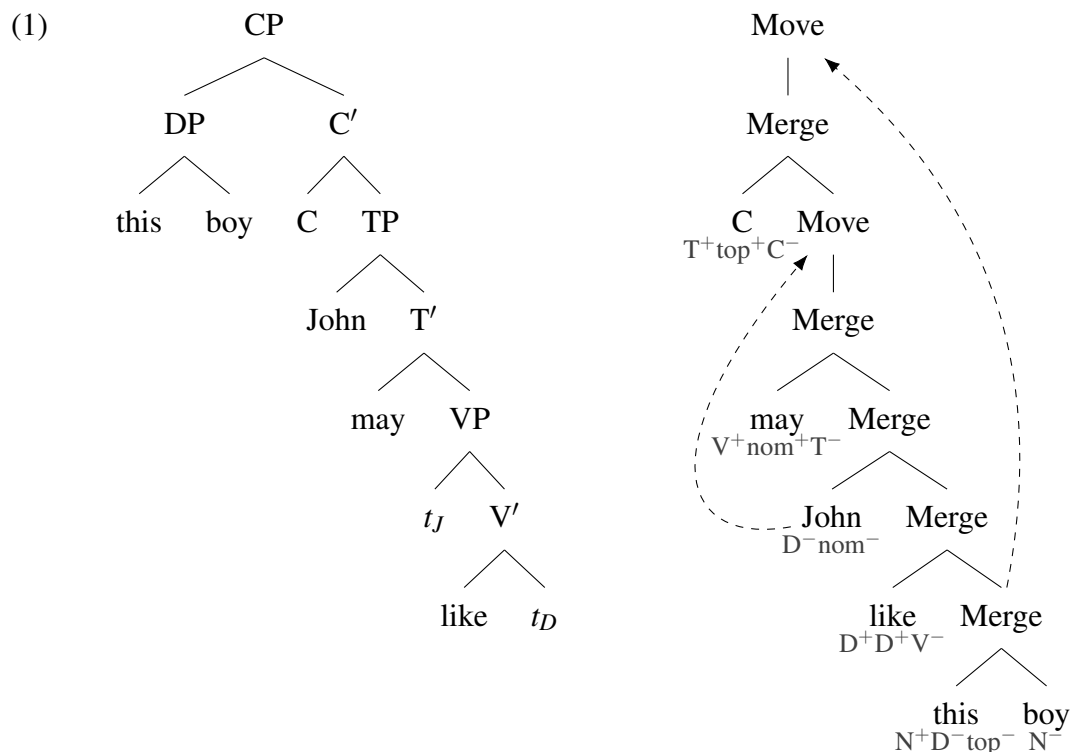
## 2. Derivation trees as syntactic data structures

In the late 90s, computational linguists started decomposing syntactic formalisms into two base components: a finite-state tree language and a finite-state mapping from this language to the set of output structures (Mönnich 1997, 2007, 2012, Kolb et al. 2003, Morawietz 2003). While the goal was to squeeze the complicated mechanics of Tree Adjoining Grammar (TAG; Joshi 1985) and Minimalist grammars (MGs; Stabler 1997, 2011) into the well-understood confines of finite-state methods, the end result displayed a striking resemblance to Chomsky (1965)'s factorization of grammars into D[*eep*]-structures and transformations that convert D-structures into S-structures. Even more surprisingly, it turned out that the finite-state tree languages can be taken to encode a grammar's well-formed derivations. Rather than D[*eep*]-structures, then, the computational factorization builds on D[*erivation*]-structures.

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\*To Martin, whose continuous efforts to have a top-notch linguistics program in Vienna granted me the privilege of an undergraduate education that outclasses even most M.A. programs in the US.

Let us look more closely at the application to MGs (even though the general idea works just as well for TAG, GPSG, GB, and many other formalisms). In MGs, syntactic trees are built by the feature-driven operations Merge and Move. For any phrase structure tree, we can retrace the derivational steps that produced it, yielding a *derivation tree* as in (1). In the derivation tree, all interior nodes are labeled Merge or Move, and all other nodes are lexical items (movement arrows are only added for the reader's convenience here and are not part of the tree).



Note that all the information of phrase structure trees is already implicit in the derivation trees because the latter are a construction blueprint for the former. So derivation trees are a viable syntactic data structure in the sense that they do not lack vital information. This interchangeability holds even in the presence of elaborate representational constraints over phrase structure trees as those can be converted into purely derivational feature checking requirements (see Graf 2013, 2017). This addresses one half of the representationalism/derivationalism debate: a derivational approach is not impoverished, we can prove mathematically that derivation trees store just as much information as other types of structures. Moreover, derivation trees are finite-state in nature, whereas phrase structure trees are not. So from a computational perspective, derivation trees are a more economic data structure.

But a representational approach may still be preferable if it is more restricted or conceptually simpler. At least the former is provably not the case. A lengthy chain of mathematical arguments (see Graf 2013) establishes that every distinction made at the level of derivation trees can also be made at the level of phrase structure trees (or bare phrase structure sets, or any other comparable output structure). With the first possible advantage eliminated, let

us focus on the question of conceptual simplicity. It is this very issue of simplicity where derivational and representational accounts can be fruitfully synthesized.

In a purely derivational version of MGs, well-formedness is determined by the feature calculus. A grammar that needs to account for even a handful of phenomena like subject-verb agreement, passive, topicalization, wh-movement and the distribution of reflexives quickly turns into an impenetrable list of lexical items with cryptic feature annotations. A single LI may be multiplied out into hundreds that differ only marginally in their features, and the size of a lexicon with a few thousand lexical items might blow up to millions. It is virtually impossible for any human to discern what well-formedness conditions such a grammar enforces.

Let us look at a concrete example of how the derivational focus on features renders simple generalizations verbose by compiling them into the feature make-up of lexical items. Consider the small MG below, where category features are indicated by  $-$  and subcategorization features by  $+$ . The details of the feature calculus are not important here—the reader need only pay attention to how the lexicon grows with each step.

- |     |                 |                      |                  |
|-----|-----------------|----------------------|------------------|
| (2) | John :: $D^-$   | loves :: $D^+D^+V^-$ | himself :: $D^-$ |
|     | Mary :: $D^-$   |                      | herself :: $D^-$ |
|     | Google :: $D^-$ |                      | itself :: $D^-$  |

This grammar builds VPs of the form  $X$  loves  $Y$ , where  $X$  and  $Y$  are DPs. This includes both the well-formed *John loves himself* and the ill-formed *himself loves John*. The only way to rule out the latter with the MG feature checking mechanism is to explicitly distinguish reflexives from R-expressions.

- |     |                 |                      |                  |
|-----|-----------------|----------------------|------------------|
| (3) | John :: $D^-$   | loves :: $D^+D^+V^-$ | himself :: $R^-$ |
|     | Mary :: $D^-$   | loves :: $R^+D^+V^-$ | herself :: $R^-$ |
|     | Google :: $D^-$ |                      | itself :: $R^-$  |

But that of course does not account for gender agreement between the reflexive and its subject antecedent, which necessitates additional category refinement:

- |     |                   |                          |                    |
|-----|-------------------|--------------------------|--------------------|
| (4) | John :: $D_m^-$   | loves :: $D_x^+D_y^+V^-$ | himself :: $R_m^-$ |
|     | Mary :: $D_f^-$   | loves :: $R_m^+D_m^+V^-$ | herself :: $R_f^-$ |
|     | Google :: $D_n^-$ | loves :: $R_f^+D_f^+V^-$ | itself :: $R_n^-$  |
|     |                   | loves :: $R_n^+D_n^+V^-$ |                    |

Here  $D_x^+$  and  $D_y^+$  are placeholders for arbitrary choices of gender features. So the single entry  $\text{loves} :: D_x^+D_y^+V^-$  corresponds to  $3 \times 3 = 9$  different lexical items, putting the total size of the grammar at 18 instead of the original 7. All of the 11 new lexical items are just variants of *loves* with slightly different feature values. If we were to also distinguish between singular and plural, over 40 variants of *love* would have to be listed in the grammar.

Once we consider a more realistic grammar that tries to also capture the locality requirements of reflexive licensing, the role of c-command, and the special status of exempt

anaphors, the blow-up would be truly enormous. More powerful feature checking operations such as Agree can mitigate the problem of lexical blow-up, but they do not change the core problem that a purely derivational approach has to decompile well-formedness conditions into a fine-grained feature calculus that distributes the workload across a myriad of lexical items. So even though derivation trees are suitable data structures, specifying them in a purely derivational manner is cumbersome and arguably an impediment to linguistic insight.

A better approach is to treat derivation trees as representations and use constraints to restrict their shape. To ensure that constraints are still limited in their expressivity, we can choose a specific description language such as first-order logic. A derivation tree is well-formed only if it is a model of all these formulas. The need of reflexives for a gender-matching antecedent, for example, is easily expressed as a representational constraint in first-order logic.

$$\forall x[(\text{himself}(x) \vee \text{herself}(x) \vee \text{itself}(x)) \rightarrow \exists y[\text{DP}(y) \wedge \text{c-commands}(y,x) \wedge \bigwedge_{\text{gender} \in \{m,f,n\}} (\text{gender}(x) \leftrightarrow \text{gender}(y))]]]$$

Constraints can be added or removed without noticeable complications, whereas a derivational approach has to recompute the feature makeup of all lexical items whenever a new constraint is compiled into the grammar.

The logical view of constraints is very elegant and has been successfully used to formalize all of GB (Rogers 1998) and MGs (Graf 2013). From a computational perspective, the important thing is that the formal description language must not be more powerful than monadic second-order logic (MSO). MSO-definable constraints do not increase the power of MGs and related formalisms because they can be translated into mechanisms of the feature calculus (Graf 2013, 2017). Fortunately MSO is powerful enough to express virtually all constraints found in the syntactic literature, even transderivational ones (Graf 2010b, 2013). This shows indirectly that all syntactic constraints, even if they are stated in representational terms, can be expressed purely through feature checking. But MSO constraints are much more succinct and elegant than their feature-based equivalents, giving an edge to the representational view of derivation trees.

At this point several core insights have been established. First, the choice between representations and derivations cannot be made based on weak or even strong generative capacity. Second, derivation trees provide a computationally more parsimonious data structure than phrase structure trees or bare phrase structure sets. Third, a representational specification of well-formed derivation trees is more succinct and intuitive than a purely derivational one. In other words, representational derivationalism combines the computational advantages of derivation trees with the elegance of constraint-based systems.

But this is a purely methodological argument for representational derivationalism, which may or may not translate into concrete advantages for linguistic research. In the next section, I discuss a recently discovered parallel between phonology and syntax that could not even be formulated without representational derivationalism. This demonstrates that repre-

sentational derivationalism is not just a matter of methodological beauty but an empirically fertile perspective on syntax and language as a whole.

### 3. Parallels between phonology and syntax

I mentioned at the very beginning of this squib that if derivation trees rather than phrase structure trees are the basic data structure for syntax, then syntax is finite-state in nature. This is remarkable because that makes syntax computationally similar to phonology and morphology, whose dependencies are also finite-state (Johnson 1972, Koskenniemi 1983, Kaplan & Kay 1994). But the class of finite-state dependencies is large, so the fact that phonology, morphology, and syntax all fit into it may just be a curious accident rather than indicating a deep cognitive parallel between the three modules. However, recent work suggests that there is more to this: we can identify a very weak subclass of finite-state dependencies that make up the very core of phonology, morphology, and syntax.

Numerous findings from the last ten years have revealed that phonology and morphology use only a fraction of the power of finite-state dependencies (Heinz 2009, 2010, Graf 2010a, Heinz & Idsardi 2013, Chandlee 2014, Aksënova et al. 2016). Instead, the highly restricted subclass of *tier-based strictly local* dependencies (TSL) seems to provide an adequate fit for the large majority of dependencies (Heinz et al. 2011, McMullin 2016). Taking a hint from autosegmental phonology (Goldsmith 1976), TSL treats dependencies as local constraints over tiers. More precisely, a TSL grammar consists of a set of symbols that should be projected onto a tier and a set of forbidden local sequences that must not occur on said tier.

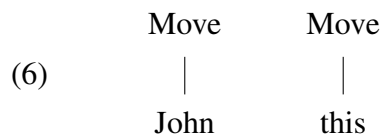
As a concrete example, consider sibilant harmony in Samala, which prevents two sibilants in a word from disagreeing in anteriority. Hence we find [haʃxintilawaf] but not [hasxintilawaf] or [haʃxintilawas]. A TSL grammar can capture this behavior by projecting all sibilants and forbidding adjacent instances of [s] and [ʃ] on this tier.

$$(5) \quad \begin{array}{cccc} & \text{ʃ} & & \text{ʃ} & & \text{s} & & \text{ʃ} \\ & | & & | & & | & & | \\ \text{h a ʃ x i n t i l a w a ʃ} & & & * \text{h a s x i n t i l a w a ʃ} & & & & \end{array}$$

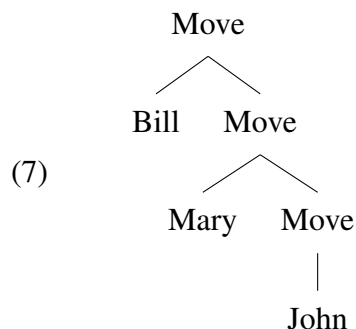
TSL thus reduces the non-local dependency of sibilant harmony to a local well-formedness constraint. This kind of “hidden locality” seems to play a central role in phonology and morphology, and it can also be found in MG derivation trees.

When verifying whether an MG derivation tree is well-formed, the challenging part is the long-distance nature of movement dependencies. Even with phases and successive cyclicity, there is no fixed upper bound  $k$  such that a mover never crosses more than  $k$  nodes. Object topicalization, for instance, can cross arbitrarily many VP-adjuncts. Despite appearances, movement dependencies are extremely local if one does not apply them directly over derivation trees but rather over *movement tiers*. For every movement type (wh, case, topicalization, ...) one projects a tree tier that contains only those nodes from the derivation tree that are involved in such a movement step, either as the head of a moving

phrase or as a matching Move node. For example, the derivation tree in (1) has a subject movement tier and a topicalization tier.



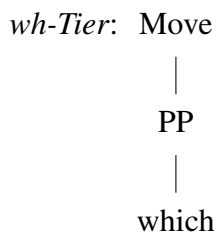
For a more complex example, consider the subject movement tier of the sentence *Bill thinks Mary thinks John likes this boy*.



These examples show that tree tiers are trees rather than strings. They contain only those parts of a derivation tree that matter for a specific type of movement while ignoring everything else, just like the string tiers for Samala sibilant harmony ignore all material that is irrelevant for sibilant harmony.

The crucial role of movement tiers is that they make movement a maximally local relation between mothers and daughters in those tiers. The movement dependencies in a derivation are well-formed iff each projected tier obeys two constraints: every lexical item is the daughter of a Move node, and every Move node has exactly one lexical item among its daughters. Note that this makes it very easy to express certain constraints on movement. The adjunct island constraint amounts to projecting adjunct roots onto movement tiers as this means that the head of a phrase that moves out of an adjunct can never be the daughter of a Move node on the corresponding tier.

(8) *Sentence:* Which report did John go home without filing ⟨which report⟩?



The TSL perspective of movement is a unique view of syntax that, to the best of my knowledge, has not been explored before. Whether it provides a fully adequate picture or falls woefully short in certain respects is still an open issue, and right now it depends on several technical assumptions that are innocuous for MGs but may be problematic for Minimalism. But it nonetheless shows at an abstract level that movement, the core of Minimalist syntax, involves dependencies of comparable complexity to what we find in phonology and morphology. Without derivation trees, this result would not be obtainable because phrase structure trees have a higher degree of complexity that does not fit within TSL. But derivation trees are not enough, one also has to view them as representations that can be regulated by constraints on tiers—couching well-formedness purely in terms of feature checking precludes a TSL perspective of syntax. Hence the TSL-parallel between syntax, phonology, and morphology only surfaces when syntax is viewed through the lens of representational derivationalism.

#### 4. Conclusion

The choice between representations and derivations is a nuanced one that a single squib cannot do full justice. Nonetheless I hope that the appeal of a Solomonic solution that fuses these two traditions into *representational derivationalism* has been aptly demonstrated. Switching from phrase structure trees to derivation trees offers many advantages, but it does not commit us to a derivational perspective of derivation trees.

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Thomas Graf  
mail@thomasgraf.net



## Shedding new light on the *wohl* muddle: The particle *schier* in Austrian German\*

Patrick G. Grosz

University of Oslo

### 1. Introduction: *well*-type modal particles in Germanic and beyond

In Standard German, *wohl* (lit. ‘well’), which originated as the adverbial counterpart of *gut* ‘good’, has a well-documented use as a so-called *modal particle* (or *discourse particle*); see Thurmair 1989, 139-145 and Zimmermann 2008 for representative analyses. As a modal particle, illustrated in (1), *wohl* roughly amounts to a quasi-synonym of *probably* / *apparently* / *certainly* (or parenthetical *I guess* / *I suppose*).

- (1) Damit hatte **wohl** niemand in Mattersburg gerechnet. *German*  
there.with had WOHL nobody in M. reckoned  
‘**Apparently** ( $\approx$  *wohl*) nobody in Mattersburg had expected this.’  
(*DeReKo*: Burgenländische Volkszeitung, 18.10.2012)

This is not an isolated fact. Several Germanic languages have developed a reading of a ‘well’-type lexeme that has a similar function. This is well-established for Scandinavian languages, as illustrated for Swedish *väl* ‘well’ in (2) (from the English-Swedish Parallel Corpus; quoted from Aijmer 2015, 179).

- (2) Det är **väl** så man gör. *Swedish*  
this is VÄL how one does  
‘That’s **probably** what you do.’

Sudhoff (2012, 109) discusses several readings of the Dutch cognate *wel* ‘well’, one of which also corresponds to the expression of ‘uncertainty or doubt’, as in his example (3).

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- (3) Komt dat **wel** weer GOED? *Dutch*  
 comes that WEL again good  
 ‘Could this **possibly** get better again?’ (*lit.* ‘Will this [WEL] get better again?’)

Moreover, even non-Germanic languages display related developments, as in the case of French *bien* (lit. ‘well’), see Detges & Waltereit (2009). As shown in (4), *bien* can be used as a modal particle in questions, where it conveys ‘bewilderment’; a suitable context for (4) would be one in which we did not expect the subject referent to speak to anyone.<sup>1</sup>

- (4) À qui est-ce qu’il a **bien** pu parler? *French*  
 to who is-it that’he has BIEN been.able.to speak  
 ‘Who **on earth** could he have spoken to?’ (Corréard et al. 2007, 1893, adapted)

While some of these particles have received more attention than others (e.g. German *wohl* in the works of M. Zimmermann and Swedish *väl* in the works of K. Aijmer), we are far from an explanation of how *wohl*-type elements acquire modal particle readings and how the range of modal particle interpretations is constrained cross-linguistically. To shed new light on the diachronic preconditions for the emergence of such modal particles, this paper pursues the following strategy. In Section 2, I investigate a lexeme that has developed a *wohl*-type reading even though its source lexeme is not a *wohl*-type element: the lexeme *schier* (lit. ‘almost, downright’) in East Austrian German. I compare the diachronic development of *schier* (which originates in Middle High German *schiere* ‘soon’) to that of *wohl* and conclude, in Section 3, that the common denominator is a notion of scalarity. For concreteness’ sake, I sketch a formalization for *wohl* in Section 4. The objective of this little study is to show how case studies of dialectal phenomena can contribute to our understanding of more general patterns and developments.

## 2. When *almost* means *well* – introducing *schier* in East Austrian German

The diachronic origin of the South German<sup>2</sup> lexeme *schier* ‘almost, downright’, illustrated in (5), has previously been discussed in Eckardt 2011. Its original meaning was that of the temporal adverb *soon*, and Eckardt analyzes the development from Middle High German *schiere* ‘soon’ to Modern German *schier* ‘almost’.<sup>3</sup> In the remainder of this paper, I write *schier*<sub>0</sub> for the variant that means ‘almost, downright’.

<sup>1</sup>I am grateful to Alexandre Cremers and Valentine Hacquard for commenting on this example and related examples. The term ‘bewilderment’ is due to V. Hacquard; the context description to A. Cremers.

<sup>2</sup>Note that *schier* has a North German homophone (illustrated by *schieres Hechtfleisch* ‘pure pike meat’) that has a different diachronic trajectory (related to Middle High German *schür* ‘pure’); while it is unclear if their diachronic origin is distinct, I will adopt the standard view (e.g. in the *DWB* of Jacob and Wilhelm Grimm) of treating them as separate lexemes and focus exclusively on the South German version.

<sup>3</sup>The synchronic meaning of *schier* in Standard German is puzzling in the sense that *schier* is a quasi-synonym of *fast* ‘almost’ as well as *geradezu* ‘downright/virtually/positively’, which are not equivalent in their meaning. To illustrate the difference, native speakers’ intuitions and corpus examples indicate that *fast verdoppelt* ‘almost doubled’ entails that the reference value has not yet doubled (e.g. from 6 to 12), whereas *geradezu verdoppelt* ‘downright/virtually/positively doubled’ lacks this entailment. As a concrete example, *geradezu verdoppelt* is judged acceptable when a value has risen from 6 to 12.5 (and corpus examples can be found that corroborate this point). For present purposes, I gloss over this complication.

- (5) Der Beifall wollte **schier** nicht enden.  
 the applause wanted SCHIER<sub>0</sub> not to.end  
 ‘The applause **almost** (= *schier*<sub>0</sub>) was not going to end.’  
 (DeReKo: Niederösterreichische Nachrichten, 26.11.2008)

The *Deutsches Wörterbuch von Jacob Grimm und Wilhelm Grimm (DWB)* observes that *schier* acquired an additional reading as a *wohl*-type modal particle (*schier*<sub>M</sub>), which derived from its ‘almost’ reading (*schier*<sub>0</sub>). The description of how *schier*<sub>M</sub> emerged from *schier*<sub>0</sub> is quoted in (6) (from a DWB section completed in 1894), my translation added.

- (6) *das mit schier verbundene [bezeichnet] eine steigerung gegenüber dem, was beschrieben werden soll. das mag der anlass gewesen sein zur herausbildung des gebrauchs im sinne von ‘gar, vollends’, von dem aus das wort dann zu der bedeutung ‘wol’ im weiteren sinne und zum bloszen fillwort herabsinkt.*<sup>4</sup>  
 ‘What is combined with *schier* conveys an increase with respect to what is being described. This may have been the reason for why *schier* acquired a reading in the sense of *gar* ‘even’ and *vollends* ‘completely’, from where *schier* developed a meaning equivalent to *wohl* in the broadest sense, and became a mere filler.’

This ‘*wohl* reading’ is documented by Hügel (1873, 136), who identifies the relevant meaning with that of *wahrscheinlich* ‘probably’ and provides the examples in (7).

- (7) a. Er wird **schier** heirat’n.  
 he will SCHIER<sub>M</sub> get.married  
 ‘He will **probably** (= *schier*<sub>M</sub>) get married.’  
 b. Du wirst **schier** a Fiab’r krieg’n.  
 you will SCHIER<sub>M</sub> a fever get  
 ‘You will **probably** (= *schier*<sub>M</sub>) get a fever.’

The *wohl* reading of *schier* has largely disappeared from present-day German (including most varieties of Austrian German), but it is still available in Burgenland varieties of East Austrian German. (So far, I have been able to confirm this for the districts of Mattersburg, Neusiedl, and Oberpullendorf.) Corpus examples are sparse, but can be found; example (8) (where the spelling emulates dialectal speech) is from a public Facebook discussion, found via *Google*. Examples (9)-(10) are from a local newspaper.

- (8) na des wiad **schia** nix wean!  
 well this will SCHIER<sub>M</sub> nothing become  
 ‘Well, this **probably** (= *schier*<sub>M</sub>) won’t go well!’  
 (9) Youngster Patrick Pasterniak hatte **schier** etwas dagegen.  
 youngster P. P. had SCHIER<sub>M</sub> something against.it  
 ‘**Apparently** (= *schier*<sub>M</sub>), youngster P. Pasterniak was against it (*his team losing*).’  
 (DeReKo: Burgenländische Volkszeitung, 11.06.2008)

<sup>4</sup><http://www.woerterbuchnetz.de/DWB?bookref=15,19,29> (Section II.3, [Bd. 15, Sp. 26])

- (10) Während der Saison den Klub zu wechseln, ist **schier** nicht das Einfachste.  
 during the season the club to change is SCHIER<sub>M</sub> not the easiest  
 ‘To change one’s club during the season is **probably** (= *schier*<sub>M</sub>) not the easiest.’  
 (DeReKo: Burgenländische Volkszeitung, 05.09.2013)

Evidence that *schier*<sub>M</sub> was more widely used in the 19<sup>th</sup> century stems from the writings of Peter Rosegger (\*1843 / †1918 in Alpl/Krieglach, North Eastern Styria), (11), and Ludwig Anzengruber (\*1839 / †1889 in Vienna), (12).

- (11) Was, mein Hemd soll ich ausziehen? sagt der Franzel,  
 ‘What, I shall take off my shirt?, said Franzel,’  
 das wird **schier** nicht geschehen.  
 that will SCHIER<sub>M</sub> not happen  
 ‘**it looks like** (= *schier*<sub>M</sub>) that’s not gonna happen.’  
 (Rosegger, Peter. 1897. *Das ewige Licht*. via *Google Books*)<sup>5</sup>
- (12) a. Toni: So, ’n Muckerl? Is das dein Schatz?  
 ‘Oh, [you were accompanying] Muckerl? Is that your boyfriend?’  
 Helen: Ich wüßt nit, warum ich dich in dem Glauben irrmachen sollt;  
 ‘I don’t know why I should deceive you with regards to your beliefs;’  
 er wird **schier** so was sein.  
 he will SCHIER<sub>M</sub> such something be  
 ‘**I guess** (= *schier*<sub>M</sub>) he’s going to be something like that.’
- b. D’ Matzner Sepherl tut **schier** was suchen,  
 the M. S. does SCHIER<sub>M</sub> something look.for  
 ‘**Apparently** (= *schier*<sub>M</sub>), Sepherl Matzner is looking for something,’  
 hat wohl ’n gestrigen Tag verloren.  
 has WOHL the of.yesterday day lost  
 ‘she must have lost her entire yesterday.’

(Anzengruber, Ludwig. 1884. *Der Sternsteinhof*, via *COSMAS II / DeReKo*)

We can now ask the following question: which property does the source lexeme of the modal particle *schier*<sub>M</sub> share with the source lexeme of the modal particle *wohl*?

### 3. A scalar hypothesis: *wohl*-type elements are built on scalarity

I propose, in (13), that *wohl*-type elements emerge from markers of scalar proximity.

- (13) *The scalar hypothesis of ‘wohl’-type elements*  
 [i.] Modal particles like German *wohl* originate from approximators, i.e. from elements that function as scalar modifiers.  
 [ii.] Their grammaticalization involves a shift of the type of expression that they modify (before: a proposition, afterwards: the commitment to a proposition)

<sup>5</sup><https://books.google.de/books?id=vE4bCgAAQBAJ>

We have already seen that *schier*<sub>M</sub> originates in an approximator *schier*<sub>0</sub> that means ‘almost, downright’. The DWB proposes that the modal particle *wohl* (henceforth *wohl*<sub>M</sub>) derived from an affirmative particle with the meaning ‘truly, certainly, definitely, indeed’. As an example of the affirmative use of *wohl* (henceforth *wohl*<sub>0</sub>), the DWB cites the Middle High German (14), from Hartmann von Aue’s *Iwein* (approx. 1203 CE).<sup>6,7</sup> The quote (15) (from a DWB section that was completed later, in 1943) addresses the emergence of *wohl*<sub>M</sub> from the affirmative particle *wohl*<sub>0</sub>.

(14) sô bistû **wol** ein vrum man:  
then are.you WOHL<sub>0</sub> a valiant man  
‘Then you are **truly** (= *wohl*<sub>0</sub>) a valiant man.’

(15) *aus bekräftigendem, betuerndem wohl entwickelt sich die bedeutung ‘vielleicht, vermutlich’ bei bescheidenhöflicher, zustimmung heischender oder erwartung ausdrückender behauptung sowie in zweifelnder oder rhetorischer frage. in neuerer sprache in breiter verwendung.*<sup>8</sup>  
‘From an affirmative, assuring *wohl* [i.e. *wohl*<sub>0</sub>], the meaning *vielleicht* ‘maybe’, *vermutlich* ‘presumably’ [i.e. *wohl*<sub>M</sub>] emerges in statements that are modestly polite, fishing for approval, or expressing an expectation, as well as in doubtful or rhetorical questions, which is in broad use in the present day language.’

The scalarity of affirmative *wohl*<sub>0</sub> is particularly evident in combination with numerical phrases and measurements, where the DWB (quoting examples that date back to 1402) observes that affirmative *wohl*<sub>0</sub> means *annähernd* ‘approximately’, *ungefähr* ‘roughly’, or *reichlich* ‘plentifully’.<sup>9</sup> Synchronically, this use of affirmative *wohl*<sub>0</sub> is still attested, as in (16), where *wohl alle Kinder* corresponds to ‘approximately all children’ (or, more colloquially, ‘pretty much all kids’, as in the translation). We can make the parallels between *wohl*<sub>0</sub> and *schier*<sub>0</sub> more visible by looking at a parallel example with *schier*, given in (17); again, the most natural translation of *schier alle Objekte* seems to be ‘pretty much all of the objects’, while a more literal translation would be ‘virtually all objects’ (or, possibly, ‘almost all objects’, but this does not seem to be the intended reading).

(16) **Wohl** alle Kinder mögen es, wenn sie spannende Bücher vorgelesen bekommen.  
‘**Pretty much** (= *wohl*<sub>0</sub>) all kids like it if someone reads exciting books to them.’  
(*DeReKo*: Mannheimer Morgen, 22.11.2014)

(17) **Schier** alle Objekte zeichnen sich durch sauberste handwerkliche Arbeit aus.  
‘**Pretty much** (= *schier*<sub>0</sub>) all of the objects exhibit the most precise manual work.’  
(*DeReKo*: Vorarlberger Nachrichten, 03.04.1997)

<sup>6</sup>Note that Detges & Waltereit (2009) also demonstrate an affirmative use of French *bien* in declaratives (though they subsume affirmative *bien* under the ‘modal particle use’ of *bien*); this would suggest that *bien* has undergone a development parallel to that of German *wohl*.

<sup>7</sup>Note that the use in (14) seems to be archaic, and unacceptable in Present Day German.

<sup>8</sup>[http://www.woerterbuchnetz.de/DWB?bookref=30,1025,1\(Section II.B, \[Bd. 30, Sp. 1062\]\)](http://www.woerterbuchnetz.de/DWB?bookref=30,1025,1(Section%20II.B,%20[Bd.%2030,%20Sp.%201062]))

<sup>9</sup>See also the corresponding entry in the online version of the *Duden* dictionary (last accessed on February 28, 2017): [http://www.duden.de/rechtschreibung/wohl\\_gut\\_besser\\_durchaus#Bedeutung4](http://www.duden.de/rechtschreibung/wohl_gut_besser_durchaus#Bedeutung4)

#### 4. Sketch of a formalization

Informally, this is what we aim for: what the source lexemes *schier*<sub>0</sub> and *wohl*<sub>0</sub> share with the modal particles *schier*<sub>M</sub> and *wohl*<sub>M</sub> is a scalar component that conveys the exceedance of a high threshold  $\theta$ . (I treat the inference that the scalar maximum is not reached as a conversational implicature.) What changes in the course of their diachronic development is the type of scale that these elements operate on. Simplifying for present purposes, I assume that the source lexeme *wohl*<sub>0</sub> has the same meaning as *approximately*. I propose that *wohl*<sub>0</sub> conveys that the preciseness of a given proposition  $p$  (modeled as its closeness/similarity to a contextually salient true proposition  $q$ ) exceeds a context-dependent threshold  $\theta_p$ . The sketch in (18) is inspired by Penka's (2006, 279) analysis of *almost*.<sup>10</sup>

- (18) *wohl*<sub>0</sub>  $p$  ( $\approx$  *approximately*  $p$ ) is true in  $w$ , for any contextually restricted set of propositions  $C$ , iff  $\exists q [q \in g(C) \ \& \ \text{CLOSENESS}(p,q) \geq \theta_p \ \& \ q(w)]$   
 where  $\theta_p$  is a high threshold of *closeness* between propositions, and the degree of *closeness* between  $p$  and  $q$  reflects the similarity between  $p$ -worlds and  $q$ -worlds

Similarly, I assume that the German modal particle *wohl*<sub>M</sub> makes a contribution parallel to that of the English auxiliary *must* and adverb *surely*, with the non-trivial difference that *must* makes a truth-conditional contribution, while *wohl* operates at a non-truth-conditional level. We can then posit the analysis in (19), loosely based on Swanson's (2006) scalar analysis of *must* (see Lassiter 2016, 150). In words, *wohl*<sub>M</sub> conveys (at the level of felicity conditions) that, according to the speaker's beliefs, the probability  $P$  that the modified proposition  $p$  holds in the evaluation world  $w$  is high, i.e.  $P$ 's closeness to 1 exceeds a high threshold  $\theta_{prob}$ .<sup>11</sup> One open question concerns the *setting of the threshold value* in (19) (and (18)); while  $\theta_{prob}$  in (19) plausibly reflects the current speaker's notion of 'high likelihood', Lassiter (2016, 159-160) discusses limitations on making probability thresholds more precise in current theorizing. My approach inherits these limitations.

- (19) *wohl*<sub>M</sub>  $p$  ( $\approx$  *surely*  $p$ ) is felicitous in  $w$  iff  
 $\forall w' [w' \in \text{DoX}_{\text{speaker}}(w) \rightarrow \text{PROB-CLOSENESS}_{w'}(P(p(w)), 1) \geq \theta_{prob}]$   
 where  $\theta_{prob}$  is a high threshold of *closeness* between probabilities,  $P(p(w))$  is the probability that  $p$  holds in the evaluation world  $w$ , and *prob-closeness* <sub>$w'$</sub>  is a scalar 'close by' relation that compares, in  $w'$ , two probability values  $n$  ( $0 \leq n \leq 1$ ).

In line with Beltrama's (2015) analysis of *totally*, the reanalysis from (18) to (19) minimally (but not exhaustively) involves a change in the relevant scale and a shift in at-

<sup>10</sup>In line with Penka (2006), I take *wohl*<sub>0</sub> to take a propositional argument even though *wohl*<sub>0</sub> seems to form syntactic constituents with phrases that have a non-propositional meaning, cf. (16). This is in line with the parallel behavior of uncontroversially propositional operators such as *wahrscheinlich* 'probably', in (i).

(i) [**Wahrscheinlich** alle Schülerinnen und Schüler] haben sich [...] den Tag herbeigesehnt [...]  
 '[Probably all pupils] were longing for the day [...]' (*DeReKo*: Mannheimer Morgen, 23.06.2000)

<sup>11</sup>Note that (19) is a simplification that only captures *wohl*<sub>M</sub> in declaratives.



issueness. What stays the same is the reference to a high threshold ( $\theta$ ) on the respective scale, which is present in both *wohl*<sub>0</sub> and *wohl*<sub>M</sub> (and, by analogy, in *schier*<sub>0</sub> and *schier*<sub>M</sub>).

## 5. Conclusion

In this article, I have argued for a diachronic development from APPROXIMATELY/ALMOST type elements to CERTAINLY/SURELY type elements, which is instantiated by German *wohl* and Burgenland German *schier*. The analysis that I propose treats *wohl*-type elements as scalar modal operators. This sheds new light both on the semantic analysis of *wohl* itself and on its diachronic development from *wohl* ‘well’ (as the adverbial counterpart of *gut* ‘good’) via *wohl* ‘truly’, (14), and *wohl* ‘approximately’, (16).

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Patrick Grosz  
p.g.grosz@iln.uio.no

## Anaphors and reflexives\*

Martin Haiden

Université de Nantes & UMR 6310 LLING

### 1. Introduction

The classical Binding Theory explained the behavior of anaphors as locally A-bound NPs. It had little to say about inherently reflexive predicates like *wash* in *Max washed*. A host of data related to the interpretation of implicit arguments led Williams (1987) to argue that the Binding Theory should be formulated over thematic roles, rather than NP positions. That approach was fleshed out in great detail in Reinhart & Reuland (1993), with strong implications for Tanya Reinhart's work on the content of thematic roles. Reinhart & Siloni (2005, 400) propose a "reflexivization operation [...] that takes two  $\theta$ -roles and forms one complex  $\theta$ -role. [They] call this operation bundling".

There are two puzzling aspects of Reinhart and Siloni's (2005) paper. While they claim that a bundled reflexive role is assigned to a single NP argument, they write that the bundled roles must be dissociated in semantics, even for reflexives formed in the lexicon (*ibid.*, 401). (1) below reproduces their (26c), (27a,b), respectively. Instead of (1b), which we would expect from the syntactic representation in (1a), we get (1c). This is puzzling, because it really undoes the effect of the bundling operation in favor of a bound variable treatment of reflexives. The other puzzling aspect is the lex-syn parameter: Why should some languages lack lexically listed transitive-reflexive pairs of verbs?

- (1) a. Syntactic output:  $\text{Max}_{[\text{Agent-Theme}]}$  washed.  
b.  $\exists e$  [wash(e) & [Agent-Theme](e, Max)]  
c.  $\exists e$  [wash(e) & Agent(e, Max) & Theme(e, Max)]

In this squib I show that certain contexts appear to favor (1b) over (1c) and explore the consequences of this fact for Reinhart and Siloni's (2005, 408) *lex-syn parameter*.

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\*I offer this squib to Martin Prinzhorn who led me to discover the remnants of meaning and mental representation, and a *no-theory* theory thereof in the spring semester of 1990. I thank my colleagues in Nantes for their help with the French data, and Winnie Lechner, Dominique Sportiche, and the editors for valuable comments.

## 2. The dissociation of roles under focus

I recently came across Sportiche (2014), whose observations amount to dissociating under focus what Reinhart and Siloni analyze as bundled roles.<sup>1</sup> Sportiche uses the ambiguity between strict and sloppy readings of reflexives under focus. The essential part of his paradigm is as follows (his examples (14), (15), (18)). Sportiche observes that French (2a) can be denied as in (2b) and (2c), but not as in (2d)<sup>2</sup>. The two possible answers highlight two different readings of (2a). The strict reading is exemplified by the dialogue (2a)-(2c), where the internal argument is assigned a referent, *Pierre*, and that reference is kept constant in the dialogue. The sloppy reading is exemplified in the dialogue (2a)-(2b). On the sloppy reading, intelligence is attributed to the respective local subject: *Jean* in (2a), *moi* in (2b).

- (2) a. Seul Pierre se trouve intelligent.  
 only Pierre SE finds smart  
 ‘Only Pierre finds himself smart.’
- b. Non, moi aussi je me trouve intelligent.  
 no me too I me find smart  
 ‘No, I find myself smart too.’
- c. Non, moi aussi je le trouve intelligent.  
 no me too I him find smart  
 ‘No, I find him smart too.’
- d. #Non, Pierre me trouve intelligent moi aussi.  
 no Pierre me finds smart me too  
 ‘No, Pierre finds me smart too.’

I suggest restating the strict-sloppy asymmetry of (2) in terms of role-bundling as follows.<sup>3</sup> On the sloppy reading (2a)-(2b), focus is on the argument bearing the bundled reflexive role. Negation of that argument triggers an alternative reflexive proposition. On the strict reading (2a)-(2c), focus is on the argument bearing the sole experiencer role of the main verb. The argument bearing the theme role of the small clause predicate *intelligent* is dissociated from the focus, and therefore remains constant. This shows that the two roles assigned in (2a) are independently accessible, which favors (1c) over (1b).

<sup>1</sup> The discussion of pronouns and their formalization has a rich tradition in generative grammar going back to Postal’s 1966/1970 seminal paper. Cf., Partee (1970) and subsequent work for a discussion of coreference relations, Dimitriadis et al. (2017) for a recent special issue on the grammar of reflexives, and Spathas (2010), Lechner (2012), Sauerland (2013) on their semantics. A test very similar to Sportiche’s is used extensively in Haiden (2005) to distinguish reflexives from reflexive-marked anti-causatives. The limitations discussed in this squib apply equally to Sportiche’s and to Haiden’s tests.

<sup>2</sup> Sportiche marks (2d) with ?? . However, the sentence as such is fully acceptable in isolation. It is deviant in reply to (2a) only. I therefore chose to replace ?? by #.

<sup>3</sup> Notice that the bundling operation can apply in syntax, targeting the roles of different predicates under certain conditions discussed in section 4.1.2 of Reinhart & Siloni (2005).

I will now show that the strict/sloppy ambiguity is not systematic. There are verbs which qualify as reflexive due to the fact that two distinct roles are assigned to the subject, but which disallow the dissociation of those roles under focus.

### 3. Directional auto-motion

If (1c) is the correct interpretation of reflexive constructions, then we should be able to reproduce the strict/sloppy ambiguity with any reflexive verb. Consider reflexive-marked verbs of directional auto-motion.<sup>4</sup> Verbs in this class assign a cause role to the instigator of the motion, and a theme role to the moved object.

- (3) a. Nur Hans hat sich in die erste Reihe gedrängt.  
 only Hans has SE in the first row pushed  
 ‘Only Hans forced himself into the first row.’
- b. Nein, auch Kurt hat sich in die erste Reihe gedrängt.  
 no also Kurt has SE in the first row pushed  
 ‘No, Kurt, too, pushed himself into the first row.’
- c. #Nein, auch Kurt hat ihn in die erste Reihe gedrängt.  
 no also Kurt has him in the first row pushed  
 ‘No, Kurt, too, pushed him into the first row.’
- d. #Nein, er hat auch Kurt in die erste Reihe gedrängt.  
 no he has also Kurt in the first row pushed  
 ‘No, he pushed Kurt into the first row, too.’

Let us first establish that *drängen* in (3a) assigns both an agent and a theme role. This is shown, first, by the fact that reflexive *drängen* has a transitive variant (4a), where the accusative is interpreted as a theme affected by the subject’s action. Second, the acceptability and the reading of (4b) shows that the subject of the reflexive variant must be both an agent and an argument of the directional PP: (4b) means that the pushing was on purpose, but that its result, the subject’s location in the first row, was unintentional. Finally, both the transitive and the reflexive variant of the verb imply that one of its arguments (the object in (4a), the reflexive subject in (4b)) occupies the target location for at least a brief moment.

- (4) a. Hans hat mich in die erste Reihe gedrängt.  
 Hans has me in the first row pushed  
 ‘Hans pushed me into the first row.’

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<sup>4</sup> Reflexive auto-motion verbs are a particularly important class for the *Theta System* because of their status with respect to event perception: While (caused) motion belongs in the domain of *folk physics* (covered by Reinhart’s feature *c*), spontaneous auto-motion is a cue for intentionality (covered by Reinhart’s feature *m*); cf., Haiden (2012). Intentionality in turn appears to be a crucial ingredient of reflexivization, cf., Reinhart (2000), Reuland (2017), and the discussion of French *se déplacer* below.

- b. Hans hat sich unabsichtlich in die erste Reihe gedrängt.  
 Hans has SE unintentionally in the first row pushed  
 ‘Hans unintentionally forced himself into the first row.’

Now consider the strict/sloppy paradigm with a reflexive-marked auto-motion verb in German (3). Unlike (2a), (3a) is not ambiguous. Only (3b) is a felicitous reply to (3a). The reason for this judgment is most likely related to the fact that auto-motion verbs like *sich drängen* ‘push forward’ are lexically specified as reflexive predicates whose agent and theme roles cannot be dissociated under focus.

French has reflexive auto-motion verbs, too. Consider the following paradigm: The transitive causative *déplacer* ‘move’ in (5a) alternates with two distinct reflexive-marked uses, one with an unintentional theme-subject (5b), the other one with an intentional agent (5c). Both reflexive-marked uses imply that the subject undergoes a caused change of location. This shows the presence of a theme role. Furthermore, (5c) is agentive, as evidenced by the possibility of a purpose clause, which is incompatible with (5b). I conclude from this that (5c) is an agentive reflexive, while (5b) is a reflexive-marked reduced unaccusative verb. Notice finally that the agentive reflexive *se déplacer* must be lexically listed on its own, because its subject is an agent [+c, +m],<sup>5</sup> unlike the subject of its transitive counterpart, which is a cause ([+c]).

- (5) a. Antoine/ la commotion a déplacé la cargaison.  
 Antoine the shock has moved the cargo  
 ‘Antoine/the shock moved the cargo.’
- b. La cargaison s’ est déplacée (\*afin de faire chavirer le bateau).  
 the cargo SE is moved in-order to make capsize the ship  
 ‘The cargo moved/shifted (\*in order to cause the ship to capsize).’
- c. Antoine s’ est déplacé à Paris (afin de régler ses affaires).  
 Antoine SE is moved to Paris in-order to settle his affaires  
 ‘Antoine went to Paris (in order to settle his affaires).’

Now turn to the strict-sloppy contrast. Notice that the the most salient reading of the predicates in (6) is *go to/make a journey*, which is the most natural way to interpret the self-movement of animates. The judgments indicated apply to this salient reading. I will get back to a different reading in section 4 below. Among the 11 French speakers I consulted, not one accepted (6c) as an answer to (6a). They all accept (6b) on the relevant reading.<sup>6</sup>

<sup>5</sup>On the feature notation for thematic roles, cf., Reinhart (2000), Haiden (2005, 2012), and note 4.

<sup>6</sup>A note on the marginality of (6c)-(6d) is in order. When transitive *déplacer* ‘move’ takes an intentional object, it is usually a group-denoting plural. Animate singletons are judged as anomalous in the object of *déplacer*, unless they have a stable location as a salient property (ib). This constraint is trivially satisfied in reflexive contexts, because the reflexive agent is permanently located with respect to itself. It appears that the lack of a sufficiently salient, stable location of the intentional internal argument renders (6c)-(6d) awkward.

- (6) a. Seul Jean-Luc s' est déplacé à la fête de l'Huma.  
only Jean-Luc SE is moved to the festival of l'Humanité  
'Only Jean-Luc went to the festival of l'Humanité.'
- b. Non, Arlette aussi s' est déplacé à la fête de l'Huma.  
no Arlette also SE is moved to the festival of l'Humanité  
'No, Arlette went to the festival of l'Humanité, too.'
- c. #Non, Arlette aussi a déplacé Jean-Luc à la fête de l'Huma.  
no Arlette also has moved Jean-Luc to the festival of l'Humanité  
'No, Arlette has dragged Jean-Luc to the festival of l'Humanité, too.'
- d. #Non, il a aussi déplacé Arlette à la fête de l'Huma.  
no he has also moved Arlette to the festival of l'Humanité  
'No, he dragged Arlette to the festival of l'Humanité, too.'

This behavior is perfectly coherent with what we found for German: certain reflexives do not allow the dissociation of the bundled theta roles under focus. For this class, (1b) appears to be the correct analysis.

#### 4. The remnants of the *lex-syn 'parameter'*

It seems clear that we cannot categorically exclude (1b) as an interpretation of reflexives. Certain reflexive verbs disallow the dissociation of their internal and external roles even under focus. It seems reasonable, too, that the non-dissociability of bundled roles is a property of lexically listed reflexives. The auto-motion examples discussed here are in sharp contrast with Sportiche's paradigm of a syntactically complex reflexive construction, which is systematically ambiguous between the strict and the sloppy reading. This observation is at odds with Reinhart and Siloni's (2005) *lex-syn parameter* which states that grammars make a once and for all choice between the lexical vs syntactic application of reflexivization. As a matter of fact, languages typically have both lexical and syntactic reflexives. The asymmetry is not even rigid with respect to individual lexical entries. Consider the German verb *rasieren* 'shave' in the following paradigm under default intonation, with primary stress on the subject NP.

- (7) a. Nur Hans hat sich rasiert.  
only Hans has SE shaved  
'Only Hans shaved.'
- 
- (i) a. Jean-Luc a déplacé des foules.  
Jean-Luc has moved INDEF.PL crowds  
'Jean-Luc attracted large crowds (to his meetings).'
- b. La maitresse a déplacé mon fils à une table différente.  
the teacher has moved my son to a table different  
'The teacher assigned my son to a different desk.'

- b. Nein, auch Kurt hat sich rasiert.  
no also Kurt has SE shaved  
'No, Kurt shaved, too.'
- c. #Nein, auch Kurt hat ihn rasiert.  
no also Kurt has him shaved  
'No, Kurt shaved him (Hans), too.'

Used as in Sportiche's paradigm (7), the verb *rasieren* patterns with lexical reflexives. Focus on the NP subject in (7a) excludes the dissociation of the bundled roles. Only (7b) can be a reply to (7a). (7c) cannot. Such is not the case when the reflexive pronoun is focused, as in (8). In this configuration, the reflexive pronoun can no longer be a marker of lexical reflexivization. It must be a bound argument that realizes the internal theta-role of the verb. Correspondingly, (8c) is an appropriate reply to (8). (8b) isn't.

- (8) a. Hans hat nur sich rasiert.  
Hans has only SE shaved  
'Hans shaved nobody but himself.'
- b. #Nein, auch Kurt hat sich rasiert.  
no also Kurt has SE shaved  
'No, Kurt shaved, too.'
- c. Nein, er hat auch Kurt rasiert.  
no he has also Kurt shaved  
'No, he shaved Kurt, too.'

I conclude that *lexical reflexivization* cannot be a property of a homogeneous lexical entry *rasieren*. It is a property of one of its uses only.<sup>7</sup>

Similar observations can be made for French. Let us reconsider (6) and imagine a situation where *Jean-Luc* and *Arlette* are security guards assigned to various events. (6) can then be read as dialogues on who changed who's assignment.<sup>8</sup> This is a proxy reading of (6a), because what is moved is not *Jean-Luc*'s self, but his name on the assignment chart. On this reading, both (6c) and (6d) are grammatical, but only (6c) can be a reply to (6a). In other words, (6) (on the proxy reading) behaves exactly like (2). This is not a surprise really, because a proxy reading on the theme argument requires its existence in the syntax. The proxy reading thus shows that the syntactic derivation co-exists with the lexical reflexive for the verb *se déplacer*.

To conclude, it appears that certain, lexically listed reflexive predicates assign a bundled, non-dissociable role to an argument, while syntactically formed reflexives assign two independent roles to a single argument. Crucially, both configurations can coexist in any

<sup>7</sup> Counterexamples to the lex-syn parameter actually abound. For example, Reinhart and Siloni's *Max washed* contrasts with *Max washed himself*. As expected, only the latter allows the dissociation of  $\theta$ -roles, as evidenced by the distribution of object comparative readings, cf., Dimitriadis & Que (2009).

<sup>8</sup> Thanks to Dominique Sportiche for pointing me to this context and the associated readings.



given grammar. The *lex-syn parameter* is therefore not a parameter, but a simple classification of constructions.

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Martin Haiden  
martin.haiden@univ-nantes.fr



## In the absence of a subject

Hubert Haider

University of Salzburg

### 1. Background

Initially, there was a simple question incited by a simple observation: what might be the grammatical reason for the ungrammaticality of subjectless clauses in English? The observation was this: “*There is compelling evidence that the subject of a clause is obligatory in English and similar languages* (Chomsky 1981, 40).”

In the absence of any deeper understanding, the empirical finding has been turned into an axiomatic grammatical constraint, namely the ‘*Extended projection principle*’ (EPP). It should be obvious that this is merely a technical restatement of the fact and the unanswered original question is turned into an unanswered technical question: why would a grammar have to embody such a requirement? In Lasnik’s words (2001, 356) “*The ‘Extended Projection Principle’ (EPP) has been [...] a pervasive mystery since it was first formulated by Chomsky (1981).*”

Even more mysterious is only the fact that the EPP is considered to be a *universal* axiom of a theory of sentence structures. In the present versions of generative theorizing, the axiom is not limited anymore to a subset of languages, namely “*English and similar languages*”. Without any substantive evidence beyond SVO languages, it has been elevated to the rank of a universal property of clause structure.

The universality claim is in immediate conflict with facts from languages other than English and similar languages, that is, other than SVO languages. McCloskey (1996) has shown that VSO languages such as the Celtic languages do not pattern as predicted.<sup>1</sup> As for SOV languages, there is no language known that provides unequivocal evidence for

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(i) Laghdaigh ar a neart. (Irish)  
decreased on his strength  
‘His strength decreased’

the efficacy of an EPP requirement. In particular, no SOV language requires or admits a purely expletive<sup>2</sup> subject in an otherwise subjectless clause, Dutch notwithstanding.

Eventually, the EPP axiom got translated into a feature device. Each clausal structure happens to be universally imbued with an EPP feature that must be eliminated ('checked') by a lexical item in the affected subject position. It is truly surprising that anyone could regard the postulation of an EPP feature as a satisfactory theoretical explanation of the alleged fact that clauses must have subjects in SVO languages. Hardly anyone seems to be irritated by the narrow circularity: clauses have subjects, because there is an EPP feature (= theoretical claim), and there is an EPP feature because clauses have subjects (= empirical claim). The understandable theoretical move – let's postulate a feature for an ill-understood structural property – is deceptive for at least two reasons. Empirically it is wrong; theoretically it is immaterial as long as the postulation of such a feature is merely begging the question. Moreover, such a feature would be unique. It would be the only *meta-grammatical* feature. To postulate an EPP feature amounts to advising a grammar by posting signs such as “*To leave this position empty is against the law. If it is left empty, the sentence will be starved.*” The grammar has to decide then whether to move something to this position or to plug it with an expletive.<sup>3</sup>

## 2. EPP as an SVO affair

If SVO languages are seen as what they are, namely as languages with a particular type of sentence structure, EPP falls in place. In SVO languages, there is an argument that does not stay within the projection of the verbal head it is an argument of. It ends up in a functional spec-position outside of the VP. As a consequence, it is not only outside of the VP but it *precedes* the verbal head while all other arguments *follow* this head inside the VP. It is this setting that constitutes the clause structure type called [S [VO]]. In the two other clause structure types, the verbal head either precedes all its arguments or it follows all of its arguments. In any case, all the arguments stay within the same directionality domain. Only in SVO there is a mismatch. One argument is not in the directionality domain that contains all the other arguments. This is the argument in the pre-VP functional subject position.

<sup>2</sup>As will be argued below, semantically *void* arguments (e.g. weather-verb subjects) must not be mistaken for expletive subjects. Void arguments are nevertheless *arguments* of a verb. Expletives are mere structural fillers.

<sup>3</sup>Note that in Norwegian there is free alternation (Taraldsen 1979, 49). The obligatory structural subject position may be filled by an expletive ('det') or by fronting the complement of a PP (cf. English 'pseudo-passive'), even in the presence of a direct object, which could be fronted.

(i) *Brevet ble klistret frimerker på.*  
 letter<sub>DEF</sub> was pasted stamps on.

(ii) *Det ble klistret frimerker på brevet.*

Note that in (ii), the subject expletive has moved to the clause-initial spec-position while the object remains in its post-verbal position. Alternatively, the direct object could be fronted to the subject position in both sentences.

The trigger of the EPP property of SVO structures is this very directionality mismatch. In SVO, the canonical directionality of heads is to the right; the directionality of merger in phrases is to the left. Hence, neither the verb nor a projection node of the verb can provide directional licensing for the VP-internal subject in (1a). Therefore, a functional head is employed to provide directional licensing (1b), which is indicated by arrows in (1). The projection of the functional head establishes the particular spec-position that is typical for SVO languages, namely the position for XP in (1b).

- (1) a. .... [VP XP<sub>Subj</sub> [V° → [ZP]]]
- b. [FP XP<sub>j</sub> [F' F° → [VP e<sub>j</sub> [V° → ZP]]]]

In SOV (2a) and in VSO (2b), any argument of a verb remains within the directionality domain of the verbal head or a projection of it, whence the absence of the particular subject-related functional projection in the clause structures of these languages:

- (2) a. [VP XP<sub>Subj</sub> ← [v' ZP ← V°]]
- b. [VP V<sub>i</sub>° → [XP<sub>Subj</sub> [e<sub>i</sub> → ZP]]]

The functional projection in (1b) provides a directionally licensing head for the preverbal, VP-internal subject and a trigger for moving the subject to the spec-position. This is an effect of the general licensing condition (Haider 2015, 84). The licenser and the licensee must c-command each other. In (1b), F° c-commands the VP-internal subject and the subject c-commands F° by virtue of being raised to the spec-position. The very same relation holds VP-internally and triggers the VP-shell structure<sup>4</sup> for complex, head-initial phrases (see Haider 2015, 85).

### 3. Immediate evidence for a structural subject position and for its absence

The difference between (1b) and (2) accounts for a wide range of predictable syntactic differences with respect to subjects. On the one hand there are differences between the subject and the objects within the same SVO language, and on the other hand, there are differences between SVO subjects and subjects in VSO or SOV languages. Among the most perspicuous differences are the following ones (see Haider 2010, ch.1; 2015).

- (3) a. (no) island-effects for subjects
- b. (no) ban against in-situ wh-subjects
- c. (no) expletive element in an otherwise subjectless clause

In the past century, more than two decades of Generative research on conditions constraining extractions has produced clear results. In SVO, any position preceding the verbal head, that is, any position outside of the domain of the head-initial VP, is an opaque domain for extraction. In particular, the subject of a CP is an opaque domain. This is

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<sup>4</sup>[<sub>VP</sub> V<sub>i</sub>° → [DP [e<sub>i</sub> → DP]]] as in: [deny<sub>i</sub> [nobody [e<sub>i</sub> anything]]]<sub>VP</sub>

clearly not true for SOV (4). In (4a), the extraction site is the subject clause of a transitive verb. (4b) illustrates the extraction out of an object clause preceding the subject. In SVO languages, none of this is grammatical.

- (4) a. Wen<sub>i</sub> würde [e<sub>i</sub> damit konfrontieren zu dürfen]  
 whom would [ with-it confront to-be-allowed-to]  
 jeden Syntaktiker amüsieren?  
 every syntactician amuse
- b. Was<sub>i</sub> hat [e<sub>i</sub> mit diesem Satz zu beweisen] jemand soeben versucht?  
 what has [ with this clause to prove] someone just tried

The explanation for the ban against a *wh*-subject in situ in SVO proposed in Haider 2010, 117 is based on the very same structural difference. In VO, an in-situ *wh*-subject is in a functional spec position. In OV, the in-situ *wh*-subject is in its VP-internal argument position. A *wh*-pronoun in a functional spec-position gains operator status. It cannot be interpreted as a dependent *wh*-element anymore. This rules out patterns such as in (5a-c), originally discussed by Chomsky (1981, 236). They show that in-situ subjects are ungrammatical, independently of any Superiority violation.<sup>5</sup> In SOV languages, no matching restrictions are found. There is no such restriction against an in-situ *wh*-subject in German (5d-f):

- (5) a. I know perfectly well *who* thinks (that) she/\**who* is in love with him.  
 b. I don't know *who* would be happy that she/\**who* won the prize.  
 c. I don't remember *who* believes that she/\**who* read the book.
- d. Wir müssen herausfinden, *wer* sich sicher ist, dass *wer* gewinnen werde.  
 we must find out who REFL sure is that who win will
- e. Man weiß nicht genau, *wer* hustete, als *wer* geredet hat.  
 one knows not exactly who coughed when who talked has
- f. Hier steht geschrieben, *wer* zuständig ist, wenn sich *was* ereignet.  
 here is written who in-charge is when REFL what happens

Let us turn now to the cardinal evidence for a structurally obligatory subject position, namely expletive subjects as plugs for otherwise empty positions. This area of syntax is notoriously contaminated by the equivocation of apparently similar but entirely different items, namely true *expletives* on the one hand and *void* subject arguments on the other hand. The latter are arguments of a verb; the former are not.

<sup>5</sup>Of course, the very same restriction that rules out an in-situ *wh*-subject in (5) would rule out an in-situ *wh*-subject in a superiority context such as in (i). Nevertheless, and in oblivion of the facts illustrated by (5), clauses with in-situ *wh*-subjects are standardly adduced as evidence for superiority-based accounts.

(i) \*Why would *who* omit such facts?

#### 4. Expletive versus void subjects

The lexical entry of a verb may provide argument slots without linking them semantically. These are syntactically realized as semantically void arguments. In German, a void argument may surface as a third person neuter pronoun (6a) or as a reflexive (6b). (6c) illustrates a verb with both a void subject and a void object.

- (6) a. weil *es* keinen Wein gab  
 since *it* no wine gave  
 'since there was no wine'
- b. weil er *sich* wunderte  
 since he *himself* wondered  
 'since he wondered'
- c. weil *es sich* bei diesem Verb um ein seltsames Verb handelt  
 since *it itself* at this verb about a strange verb deals  
 'since this verb is a strange verb'

It is essential to draw a clear distinction between a structural expletive and a void argument. In German, for instance, a structural expletive is found in the clause initial position in declarative clauses. This is an obligatory functional spec-position that must be filled. It cannot be left radically<sup>6</sup> empty. If this spec-position is not occupied by a fronted phrase, it is filled with an expletive (7a). This expletive is homophonous with the pronoun used for void arguments. However, unlike a void argument, the expletive *es* cannot appear anywhere else but in the clause-initial position. Clearly, this element would be the candidate for the role of a subject expletive. If German had a structurally obligatory subject position, (7d) would have to be grammatical.

- (7) a. *Es* hat jemand angerufen.  
 it has somebody called  
 'there has called somebody'
- b. *Es* wurde darüber diskutiert.  
 it has been about-this discussed  
 'there has been a discussion about this'
- c. dass (\**es*) jemand angerufen hat.  
 that (*it*) somebody called has

<sup>6</sup>'Radically empty' means that it is *phonetically* as well as *syntactically* empty. The position is not *radically* empty if it contains a trace (i) or an empty operator (ii):

(i) Wh-trace: Was<sub>i</sub> hat er behauptet [e<sub>i</sub> stehe hier in Spec-C]]?  
 what has he claimed [stands here in Spec-C]

(ii) Topic operator: Wo ist hier das Subjekt? [0<sub>i</sub> [Ist e<sub>i</sub> stumm]] und [0<sub>i</sub> [e<sub>i</sub> steht im Vorfeld]]  
 where is here the subject? [ [Is silent]] and [ [stands in-the pre-field]]

- d. dass (\*es) darüber diskutiert wurde  
that (it) about-this discussed was

In Dutch, the expletive for the clause-initial position in V2-declaratives is *er* ('there') while the void subject is *het* ('it'). The expletives in Dutch and German declaratives are expletives for the obligatory clause-initial spec position. Hence, if Dutch or German employed subject expletives, these would be the proper candidates for this function, too. Indeed, *er* has been claimed to be a subject expletive in Dutch:

- (8) a. dat *er* ge-sms't werd  
that *there* text-messaged was
- b. dat *er* iemand de oproep heeft beantwoord  
that there someone the call has answered

In (8a), there would be room for an expletive but not in (8b), because of the transitive subject that allegedly needs to be accommodated in the subject position. If, on the other hand, *er* is not an expletive subject in (8b), it need not be one in (8a) either. This is what Dutch syntacticians such as Hoekstra & Mulder (1990), Neeleman and Weerman (1999, 210-13) and Koenenman (2000, 192) argue for.

If *er* is not a subject expletive, it is not obligatory in subjectless constructions, which is often the case. A Google search (April 28, 2017) for “*dat wordt gewerkt*” and “*dat er wordt gewerkt*”, restricted to news sites, produced 1880 hits for the variant with 'er' and 469 for the variant without *er*.<sup>7</sup> Evidently, *er* is optional in subjectless sentences in Dutch. What could be mistaken as an expletive subject in (8a) is in fact a particle that can show up also in the presence of a subject (8b). If it were a subject expletive, it would be obligatorily present, just like an expletive subject in Danish, Norwegian, or Swedish:

- (9) a. at *der* bliver handlet nu (Danish)<sup>8</sup>  
that EXPL is acted now
- b. Ofte vart *det* telefonert/gesticulert. (Norwegian)  
often was EXPL telephoned/gesticulated (Åfarli 1992)
- c. Sedan dansades *det* hela natten. (Swedish)  
then dance<sub>pass</sub> EXPL whole night<sub>Def</sub> (Falk 1993, 106)

Could there be an empty version of *er*, that is, an ‘empty expletive’, or in technical diction an ‘expletive *pro*’? This concept is not only a *contradictio in terminis*; it also runs

<sup>7</sup>Here are two examples:

- (i) *dat wordt gewerkt* aan een permanent bezette maanbasis  
(<https://www.scientias.nl/chinezen-maken-ruimteplannen-bekend/>)
- (ii) *dat wordt gewerkt* aan een snelle oplossing  
([http://www.nieuwsblad.be/cnt/dmf20140423\\_01078554](http://www.nieuwsblad.be/cnt/dmf20140423_01078554))

<sup>8</sup><http://www.tveast.dk/artikel/danske-patienter-det-er-godt-der-bliver-handlet>



into immediate empirical problems. Anyone who admits null expletives wrongly admits intransitive passives in pro-drop SVO languages. This will be the topic of the following section.

Let us summarize the essential difference between expletives and void arguments. Void arguments are specified in the argument structure of a verb. A void argument is an argument with a morphological form but without semantic content. An expletive is a dummy element that is not related to a verb. In languages that – unlike Dutch (10a,b) – use the same morpheme for both functions (10c-f), this may lead to equivocation.

- |      |    |                                             |    |                                          |          |
|------|----|---------------------------------------------|----|------------------------------------------|----------|
| (10) | a. | <i>Er</i> wordt gewerkt.<br>there is worked | b. | Het heeft geregend.<br>it has rained     | (Dutch)  |
|      | c. | <i>Es</i> wird gearbeitet.<br>it is worked  | d. | <i>Es</i> hat geregnet.<br>it has rained | (German) |
|      | e. | *Wird es gearbeitet?<br>was it worked       | f. | Hat es geregnet?<br>has it rained        |          |

In German and in some Scandinavian languages, the form of the expletive (10c) is identical with the form of the void subject (10d). The void subject appears in clause-internal positions (10f) but in an SOV language such as German (10e), there is no clause-internal position available for an expletive.

### 5. No standard passive of intransitive verbs in pro-drop SVO languages

In Romance null-subject languages, the standard passivization of an intransitive verb is ungrammatical. In other words, if the very same grammatical means used for passivizing a transitive verb are applied to an intransitive verb, the outcome is deviant (11).

- |      |    |                  |                                                                         |           |
|------|----|------------------|-------------------------------------------------------------------------|-----------|
| (11) | a. | *[ <i>expl</i> ] | È stato dormito bene in questo letto<br>has been slept well in this bed | (Italian) |
|      | b. | *[ <i>expl</i> ] | È stato tossito per il fumo<br>has been coughed because-of the smoke    |           |

It is the case only in French, a Romance language without the null-subject property, that intransitive verbs may get passivized,<sup>9</sup> but an expletive subject, namely *il*, is obligatory.<sup>10</sup>

<sup>9</sup>In Veneto, the vernacular of the Italian province Veneto, intransitives can be passivized, but only in the presence of an obligatory expletive of the *there*-type. Gratefully acknowledged source: Cecilia Polletto (p.c.).

|     |                                         |                                 |                                               |
|-----|-----------------------------------------|---------------------------------|-----------------------------------------------|
| (i) | <i>Z'è</i> stà<br><i>there</i> has-been | parlà de ti<br>spoken about you | Regional variant: <i>Gh'è</i> stà parlà de ti |
|-----|-----------------------------------------|---------------------------------|-----------------------------------------------|

<sup>10</sup>The literature contains introspectively grounded claims that in subjunctive contexts the expletive subject may be missing. A frequently quoted example is (i). Its factual status is questionable, however.

|     |                                       |                     |
|-----|---------------------------------------|---------------------|
| (i) | Je veux que soit procédé au réexamen. | (Roberts 1993, 217) |
|-----|---------------------------------------|---------------------|

- (12) a. *Il* a beaucoup été fumé dans cette sale. (Gatone 1998, 124)  
 it has much been smoked in this room
- b. *Il* a été dormi dans ce lit. (Rivière (1981, 42)  
 it has been slept in this bed
- c. qu'*il* a été procédé à cette arrestation. *Le Figaro*, Sept. 7, 2016  
 that-it has been proceeded to this detention
- d. *Il* a été opté pour cette solution.<sup>11</sup>  
 it has been opted for this solution

The obvious question to ask is this: why wouldn't (12a-d) have direct grammatical counterparts in Italian or in any other Romance pro-drop language with a null expletive instead of *il*, given that a null expletive would replace the lexical expletive of French? The straightforward answer is this: there is no such thing as a null expletive. So, (11a,b) and all other cases of passivized intransitive verbs are ungrammatical because a structural subject position in an SVO language must not be null, but a pronominal expletive would have to be null in a pro-drop language.

An expletive subject cannot be empty for at least two reasons, a grammatical and a theoretical one. First, an expletive is not an argument, hence the null-subject identification mechanism of pro-drop languages would not apply. It applies only to arguments of a lexical head. Consequently, an empty expletive would be irrecoverable. Second, an empty position “filled” by an empty expletive could not be distinguished from an empty position without an empty expletive.

Note that here the distinction between a subject expletive and a void subject argument becomes crucial. An expletive cannot be null but a void subject can. In pro-drop languages, verbs with void subjects such as weather verbs are typically null-subject verbs. Void subjects are typical of intransitive middle constructions (13a,b), too. Consequently, pro-drop languages will be able to employ null subjects for this construction (13c,d).

- (13) a. In diesem Bett schläft *es* sich gut.  
 in this bed sleeps *it* itself well
- b. Wenn man nicht raucht, hustet *es* sich leichter.  
 if one not smokes coughs *it* itself easier
- c. [*pro*] Si e dormito bene in questo letto.  
 self is slept well in this bed
- d. [*pro*] Si e tossito per il fumo.  
 self is coughed due-to the smoke

---

A corpus search (web, restricted to French, on April 23, 2017) of “*veut que soit procédé*” produced zero hits. The version with the expletive subject *il*, however, is frequent. The complete imbalance contradicts the alleged optionality of an expletive *il* in this context.

<sup>11</sup>From a list of examples with passivized intransitive verbs: <http://gabrielwyler.com/page479.html>

In Icelandic, void subjects (e.g. weather-verb subjects) are null subjects (Eythórsson & Sigurðardóttir 2016). The null-subject option is restricted to *void* subject arguments. Neither referential pronouns nor expletives are dropped (Maling & Zaenen 1978, 491). An expletive may be substituted by a fronted adverbial, however.

- (14) Hún sagði að það hefði verið dansað í gær.  
 he said that EXPL has been danced yesterday

Weather verbs are not the only void argument verbs of course. There is a large class of verbs that allow for variation between a version with a specified subject argument and a version with a void argument (15a,b). This class of verbs is virtually identical for Icelandic and German. In Norwegian, the subject of these verbs is an overt void subject (15c). The Icelandic null-subject version in (15d) would puzzle those who notice that there is an accusative object in the apparent absence of a subject. What these people would fail to appreciate is that the verb in (15d) is the version with a void subject argument that is pro-dropped in Icelandic. (15d) is the exact counterpart of the German (15e), modulo pro-drop of the void subject.

- (15) a. Hier brennt/raucht/ knistert/ stinkt/ hallt/ ... / *es* sehr.  
 here burns/ smokes/crackles/stinks/echoes/ ... / it very-much
- b. Dann hat *es* ihn umgeworfen/ vom Dach geweht/  
 then has it him overturned/ off-the roof blown/  
 aus der Bahn geworfen/...  
 out of-the track thrown/...
- c. Frå skogen ropar *det*. (Norwegian)  
 from wood-the shouts *it*
- d. Strompinn<sub>Acc</sub> blés af húsinu. (Icelandic)  
 the chimney blew of house-the
- e. Den Schornstein<sub>Acc</sub> wehte *es* vom Dach.  
 the chimney blew *it* off-the roof

The joint evidence from Romance pro-drop languages and Icelandic as languages that drop void arguments clearly points to the conclusion that the absence of an expletive subject in subjectless SOV clauses cannot be reconciled with the EPP by 'throwing in' a null expletive. Neither in Romance nor in OV-Germanic languages would this correctly cover the empirical situation.

## 6. Exceptional English

One of the many exceptional traits of English is the ungrammaticality of the passive of intransitive verbs. (16a) is deviant, with or without *there*. In Scandinavian languages, as for instance in Danish, an expletive would fill the structural subject position (16b).

- (16) a. \*that there was worked

|    |      |            |        |         |     |          |
|----|------|------------|--------|---------|-----|----------|
| b. | at   | <i>der</i> | bliver | handlet | nu  | (Danish) |
|    | that | EXPL       | is     | acted   | now |          |

It is a longstanding question as to what prevents *there* from functioning as an expletive in passive constructions. Vikner (1995, 209) suspects nominative-case assignment to be the crucial factor and assumes that in V2 languages, but not in English, “*nominative is assigned from C° under government*” while in English “*nominative is assigned from I° via spec-head*.” Together with the assumption that expletives have to be governed, this would rule out (16a). But there is a simpler account. English *there*-constructions (17a) as well as locative inversion constructions (17b) show agreement effects. Since *there*, unlike French *il*, does not provide an agreement value of its own, it is well-formed only if it is associated with an item from which it imports agreement features (17a). This is true also for locative inversion (17b), with a PP in the subject position.<sup>12</sup> (16a) is deviant because ‘*there*’ does not provide any agreement values.

- (17) a. There *has* arrived a letter - There *have* arrived two letters  
 b. On this spot *has* stood a great man - On this spot *have* stood several great men

Vikner (1995, 210) does not fully trust his account because of the ungrammaticality of ECM infinitival constructions such as (18a) for which nominative assignment (or agreement) would not come into play. However, this construction is deviant for an independent reason. Subjectless infinitival clauses (18b) are ungrammatical in SOV languages as well (Haider 2010, 304). This indicates that the source of the ungrammaticality of (18a,b) is independent of the presence or absence of a special subject position and the availability of a suitable filler.

- (18) a. \*I expect there to have been danced.  
 b. \*ohne am Sonntag gearbeitet zu werden.  
     without on Sunday worked to be  
 c. ohne dass am Sonntag gearbeitet wird.  
     without that on Sunday worked was  
 d. ohne dass gearbeitet zu werden braucht.  
     without that worked to be needs

In German, clausal infinitival constructions without a (silent) subject argument are ungrammatical (18b) and contrast with subjectless finite clauses (18c). If the infinitival construction is not clausal but rather a mono-sentential verb cluster construction (18d), it

<sup>12</sup>The absence of *do*-support indicates that the PP is in the subject position indeed:

- (i) Out of which carriage jumped a horse?  
 (ii) Out of which carriage *did* there jump a horse?

may remain subjectless. In sum, an agreement-based account of the deviance of *there* as an expletive subject is sufficient.

## 7. Summary

Semantically void subject arguments must not be confused with subject expletives. Expletive subjects are non-arguments. In pro-drop languages, void subject arguments are null subjects. Null expletives are a theoretical fiction. They do not exist. Void arguments are found in virtually every language, be it a null-subject language or not.

For principled reasons, SVO languages employ subject expletives, and SOV and VSO languages don't. In the SVO clause structure, there is a VP-external subject position that needs to be filled. If an SVO language lacks a subject expletive – either because it is a null-subject language or because it lacks a suitable candidate – it is unable to passivize intransitive verbs in the standard passive construction.

The EPP describes an SVO phenomenon, namely the defining characteristics of the SVO clause structure, with its obligatory VP-external structural subject position, which is a 'reaction' of the grammar on a 'defect' of the VP-internal position of the subject in SVO. In SOV and VSO, the base position of any argument of a verb is *within* the directionality domain of the head, In SVO, the VP-internal subject argument precedes, but the other arguments follow the verbal head they depend on. A functional head selecting the VP turns the VP into an extended projection in which all argument positions are in the canonical directionality domain of a head, either a lexical or a functional one. The spec of this functional head is the VP-external subject position. Expletives are indicators of this position and the requirement that it be lexically represented.

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Hubert Haider  
Hubert.Haider@sbg.ac.at

# PP-extrapolation and nominal pitch in German

Katharina Hartmann

Goethe Universität Frankfurt

## 1. Non-sentential phrases in postverbal position

According to common theorizing about German word order, German is considered an SOV language (see e.g. Thiersch 1978). Nevertheless, German has access to a post-verbal position, traditionally referred to as the *Nachfeld* (NF). In her analysis of the corpus TüBa D/Z Proske (2010) shows that the NF is overtly filled in a third of all sentences, the main body of which (72%) are embedded sentential constituents. The remainder consists of PPs (44%), DPs (33%), adverbials (17%) and adjectives (6%).

The present squib investigates prosodic triggers for extraposition of PPs (PP-EX) that originate in an object DP. It presents a prosodic pilot study, which suggests that extraposition alters the overall prosodic shape of the utterance to the effect that the pitch accent on the PP-selecting noun is strengthened. This effect is argued to be a consequence of default pitch assignment. If the PP is in its base-position, the head of its NP-complement ( $N_2$  in (1)) is the last (and most deeply embedded) nominal head within the DP, which receives default prominence. After PP-extraposition, which I assume to be rightward movement and adjunction above  $vP/IP$ , stress shifts to the nominal head of the object-DP ( $N_1$  in (1)) again by rules of default prominence.

(1) ... $[NP \dots N_1 [PP \dots N_2]] V \rightarrow \dots [NP \dots N_1 t_i] V \dots [PP \dots \underline{N_2}]_i$

Based on this pilot study, it is argued that PP-EX is only indirectly motivated by information structure (IS, see also Chomsky 2005, Fanselow & Lenertová 2011). It will be shown that the NF does not represent a topological field linked to a specific IS-interpretation. Instead, PP-EX influences the overall intonational contour of a sentence in that it causes a boost of the pitch accent of the  $N_1$ , the nominal head of the preverbal DP-object. The strengthening of this accent may lead to a modulation of the IS-interpretation, and thus a weak foregrounding of the NP.

Sec. 2 discusses whether PP-EX is triggered by IS, i.e. whether the NF represents a preferred position for either topic or focus constituents. Sec. 3 presents the material and the pilot experiment. The prosody of PP-EX is investigated with the PP being either new, or given information. The subsequent discussion in Sec. 4 argues on the basis of the

result that the nuclear accent is not reconstructed (Bresnan 1971, Truckenbrodt & Darcy 2010). Instead, the overall intonational contour is re-organized as a consequence of PP-EX.

## 2. Information structure is not a potential trigger for PP-EX

Word order variation is often assumed to follow from IS-requirements. It is known that topicalization of non-subjects in German causes a contrastive interpretation of the fronted constituent (e.g. Lötscher 1985). In addition, scrambling is argued to be sensitive to discourse givenness in that definite, i.e. discourse-old, DPs move to a position above VP whereas indefinites, which are discourse-new, remain within the scope of VP (e.g. Lenerz 1977, Büring 1994 and many others). Such considerations could carry over to the postverbal domain, the *Nachfeld*, which should represent an ideal topological field for focused, i.e. discourse-new, constituents. This hypothesis, however, cannot be upheld, since there appears to be no correlation between the information-structural status of a constituent and its position in the post-verbal domain, at least for PPs in German.

Pps in extraposed position may receive all possible information-structural interpretations. First, they may represent new information, see (2) from Austrian German (Prinzhorn 2013), where the extraposed PP has not been mentioned before.<sup>1</sup> In the following examples, the verb in final position appears in italics and the extraposed PP is underlined. It is not an afterthought and thus not separated from the main clause by a considerable prosodic break.

- (2) Heit in da nochd hosd du gred untan schlofm.  
 today in the night have you talked under sleeping  
 ‘Today at night you talked while sleeping.’

A PP in extraposed position can also be the answer constituent of a wh-question, thus the focus of a clause, especially if syntactically complex (Truckenbrodt 2012). The obligatory accent is represented in small caps.<sup>2</sup>

- (3) Q: Wo hat Simone nach ihrer Scheidung gelebt?  
 where has S. after her divorce lived  
 ‘Where did Simone live after her divorce?’

<sup>1</sup>This holds for standard German as well. I differentiate new information from focus. The former refers to information that has not been mentioned previously in the context. Simple new information is not necessarily accented and does not invoke a set of focus alternatives. The latter is a subset of the former. It also represents discourse new information, but in addition needs to occur in a special pragmatic context to occur in. It carries a nuclear pitch accent and creates sets of alternatives. In (2), the PP *untan schlofm* does not have to be stressed. The most natural contour in the given context results from stressing the main verb.

<sup>2</sup>The acceptability of non-sentential EX in German is in general subject to a lot of variation across speakers. In addition, the phenomenon appears to be present only in spoken language, to the extent that individual speakers often find written examples of PP-EX quite marked but produce them orally nevertheless. Thus, PP-EX clearly represents a performance phenomenon.



- A: Sie hat *gelebt* [<sub>PP</sub> in der Nachbarschaft von POTSDAM].  
 she has lived in the vicinity of P.  
 ‘She lived in the vicinity of Potsdam.’

Further evidence for the occurrence of focused PPs in extraposed position is that they can associate with a focus sensitive particle in the main clause, see (4A) from Balbach (2012: 4). The interpretation of the sentence is that the only thing Peter was afraid of was snakes, see also Barbiers (1995) for Dutch.

- (4) Q: Vor was hat sich Peter gefürchtet?  
 from what has REFL P. feared  
 ‘What was Peter afraid of?’

- A: Peter hat sich nur *gefürchtet* [<sub>PP</sub> vor SCHLANGEN].  
 P. has REFL only feared of snakes  
 ‘Peter was only afraid of snakes.’

The extraposed PP can also be given information as illustrated in (5). In the context preceding this utterance *Außenminister* (‘minister of foreign affairs’) and *Außenministerium* (‘ministry of foreign affairs’) are explicitly mentioned causing the given interpretation of the extraposed PP in (5), cf. the corpus TüBa D/Z for context information.

- (5) Daraufhin wollte Schlingensief, daß die Volksbühne Druck *macht*  
 thereupon wanted S. that the V. pressure makes  
 [<sub>PP</sub> auf das Außenministerium].  
 on the ministry.of.foreign.affairs  
 ‘After this Schlingensief wanted that the Volksbühne puts pressure on the ministry of foreign affairs.’  
 (TüBa D/Z, s14728)

Finally, an extraposed PP can also function as a continuative topic (Vinckel 2006, Averintseva-Klisch 2009), hence a topic of the following clause, see (6).

- (6) Jeder möge seiner Steuererklärung ein Protestschreiben  
 everybody should his tax.declaration a protest.letter  
*beifügen*, [<sub>PP</sub> mit folgendem Inhalt]: ...  
 add with following content ...  
 ‘Everybody should add a protest letter to his tax declaration with the following content.’  
 (TüBa D/Z, s5973)

To summarize, a PP in extraposed position is not linked to one specific IS-interpretation. This shows the NF is excluded from linearization restrictions as encoded in Behaghel’s second law (‘That which is less important (or already known to the listener) is placed before that which is important.’). It also proves that IS cannot be considered a direct trigger of PP-EX. Thus, a PP is not subject to EX due to some specific IS-state.

### 3. The effect of PP-EX on accent realization

The main claim of this squib is that the structural variation resulting from PP-EX has a significant effect on the strength of the pitch and nuclear accents of the whole clause. Extraposition alters the relative order of the two nouns (the object's head noun  $N_1$  and the head noun of the PP's complement  $N_2$ ), and the final main verb. Whereas  $N_2$  is immediately preverbal prior to extraposition, it is the object's head noun ( $N_1$ ) which is in preverbal position after extraposition. Thus, the preverbal object is prosodically non-complex once the PP is extraposed. As a consequence, the pitch accent on the head noun is strengthened.<sup>3</sup>

$$(7) \quad N_1 [PP \dots N_2 \dots] V \rightarrow N_1 V [PP \dots N_2 \dots]$$

Principles of prosodic phrasing establish connections between syntactic and prosodic structure. According to Truckenbrodt (1995) et seq., prosodic phrasing is mainly based on the principle that requires that every syntactic phrase is assigned phrasal stress, i.e. stress at the level of the phonological phrase (see also the Stress Accent Assignment Rule, SAAR, of Gussenhoven 1983, 1992). Within the VP-domain the syntactic difference between complements and modifiers has prosodic effects. With complementation, stress on the nominal object licenses VP-level stress since the object is contained in the VP, see (8a) from Truckenbrodt (2006, 7). The phrasal accent of an adverbial, however, does not license Stress-XP at the VP. As a consequence, the VP and the adverbial PP both receive phrasal stress (see (8b)). The rightmost phrasal stress is strengthened at the level of the intonational phrase (= *Endakzentverstärkung*, Uhmann 1991).

- (8) a. (            x                            ) *ip accent*  
           (            x                            ) *phrase acc.*  
           (x)(x)(    x    ) (    x    ) *word acc.*  
           Er hat Linguistik unterrichtet.  
           he has linguistics taught  
           'He taught linguistics.'
- b. (            x                            x                            ) *ip accent*  
           (            x                            ) (            x                            ) *phrase acc.*  
           (x)(x)(    x    ) (    x    ) *word acc.*  
           Er hat in Ghana unterrichtet.  
           he has in G.    taught  
           'He taught in Ghana.'

Within the DP, a PP may be either selected by the object's head noun (a PP-complement, see (9a)) or adjoined to it (a PP-modifier, see (9b)).

<sup>3</sup>As a reviewer points out, the effect of stress-shift after PP-EX should also occur in sentences where the PP is either the adjunct of an intransitive clause or the only object, such as in the examples (3) and (4). This is a correct observation. Unfortunately, I did not run prosodic tests for these examples in this pilot study.

- (9) a. Ich habe [<sub>DP</sub> die [<sub>NP</sub> Verwüstung [<sub>PP</sub> von Südnigeria]]] verurteilt.  
I have the devastation of south.Nigeria condemned  
'I condemned the devastation of southern Nigeria.'
- b. Ich habe [<sub>DP</sub> die [<sub>NP</sub> [<sub>NP</sub> Verwüstung] [<sub>PP</sub> vor Südnigeria]]] verurteilt.  
I have the devastation off south.Nigeria condemned  
'I condemned the devastation off southern Nigeria.'

In contrast with prosodic phrasing at the VP-level, the syntactic difference represented in (9) is not mirrored prosodically. DP-internal PP-complements cannot be differentiated from PP-modifiers due to the head-initial nature of the NP. In both cases, the PP is phrased independently thereby neutralizing the syntactic distinction. Page limitations prevent me from discussing the sources of the observed neutralization as well as the theoretical consequences of the variation between syntactic domains.

- (10) a. ( ( x ) ( x ) ( x ) ( x )  
die Verwüstung von Südnigeria
- b. ( ( x ) ( x ) ( x ) ( x )  
die Verwüstung vor Südnigeria

If narrowly focused, the nuclear accent is realized within the focused constituent (e.g. Gussenhoven 1983). Postnuclear accents are deaccented (Féry 1993).

In the following, I discuss the effect of PP-EX on accent realization on the object. I will present a prosodic pilot study, which shows that the accent on the object's head noun is influenced by PP-EX. The phrasal accent on the PP is embedded into the general prosodic downdrift towards the end of the clause.

## 4. Experiment

### 4.1 Material

The following three sentences from the corpus TüBa D/Z have a PP in extraposed position. These and three sentences with the PP in their assumed base-positions in the middlefield were presented to three male speakers of German in written form. The sentences appeared in contexts that influenced the informational status of the PPs. The test persons were asked to read the sentences. The sentences were recorded and analyzed in PRAAT. The highest and lowest frequencies were measured on the pitch accents.

- (11) Geld *sammeln* [<sub>PP</sub> für eine Kinderkrebsklinik]  
money collect for a children.cancer.hospital  
'collect money for an oncological hospital for children' (TüBa D/Z, s13508)
- (12) weil ich Beweise sammeln *will* [<sub>PP</sub> für die Zeit nach dem Krieg]  
because 1SG proofs collect want for the time after the war  
'because I want to collect proofs for the time after the war' (TüBa D/Z, s13023)

- (13) dass die Volksbühne Druck *macht* [<sub>PP</sub> auf das Außenministerium]  
 that the V. pressure makes on the ministry.of.foreign.affairs  
 ‘that the Volksbühne puts pressure on the ministry of foreign affairs.’  
 (TüBa D/Z, s14728)

#### 4.2 Effects of PP-EX on pitch realization

In the first example (11), the entire object was not mentioned in the preceding context, hence represents new information; see TüBa D/Z s13508 for context information. The table in (14) gives the  $f_0$ -frequencies at three measure points the head noun of the object DP ( $N_1$ ), the head noun of the PP ( $N_2$ ), and the verb. The left side of the table shows the figures for the PP in the in situ position (IN), the right side represents the extraposed condition (EX). S1, S2, and S3 refer to the three speakers. The highest pitch values are shaded.<sup>4</sup>

#### (14) *Kinderkrebsklinik*

|                   | IN  |     |     |     |     |     | EX  |     |     |     |     |     |
|-------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
|                   | max |     |     | min |     |     | max |     |     | min |     |     |
|                   | S1  | S2  | S3  | S1  | S2  | S3  | S1  | S2  | S3  | S1  | S2  | S3  |
| $N_1$ <i>Geld</i> | 142 | 140 | 138 | 116 | 121 | 115 | 136 | 126 | 132 | 126 | 116 | 104 |
| $N_2$ <i>KKK</i>  | 152 | 140 | 141 | 84  | 102 | 115 | 130 | 139 | 114 | 86  | 91  | 90  |
| <i>sammeln</i>    | 87  | 136 | 121 | 78  | 97  | 90  | 115 | 124 | 116 | 109 | 115 | 112 |

(14) shows that the accents on  $N_1$  and  $N_2$  do not differ much in the in situ condition with regard to pitch frequency and pitch excursion. This is an effect of phrasing in an all new context. The nuclear accent on  $N_2$  is realized by an H\*L, it has a stronger lobe than on  $N_1$  (64, 38, 26 Hz difference between maximal and minimal frequency on  $N_2$ , compared to 26, 19, 24 Hz on  $N_1$ ). Comparing the in situ and ex situ positions of the PPs, it can be observed that the accent on  $N_2$  is weaker in the EX condition, at least for speakers 1 and 3. This is an effect of downstep. The accent on  $N_1$  remains essentially unchanged with extraposition but is relatively stronger in comparison to  $N_2$ . The nuclear accent remains on the extraposed PP, as evidenced by the strong fall on this accent in the EX condition realized across all three speakers (54, 48, 24 Hz difference on  $N_2$  compared to 10, 10, 28 Hz difference on  $N_1$ ). With EX, the accent on the verb is leveled.

The PP of the second example (12) (*für die Zeit nach dem Krieg*, ‘for the time after the war’) can be considered to be given by implication through the context, cf. TüBa D/Z, s13023. The following table shows the highest and lowest pitches on  $N_1$ ,  $N_2$ , and the verb. The accent on *Zeit*, the head noun of the upper PP, is disregarded.

<sup>4</sup>There is a difference across speakers with respect to the realization of H\*L leading to the the boundary tone L-. S1 realizes the H\*L fully on  $N_2$  (see the difference of 68 Hz on  $N_2$  and of only 9 Hz on the final verb, the L- tone). S2 and S3 realize part of the H\*L on the verb which shows an excursion of 39 (S2) and 31 (S3) Hz.

(15) *Krieg*

|                             | IN  |     |     |     |     |     | EX  |     |     |     |     |     |
|-----------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
|                             | max |     |     | min |     |     | max |     |     | min |     |     |
|                             | S1  | S2  | S3  | S1  | S2  | S3  | S1  | S2  | S3  | S1  | S2  | S3  |
| <i>N<sub>1</sub>Beweise</i> | 186 | 116 | 152 | 108 | 100 | 112 | 213 | 142 | 180 | 78  | 117 | 121 |
| <i>N<sub>2</sub> Krieg</i>  | 123 | 137 | 154 | 114 | 110 | 125 | 143 | 132 | 140 | 88  | 114 | 100 |
| <i>sammeln</i>              | 95  | 114 | 129 | 77  | 89  | 94  | 141 | 132 | 160 | 129 | 117 | 146 |

In this example, the effect of extraposing the given PP on *N<sub>1</sub>* is evident. The frequency increases considerably across all speakers (27 Hz on average). It is not only stronger than in the in situ condition but also stronger than the accent on *N<sub>2</sub>* in both in situ and extraposed conditions. The speaker variation concerning the pitch realization of *N<sub>1</sub>* and *N<sub>2</sub>* could be an effect of the uncertainty of the implicational relation triggered by the context. The effect of EX on the verbal accent is also present in (12). In the in situ condition, the overall frequency is much lower than with EX, showing the L- boundary tone. The tonal range on the verb is smaller with EX since the final fall is postposed to the *N<sub>2</sub>* in the extraposed PP.

In the third example, the nominal complement of the PP is given by prior mention in the context. It is therefore expected that *N<sub>1</sub>* is stronger in both conditions.

(16) *Außenministerium*

|                            | IN   |     |     |     |     |     | EX  |     |     |     |     |     |
|----------------------------|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
|                            | max  |     |     | min |     |     | max |     |     | min |     |     |
|                            | S1   | S2  | S3  | S1  | S2  | S3  | S1  | S2  | S3  | S1  | S2  | S3  |
| <i>N<sub>1</sub> Druck</i> | 183  | 138 | 164 | 117 | 123 | 123 | 169 | 160 | 136 | 116 | 122 | 109 |
| <i>N<sub>2</sub> AM</i>    | 134? | 116 | 124 | 79  | 97  | 113 | 142 | 137 | 104 | 116 | 102 | 94  |

The effect of deaccenting is visible in both contexts. *N<sub>2</sub>*, the accent within the PP, is deaccented with respect to *N<sub>1</sub>* in the in situ and the ex situ condition. The nuclear accent on the object is not influenced by extraposition.

### 4.3 Discussion

The predictions of Stress-XP and the SAAR are confirmed with respect to PP-EX. A nominal object is re-accented or “de-deaccented” if a PP originating between the object and the verb is extraposed. This process applies independently of the syntactic base position of the PP as a nominal attribute, a nominal modifier, or even a verbal modifier below a scrambled object. If the extraposed PP is given, the DP immediately preceding the verb receives the nuclear accent. The data suggest that the accent of the extraposed PPs does not reconstruct, see also the results of Truckenbrodt & Darcy (2010) with respect to extraposition from object clauses.

Concerning the interplay between syntax and IS, the pilot study shows that the extraposition of PPs is not directly triggered by IS. IS-features do not appear to play a role for PP-EX. Similar results concerning movement to the left periphery can be found in Fanselow & Lenertová (2011). Extraposition leads to a syntactic representation with

consequences for accent rules and interpretation. Thus the accent pattern of a sentence determines the contexts in which a sentence can be used.

To conclude, the present pilot study contributes to a research program which denies the direct influence of IS in the syntax of German. Instead, it argues for a syntactic model that forgoes IS-sensitive features like topic and focus. It is assumed that syntactic movement, which I assume extraposition to be, interacts directly with pitch accent assignment rules and resulting pragmatic interpretations.

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Katharina Hartmann  
k.hartmann@lingua.uni-frankfurt.de





# Acquisition of semantic type flexibility: The case of conjunction\*

Nina Haslinger & Viola Schmitt

University of Vienna

## 1. Introduction

Meanings of logical expressions have become one of the central topics in research on language acquisition. While there has been relatively little discussion of the learnability of functional meanings (cf. e.g. Clark 1996, 2011, Piantadosi et al. 2012), a lot of empirical work has focussed on the acquisition of semantic properties of coordinators such as English *and* and *or* (cf. e.g. Goro 2007, Crain 2012, Singh et al. 2016, Notley et al. 2016, Geçkin et al. 2016, Tieu et al. 2017). Yet, whereas the interaction of such elements with other logical operators has received a lot of attention, the semantic flexibility of coordinators – one of their central properties – has so far not been investigated at all: In many languages, they can combine with coordinates of various semantic categories, e.g. propositions, (1a), predicates of individuals, (1b), and individuals, (1c) (cf. Geach 1970, von Stechow 1974, Partee & Rooth 1983 a.o.).<sup>1</sup> Furthermore, conjunctive coordinations are ambiguous between so-called ‘distributive’ and ‘non-distributive’ interpretations (cf. Link 1983, 1984, Krifka 1990, Winter 2001): (1c) can either express that Martin and Winnie drank three bottles of beer each or (less plausibly) that they drank three bottles between them.

- (1) a. Martin has a headache and Winnie feels nauseous.  
b. Martin is very young and very tall.

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\*We wrote this squib for Martin Prinzhorn because he has always been interested in the foundations of natural language acquisition and because he is responsible for our own interest in the matter. We would like to thank Clemens Mayr for relevant remarks and comments – all remaining errors are our own. Nina Haslinger’s work was funded by the Austrian Science Fund (FWF), project P 29240-G23 (*Conjunction and disjunction from a typological perspective*).

<sup>1</sup>Some analyses, most recently Schein (1997) and Hirsch (2016), assume that conjunction only operates on conjuncts of type *t* and that all instances of non-sentential coordination are derived by Conjunction Reduction (e.g. ellipsis). In this squib, we concentrate on semantic approaches to flexibility, because they seem to account for a wider range of attested construals of conjunction than approaches based on Conjunction Reduction – in particular, the latter do not consistently derive the correct truth-conditions for sentences involving ‘non-distributive’ interpretations. Some of the implications of Conjunction Reduction for acquisition are discussed by Ardey (1980) and Tager-Flusberg et al. (1982), among others.

- c. Martin and Winnie drank three large bottles of beer.

The semantic literature offers various accounts of these two aspects of flexibility and how they could be tied to one another (cf. in particular Link (1983, 1984), Hoeksema (1983), Krifka (1990), Winter (2001), Champollion (2015)). In this squib we concentrate on the first aspect – cross-categorial application – and point out that existing semantic approaches potentially make different predictions about the order in which different construals of conjunction are acquired. Concentrating on the cross-categorial nature of English *and*, we formulate research questions for future experimental work on this issue on the basis of a preliminary study of the Brown corpus (Brown 1973).

## 2. Accounts of semantic flexibility and their predictions

Semantic analyses of conjunction differ as to which construals of conjunction they consider to be derived from a more basic lexical entry. In the following, we distinguish groups of analyses of cross-categorial application that differ in the strength of their predictions regarding acquisition. (For reasons of simplicity, we limit the discussion to the meanings of *and* for conjuncts of the logical types  $e$  (henceforth ‘individual conjunctions’, if  $e$  is the basic type of the conjuncts),  $t$  (‘sentential conjunctions’),  $\langle e, t \rangle$  (‘predicate conjunctions’) and  $\langle \langle e, t \rangle, t \rangle$  (‘quantifier conjunctions’).) Crucially, these predictions rest on the premise that, if one lexical entry for conjunction is taken to be semantically derived from another, the derived entry should not be acquired earlier than the basic one. (Note that this assumption, even though implicit in much work on the acquisition of syntax, may be unwarranted for the acquisition of functional meanings. We are not aware of any recent explicit discussion of this issue in formal semantics.)

**$t$ -based theories.** Gazdar 1980, Partee & Rooth 1983 a.o. derive the cross-categorial meaning of *and* from a basic operation  $\wedge$  on truth values, defined as in classical propositional logic (2a). In (2b), this is illustrated for one-place predicates (predicates of primitives and generalized quantifiers). Since this approach only works for types that ‘end in  $t$ ’, individual conjunction requires the application of a type-shift  $T$  mapping each individual to the set of its properties, a generalized quantifier (2c). (Winter (2001) and Champollion (2015) extend this approach to non-distributive interpretations of individual conjunction.)

- (2) a.  $[[and_t]] = \lambda p_t. \lambda q_t. p \wedge q$   
 b.  $[[and_{\langle a, t \rangle}]] = \lambda P_{\langle a, t \rangle}. \lambda Q_{\langle a, t \rangle}. \lambda x_a. P(x) \wedge Q(x)$   
 c.  $[[[T \text{ Martin}] \text{ and } [T \text{ Winnie}]]] = \lambda P_{\langle e, t \rangle}. P(\text{Martin}) \wedge P(\text{Winnie})$

Accordingly, predicate conjunction or individual conjunction should not precede sentential conjunction developmentally, since the latter reflects the “basic” meaning in (2a).

**Theories assuming an  $e/t$  ambiguity.** While  $t$ -based theories derive individual conjunctions from sentential conjunctions via type-shifting, Link (1983), Hoeksema (1987), Schwarzschild (1996) a.o. posit a primitive meaning for *and* in individual conjunctions: the operation  $\oplus$  that forms pluralities of individuals from individuals,

(3). This meaning is independent of the meaning for *and* in predicate and sentential conjunctions, which is analogous to that of *t*-based theories, i.e. (2a,b).

$$(3) \quad \llbracket \text{and}_e \rrbracket = \lambda x_e. \lambda y_e. x \oplus y$$

As the meanings of *and* for type *e* and types ‘ending in *t*’ are independent of each other, such theories make no predictions w.r.t. the relative acquisition order of these two operations – but still predict that predicate conjunction won’t precede sentential conjunction.

***e*-based theories.** In analogy to *t*-based theories, Krifka (1990) and Heycock & Zamparelli (2005) try to derive a cross-categorial meaning for *and*, but take the plurality-forming operation  $\oplus$  in (3) as basic (rather than the truth function  $\wedge$ ). This meaning is then generalised to all types ‘starting with *e*’, including  $\langle e, t \rangle$ , (4). Sentential conjunction, which does not involve a type starting with *e*, is still assigned the meaning in (2a).

$$(4) \quad \llbracket \text{and}_{\langle e, t \rangle} \rrbracket = \lambda P_{\langle e, t \rangle}. \lambda Q_{\langle e, t \rangle}. \lambda x_e. \exists y_e, z_e. x = y \oplus z \wedge P(y) \wedge Q(z)$$

As individual conjunction reflects the ‘basic’ meaning, such accounts predict that it should not be acquired after predicate conjunction. However, they make no predictions concerning the relative order of either individual and sentential conjunction or predicate and sentential conjunction, as the two meanings in (2a) and (4) are independent of each other.

**Theories with type-independent lexical entries** A final class of theories, including Keenan & Faltz (1985) and Schmitt (2013), does not consider one particular instance of *and* as basic and the other ones as derived from it, but rather posits that the meaning of *and* is defined primitively for all semantic domains – either as set-intersection (Keenan & Faltz 1985) or as generalised plurality-formation (Schmitt 2013). Such theories make no predictions concerning the relative order of acquisition since they do not assume any derived meanings of *and*.

**Interim Summary** The following summarises those predictions that involve an asymmetry in the order of acquisition of different semantic categories (‘ $a \leq b$ ’ stands for ‘*b* is not acquired before *a*’).

- |     |    |                                                                               |                                       |
|-----|----|-------------------------------------------------------------------------------|---------------------------------------|
| (5) | a. | sentential conjunction $\leq$ predicate conjunction                           | <i>t</i> -based, <i>e/t</i> ambiguity |
|     | b. | sentential conjunction $\leq$ individual conjunction                          | <i>t</i> -based                       |
|     | c. | individual conjunction $\leq$ predicate (starting with <i>e</i> ) conjunction | <i>e</i> -based                       |

### 3. Production data

As Martin likes to point out, the value of spontaneous-speech samples for investigations of children’s grammatical competence is limited since 1) non-adult performance may be the result of extra-grammatical processing factors and 2) lack of spontaneously produced examples does not show that the child has *not* acquired a certain linguistic feature. Ultimately, the predictions of the different semantic approaches therefore need to be tested experimentally. However, there are two preliminary questions which are relevant for the design of such experiments and *can* be investigated using spontaneous speech samples. First,

when do children begin to produce conjunctions of different semantic categories? Second, to what extent do conjunctions of different semantic categories emerge in a fixed order?<sup>2</sup>

**Methods** We attempted to address these questions by analysing child utterances containing *and* in the corpus discussed by Brown (1973), which is available via CHILDES (MacWhinney 2000) and contains spontaneous speech collected over several years from three English-speaking American children. We only used the odd-numbered transcripts in the database and extracted all child utterances containing *and*. Utterances that were uninterpretable even with the linguistic context in the transcripts were excluded, as were utterances in which *and* occurred utterance-initially and the first conjunct was not provided in a child utterance immediately preceding *and*, and elliptical conjunctions, i.e. non-sentential coordinate structures not embedded in a larger constituent (e.g. *for you and me* was included but *you and me* was not). Finally, we excluded clear imitations and repetitions. The remaining coordinate structures were assigned the categories *sentence* (with subcategories *declarative / non-declarative*), *VP*, “*other predicates*” (e.g. conjunction of PPs, or of nouns within a DP), and *DP* (with subcategories for *definite*, *indefinite* and *quantificational DPs*).<sup>3</sup>

For each child, the transcripts were grouped into samples such that all samples except the last one contained roughly similar numbers of utterances. (6) shows how many instances of the individual syntactic/semantic categories occurred in each sample.<sup>4</sup> In the case of VP conjunction, we made a distinction between examples in which the coordinate structure directly combines with the subject and those in which it is embedded under an additional item such as an auxiliary or modal verb. The former group was classified as “ambiguous” since, given that child English allows null subjects, the conjuncts could be analyzed as having semantic type *t* as well as  $\langle e, t \rangle$ . The column “other” in (6) contains other ambiguous examples, coordinations with conjuncts of different categories and some categories that were very rare, such as quantificational DPs.

<sup>2</sup>These questions concern the cross-categorial nature of conjunction; our corpus data were uninformative about the distributive/non-distributive distinction due to the rarity of unambiguous instances of non-distributive conjunction.

<sup>3</sup>Our analysis included 404 of Adam’s 765 tokens of *and* (53%), 78 of Eve’s 209 tokens (37%) and 237 of Sarah’s 567 tokens (41%). Note that we did not exclude all instances of utterance-initial *and*.

<sup>4</sup>The last sample from Sarah was omitted from (6) since it contained less than 200 utterances.

(6) *Absolute frequencies of different types of and-conjunction in the Brown corpus*<sup>5</sup>

| child       | sample       | sentence      |       | predicate   |           |       | DP   |        | other | total conj. | total utterances |
|-------------|--------------|---------------|-------|-------------|-----------|-------|------|--------|-------|-------------|------------------|
|             |              | decl.         | other | VP unambig. | VP ambig. | other | def. | indef. |       |             |                  |
| Adam        | 2 (2;6-2;8)  | 0             | 0     | 1           | 0         | 0     | 0    | 0      | 0     | 1           | 2555             |
|             | 3 (2;9-2;10) | 0             | 0     | 0           | 0         | 0     | 0    | 0      | 1     | 1           | 2109             |
|             | 4 (2;11-3;1) | 0             | 0     | 4           | 3         | 5     | 1    | 0      | 5     | 18          | 2871             |
|             | 5 (3;2-3;4)  | 38            | 0     | 7           | 3         | 1     | 1    | 3      | 10    | 63          | 2854             |
|             | 6 (3;5-3;8)  | 37            | 1     | 8           | 5         | 6     | 5    | 1      | 8     | 71          | 2136             |
|             | 7 (3;8-3;11) | 29            | 5     | 5           | 1         | 3     | 7    | 1      | 12    | 63          | 2139             |
|             | 8 (4;1-4;4)  | 34            | 0     | 10          | 6         | 6     | 10   | 2      | 12    | 80          | 2606             |
|             | 9 (4;6-4;10) | 21            | 2     | 7           | 1         | 6     | 4    | 2      | 9     | 52          | 2249             |
|             | 10 (5;2)     | 31            | 3     | 3           | 1         | 5     | 4    | 0      | 8     | 55          | 1089             |
|             | Eve          | 2 (1;10-1;12) | 2     | 0           | 1         | 2     | 0    | 1      | 2     | 4           | 12               |
| 3 (2;1-2;2) |              | 21            | 0     | 0           | 1         | 3     | 22   | 1      | 5     | 53          | 1488             |
| 4 (2;3)     |              | 3             | 0     | 1           | 2         | 2     | 5    | 0      | 0     | 13          | 579              |
| Sarah       | 1 (2;3-2;7)  | 0             | 0     | 0           | 0         | 0     | 0    | 0      | 1     | 1           | 1894             |
|             | 2 (2;7-2;11) | 1             | 0     | 0           | 0         | 0     | 0    | 0      | 0     | 1           | 1898             |
|             | 3 (3;0-3;3)  | 4             | 0     | 0           | 1         | 0     | 1    | 0      | 1     | 7           | 1819             |
|             | 4 (3;4-3;7)  | 11            | 0     | 1           | 2         | 2     | 5    | 1      | 5     | 27          | 1868             |
|             | 5 (3;8-4;0)  | 18            | 0     | 0           | 3         | 0     | 0    | 0      | 9     | 30          | 1911             |
|             | 6 (4;1-4;4)  | 28            | 0     | 1           | 2         | 4     | 2    | 3      | 10    | 50          | 1963             |
|             | 7 (4;5-4;7)  | 31            | 1     | 4           | 5         | 6     | 2    | 3      | 6     | 58          | 1906             |
|             | 8 (4;8-5;0)  | 20            | 1     | 7           | 1         | 6     | 1    | 7      | 18    | 61          | 1971             |

**Discussion** The data in (6) do not provide clear evidence for the hypothesis that coordinations of different semantic categories appear in a fixed order. From Adam's data, it appears that he began to use non-elliptical *and*-conjunctions productively around age 3. In his sample 4, predicate conjunction predominates, although there is one clear instance of DP conjunction and some of the ambiguous examples grouped as "other" examples could be interpreted as DP or sentential conjunctions. Already in sample 5, however, many instances of sentential conjunction as well as several DP conjunctions appear. A comparison of samples 3 and 5 suggests that he began using conjunctions of all the semantic categories discussed above within a few months (with the potential exception of quantifier conjunction, since indefinite DPs can be analyzed as non-quantificational (Heim 1982)). The data suggest that Adam may have acquired predicate conjunction slightly earlier than the other categories, a prediction not made by any of the semantic theories discussed above.

Interestingly, the data from the other two children do not show an analogous asymmetry between predicate and other conjunctions. In Sarah's case, the first instances of conjunction – in samples 2 and 3 – are mostly sentential, with a single instance of definite DP conjunction in sample 3. (The ambiguous "other" example and the ambiguous VP example in sample 3 can also be interpreted as sentential, among other possible interpretations.) In sample 4, multiple instances of predicate and individual conjunction appear. One could hypothesize that Sarah acquired sentential conjunction around age 3, with the other categories appearing a few months later. However, given the small number of instances in her early samples and the fact that conjunction of declarative sentences was the most frequent category in our data, the apparent asymmetry may also be a sampling effect. Finally, Eve acquired coordination considerably earlier than the other two children, around age 2.<sup>6</sup> Her

<sup>5</sup>Here we only counted tokens of *and* corresponding to interpretable, non-elliptical, non-discontinuous conjunctions. The last column gives the number of child utterances in each sample.

<sup>6</sup>Oddly, the description of her data in CHILDES distinguishes between age "1;12" and "2;0", so we are not sure at what exact age the last transcript from sample 2 was collected.

data do not reflect any clear asymmetries between the semantic categories: While sample 1 contains no interpretable, non-elliptical instances of conjunction, sentential, predicate and DP conjunction all appear more than once in sample 2.<sup>7</sup>

(6) suggests that indefinite DPs appeared slightly later than definites in the Adam and Sarah corpora. However, only the Sarah corpus really provides evidence for this asymmetry since Adam produced several elliptical utterances consisting of indefinite DP coordinations earlier than the first example counted in (6).

In summary, some of the data suggest that individual children may have acquired conjunctions of one category before another, but these asymmetries are not consistent across children.<sup>8</sup> Further, for all three children, conjunctions of our different semantic categories (again, with the exception of quantifier conjunction) appeared within a few months.

#### 4. Earlier studies of the acquisition of conjunction

Existing acquisition studies on the flexibility of coordinators generally focus on *syntactic* flexibility, i.e. their ability to combine with conjuncts of different syntactic categories. However, at least some of these studies are informative for the semantic questions addressed here, and the results of the studies we are familiar with, upon closer scrutiny, are consistent with our findings.

**Corpus-based work** Several corpus studies of conjunction in child language have aimed to test the developmental predictions of the hypothesis that all non-sentential conjunctions are transformationally derived from sentential conjunctions. The findings are somewhat inconclusive. Lust & Mervis (1980) divide their corpus (children aged 2;0-3;1) into “stages” defined by MLU (cf. Brown 1973) and claim that sentential conjunctions are acquired earlier than phrasal conjunctions – but their Figure 2 (p. 286) shows the frequencies of these categories to be very similar at the first two stages. Most of their early examples of phrasal conjunction appear to involve DP conjunction (Table 3, p. 288).<sup>9</sup> Bloom et al. (1980) found that in their data set, phrasal and sentential conjunction occurred at about the same time except for one child who exhibited phrasal conjunction first (p. 250) – however, the latter conclusion is debatable. Finally, Tager-Flusberg et al. (1982), who also studied Brown’s 1973 corpus, concluded that phrasal conjunction appears before sentential conjunction.<sup>10</sup> We are not sure what accounts for the difference between their findings and ours, as it is not always clear which criteria they used to select the relevant data points from the set of all utterances containing *and*. However, their criticism of the Lust & Mervis (1980) study (p. 213) suggests that they may have excluded more “uninterpretable” or am-

<sup>7</sup>Tager-Flusberg et al. (1982) comment on the unusually high frequency of definite DP conjunction in her data. They point out that Eve uttered the individual conjunction *Fraser and Cromer* – the names of the linguists who taped her speech – many times and may have used this string as an unanalyzed lexical item.

<sup>8</sup>At present, it is not clear to us whether the observed asymmetries correlate with the children’s input.

<sup>9</sup>In their data set, which is quite small (32 phrasal coordinations), many examples of coordination were excluded because the coordinate structures were not “embedded in a full sentence”.

<sup>10</sup>Oddly enough, their Fig. 6.3 on p. 212, which is supposed to show the relative frequencies of phrasal and sentential conjunction, only includes sentential conjunctions that involve redundancy and hence could undergo Conjunction Reduction. However, they say on p. 211 that “sentential coordinations with or without potential deletion” appeared considerably later than phrasal coordinations.

biguous examples from their analysis than we did. For instance, it seems that they excluded sentential conjunctions in which both conjuncts contained a referential pronoun if it was unclear whether the pronouns coreferred.

**Experimental work** Syntactically oriented experimental studies also lack definitive evidence for asymmetries between semantic categories. Ardery (1980) and Tager-Flusberg et al. (1982) report some relevant results of experimental studies on conjunctions of different syntactic categories, although those studies were motivated by the Conjunction Reduction debate and hence did not explicitly consider the semantic properties discussed in this paper. In Ardery's study, English-speaking children (mean age: 3;11) had to act out simple SVO sentences involving different syntactic subtypes of coordination. There were four categories on which more than 90% of the participants met her criteria for comprehension: sentences with intransitive verbs (type  $t$ ), two kinds of VPs (both type  $\langle e, t \rangle$ ) and definite DPs in object position (type  $e$  or  $\langle \langle e, t \rangle, t \rangle$  depending on one's analysis). These results do not support an acquisition asymmetry between these simple semantic types. Interestingly, Ardery's participants performed less well on conjunction of transitive verbs (type  $\langle e, \langle e, t \rangle \rangle$ ) and of definite DPs in subject position. She proposes a syntactic processing explanation for this asymmetry, but a semantic explanation cannot be ruled out at this point.<sup>11</sup> Similarly, an elicited production study by Tager-Flusberg et al. (1982), in which English-speaking children (age  $\geq 3$ ) were asked to describe pictures, did not find a developmental asymmetry between phrasal and sentential conjunction – rather, the types of conjunction produced depended on the non-linguistic context.

More recently, comprehension studies have focused on the interaction between conjunction and other logical operators in different languages (Goro 2007, Crain 2012, Notley et al. 2016, Geçkin et al. 2016). The conjuncts in these studies were either type  $e$  expressions or expressions that could be interpreted as being of type  $e$  or  $\langle \langle e, t \rangle, t \rangle$  (indefinite DPs or nominals unmarked for definiteness). The results of these experiments are compatible with the hypothesis that the participants had adult-like knowledge of the lexical meaning of type  $e$  conjunction. Several studies found a non-adult interpretation of negated conjunctions, but this can be attributed to independent properties of child grammars such as the scope of coordinate structures w.r.t. negation or, alternatively, the interpretation of distributivity markers such as English *both*. The children who participated in these experiments were usually a bit older than the children in corpus-based work (mean age  $> 4;0$ ). Unfortunately, these studies do not allow us to draw any conclusions about sentential or predicate conjunction.<sup>12</sup>

<sup>11</sup>Tager-Flusberg et al. (1982) performed a similar comprehension experiment. Their findings, which they say are compatible with those of Ardery (1980), are harder to interpret since they do not give percentages of correct answers for the individual conditions, and the variables in their statistical analysis are only indirectly based on syntactic categories, with the exception of a sentential/phrasal distinction. The latter distinction had a statistically significant effect; however, this is unsurprising as their examples of phrasal conjunction included some cases of non-constituent conjunction which is known to be particularly hard for children.

<sup>12</sup>They are also uninformative about the order in which distributive and non-distributive construals are acquired, since inherently distributive predicates were used.

## 5. Summary and implications for experimental work

On the basis of the spontaneous speech we surveyed and the predictions of the semantic theories reviewed above, we propose the following research questions for a future experimental study of the *comprehension* of conjunctions of different semantic categories in child English.

- (7)
  - a. Do very young children (age  $\leq 3$ ) show adult-like comprehension of conjunctions of different semantic categories in sentences without other logical operators?
  - b. Do some children go through a developmental stage (probably before age 3) at which they are competent on some, but not all of the three main semantic categories we studied (e.g. individual conjunctions before sentential conjunctions)?
  - c. If so, are these asymmetries predicted by any of the semantic analyses surveyed in Section 2?
  - d. Do we find the same asymmetries across children?

The spontaneous-speech analysis leads us to expect a positive answer to questions (7a-b) and a negative answer to questions (7c-d). If these hypotheses could be confirmed, we could conclude at least that semantic analyses of type flexibility (i.e. derived meanings for *and*) by themselves are not sufficient to account for the acquisition patterns. However, given the small number of examples in our early samples, the observed asymmetries may well be sampling effects or artifacts of our way of classifying the data.

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Nina Haslinger, Viola Schmitt

ninahaslinger@gmail.com, viola.schmitt@univie.ac.at

## ***Nur Du allein: Some thoughts on initial focus particles in German***

Elena Herburger

Georgetown University

### **1. Introduction**

There seems to be considerable support for the claim that focus particles in the *Mittelfeld* behave like adverbs and are adjoined to the main spine of the tree. In pursuit of a general theory, sentence-initial focus particles also have been analyzed this way (e.g. Jacobs 1986). Under this ‘adverbial’ analysis, (1) has the bracketing in (2a) rather than the one we might expect in (2b).

- (1) Nur/sogar/auch      die      Steuerberaterin      war      demonstrieren.  
only/even/also      the      tax accountant      was      protesting  
‘Only/even/also the tax accountant went to the protest rally.’
- (2) a. [Nur/sogar/auch [[die Steuerberaterin] war demonstrieren]]  
b. [[Nur/sogar/auch [die Steuerberaterin]] war demonstrieren]

The adverbial analysis raises skepticism because it violates the V2 constraint. In its defense, Buring & Hartmann (2001) argue that there is incontrovertible evidence for the particle appearing as an adverb in first position, even if this means that in these sentences the tensed verb is relegated to third position. However, Meyer & Sauerland (2009) take issue with Buring and Hartmann’s argumentation and, moreover, provide what seems to be independent factual evidence *against* the adverbial theory. In what follows, I argue that Meyer & Sauerland’s data can be given an independent explanation and thus do not provide a conclusive argument against the adverbial theory, which I argue remains supported. This still leaves the question of what to do with V2, which will, except for a sketch of a possible line of future inquiry, remain unsolved here.

### **2. Buring and Hartmann’s scope argument from initial *nur***

Buring & Hartmann (2001) note that in (3) *seinen* can be interpreted as a variable bound by *jeder*, indicating that the DP *ein Bild von seinen KINDERN* is reconstructed under

*jeder*.<sup>1</sup> Is the *nur* reconstructed along with it? They argue that, crucially, it is not; according to them, an example like (4) is read as in (5a), not as in (5b).

- (3) Nur ein Bild von seinen Kindern hatte jeder Vater.  
 only a picture of his children had every Vater
- (4) Nur Michelle.ACC liebt jeder.  
 only Michelle.ACC loves everyone.NOM
- (5) a. Only Michelle is such that everyone loves her. linear scope  
 b. Everyone loves Michelle and nobody else. inverse scope

The judgment seems crisp. If someone in the domain of *jeder* loves somebody other than Michelle, (4) remains true. This would seem to prove that *nur* does not have the reconstructed reading in (5b), providing crucial support for the adverbial theory.

But, Meyer & Sauerland (2009) argue, the likes of (4) do not show the absence of an inverse scope reading of *nur* (cf. Reinhart 1976, Abusch 1994). They note that the scenarios that make (5b) true (sole love for Michelle) also happen to make (5a) true. Since there is no picture a subject could be presented with in which (5b) would be true but (5a) would not, we cannot really know whether (5b) is an available interpretation of (4) or not. They further observe that an inverse scope reading would be shown to exist if a scenario that made the inverse scope reading true failed to so for the linear scope reading. And while (4) does not have this property, they present four examples which seem to have it and thus offer counterevidence to the adverbial theory. In what follows I revisit these examples and argue that, for a variety of reasons, they may not involve reconstruction after all. I also note a piece of positive evidence for obligatory wide scope.

### 3. The zoo example: pragmatic set-up

In the first example we are asked to consider the following situation (Meyer & Sauerland 2001, 236):

<sup>1</sup>Another example they use to show that the phrase in initial position (without the *nur*) reconstructs is (i).

- (i) Nur die Hoffnung, dass wir je wieder gewinnen,  
 only the hope that we ever again win  
 hat niemand/\*jemand t behalten  
 has nobody/\*somebody t kept  
 ‘The only thing that nobody kept was the hope that we’ll ever win again.’

The NPI *je* is apparently licensed by the negative quantifier *niemand*. But for that to be the case, the DP and the complement clause it contains, which houses the NPI, presumably have to be interpreted in reconstructed position under *niemand*.

“Anna, Peter and Max are visiting the Berlin Zoo. Anna raves about the little penguin, Peter loves some weird reptile, and Max adores a certain lion. But of course,

([6]) Auch Knut mag jeder.  
also Knut.ACC likes everyone.NOM

(Remember that Knut is the famous little polar bear from the Berlin Zoo.)”<sup>2</sup>

They observe that in the given scenario (6) is judged true. This is taken as evidence that *auch* has narrow scope with respect to *jeder*, in other words, that (6) is interpreted as in (7b) rather than (7a). This is unexpected on the adverbial theory.

- (7) a. Also Knut is such that everyone loves him. linear scope  
b. Everyone is such that they also love Knut. inverse scope

Clearly, (6) can be uttered truthfully in the situation given. But does this really show that *also* takes inverse scope below *jeder*? The speaker’s enumeration of what animal each child likes invites the inference on the part of the addressee that the kids all like the zoo. This inference can then serve as the alternative to the prejacent of the *linear* scope interpretation of *auch* in (6); pragmatically, the assertion that they all like the polar bear then just serves to further strengthen the already implied claim that the zoo trip is fun. Note also that the set-up can be followed in English by (7a). Register differences aside, the conversational effect is very similar to the one we get for (6).

- (8) Anna, Peter and Max are visiting the Berlin Zoo. Anna raves about the little penguin, Peter loves some weird reptile, and Max adores a certain lion. And Knut, too, everyone loved.

(6) then might not show that *auch* reconstructs. My reasoning also suggests that, without the specific pragmatic set-up, what looks like the inverse scope reading should not be available. And, in fact, (9) can only mean that in addition to a universally loved or admired person (Ruth? Beyoncé?), Michelle is also universally loved. It cannot be read as saying that everyone loves Michelle in addition to some other, possibly different person.

(9) Auch Michelle liebt jeder.  
also Michelle.ACC loves everyone.NOM

#### 4. *Nur* and stressed *keiner*: correcting utterance

A second piece of evidence Meyer & Sauerland use to argue for the existence of inverse scope readings of sentence initial focus particles comes from sentences like (10), where instead of *jeder* (‘everyone’) we find *keiner* (‘no one’) (cf. also Reis 2005). They note

<sup>2</sup>The original number of the example is (7).

that these examples provide another instance where the scenarios that make the inverse scope reading in (11b) true do not also make the linear scope reading in (11a) true. If the sentence can thus be true under circumstances that make (11b) but not (11a) true this constitutes proof of an inverse scope reading. This, they claim, is indeed the case.

(10) Nur Michelle liebt keiner.  
only Michelle.ACC loves nobody.NOM

(11) a. Only Michelle is such that nobody loves her. linear scope  
b. Nobody is such that he loves only Michelle. inverse scope

They note in passing, however, that prosodic factors come into play. Normally, focus particles need a focus, realized by stress, in their c-command domain. With stress and focus just on *Michelle* the sentence seems to only have the linear scope reading. Only when the sentence is pronounced with additional and heavy stress on *keiner* and a ‘bridge-intonation’ (e.g. Frey 1993) do we find the inverse scope reading. To utter (10) with the stress pattern just described out of the blue seems strange.

(12) A: Jeder liebt nur MICHELLE.  
Everyone loves only Michelle  
B: Das stimmt nicht. Nur MICHELLE liebt KEINER!  
‘That’s false.’ only Michelle loves no one

Like *jeder* in (12A), *keiner* in (12B) takes scope over *nur*. But the wide scope of *keiner*, I’d like to suggest, results from its being used ‘metalinguistically’, to correct a previous utterance, and hence provides no indication that *nur Michelle* reconstructs.

### 5. *Nur Brahms, nur Reis: nur takes scope within the initial constituent*

Finally, Meyer & Sauerland (2009) discuss two more sentences where the quantifier under *nur* is not universal and where, as a consequence, the inverse scope reading does not entail the linear scope reading. They argue that these examples also support their claim that initial focus particles can take non-linear, reconstructed scope:

(13) Nur Brahms liebt genau jeder Dritte.<sup>3</sup>  
only Brahms.ACC loves exactly every third.NOM

(14) Nur Reis essen die meisten Menschen.  
only rice.ACC eat the most people.NOM

(13) is said to have both readings in (15), and (14) both readings in (16).

<sup>3</sup>Meyer & Sauerland’s version of the example does not contain *genau* but, as far as I can see, adding it makes the point they make easier to appreciate.

- (15) a. Only Brahms is such that exactly a third of the people love him. 1. scope  
 b. Exactly a third of the people only love Brahms. inverse scope
- (16) a. Only rice is such that most people eat it. linear scope  
 b. Most people only eat rice. inverse scope

As Meyer & Sauerland point out, the scenarios that make the inverse scope reading of (13) true are again not also scenarios in which the linear scope reading is also true; exactly a third of the people only liking Brahms and no other composer is not a special case of only Brahms being liked by exactly a third of the people: the former can actually be true when Brahms is liked by everyone (e.g. 1/3 only like Brahms, 2/3 like Brahms and Beethoven) but the latter cannot be true when 100 percent like Brahms.<sup>4</sup>

I think two observations are worth making here. First, though it has not been noted in the literature, I think here too there is a prosodic difference that correlates with the two different interpretations. When pronounced with stress only on *Brahms* and *Reis* and with a falling contour at the end of the sentence, the linear scope reading seems prominent. For the other reading, we seem to want primary stress elsewhere, in particular on *Dritte* in the Brahms example and *meisten* in the rice example, with reduced stress on *Brahms* and *Reis*, as in an instance of second occurrence focus (see above). Unlike the *keiner* example, these examples, however, do not require a correcting context.

The second observation is this. While Meyer & Sauerland (2009) take the non-linear scope reading of these examples to be instances of reconstruction, I think the comparison with cases where the focus particle takes scope just within the moved constituent may be more apt. Such readings have been observed for e.g. (17) and (18) (cf. Buring & Hartmann 2001, Reis 2005).

- (17) Nur Spanisch sprechen fiel uns leicht.  
 only Spanish.ACC speak fell us.DAT easy  
 ‘Only to speak Spanish was easy for us.’ sentential scope  
 ‘To speak only Spanish was easy for us.’ ‘local’ scope
- (18) a. Nur [AP mit Eiern belegt]<sub>i</sub> schmeckt es nicht t<sub>i</sub>  
 only with eggs topped tastes it not  
 b. Nur [VP mit Eiern belegen]<sub>i</sub> will ich es nicht t<sub>i</sub>  
 only with eggs top want I it not

In English the ambiguity in (18) is resolved by negative inversion (e.g. Liberman 1974):

<sup>4</sup>The argument for (14), which is not spelled out in Meyer & Sauerland (2009), is presumably analogous. The scenarios where the majority of people consume nothing but rice should not all also be scenarios where only rice is such that it is consumed by a majority of people. That, however, is harder to see. If more than 50% only consume rice, there cannot be any other food but rice that more than 50% eat. This means that rice is the only food eaten by a majority, and there is no scenario where (16b) is true but where (16a) is not. (14) thus would seem to pattern with the *jeder* example in (4) in terms of entailment relations and would not seem relevant to the point Meyer & Sauerland are trying to make.

- (19) a. Only topped with eggs does it not taste good. linear scope  
 b. Only topped with eggs, it does not taste good. 'constituent' scope

What I am proposing then is that the supposed inverse scope readings of (13) and (14) are readings where *nur* takes 'constituent' scope within the constituent in sentence-initial position and where they are interpreted the way (20b) and (21b) are, respectively:

- (20) a. Only Brahms do exactly a third of the people like.  
 b. Only Brahms, a third of the people like (that).  
 (21) a. Only rice do most people eat/is eaten by most people.  
 b. Only rice, most people eat (that).

When do such 'constituent' scope readings make sense? When *only Brahms* is understood, for instance, as 'a concert program consisting of only Brahms' and *only rice* is read, for example, as 'a meal/diet consisting of nothing but rice'. Note that when we have a pronoun (*das*), as in (22), that is the only reading we get. The neuter pronoun *das* presumably refers not to Brahms or Reis, both masculine in gender, but to the implicit entity. Conversely, we only find the sentential scope reading when we have an NPI (*je*), as in (23); for it to be licensed it needs to be c-commanded by *nur*.

- (22) a. Nur Brahms, das liebt genau jeder Dritte. 'constituent'  
 only Brahms.ACC that loves genau every third.NOM  
 b. Nur Reis, das essen die meisten Menschen.  
 only rice.ACC that eat the most people.NOM  
 'Only rice, most people eat that.'  
 (23) a. Nur Brahms wird je jeder Dritte lieben. 'linear'  
 only Brahms.ACC will ever every third love  
 b. Nur Reis werden je die meisten Menschen essen  
 only rice.ACC will ever the most people.ACC eat

Finally, we also expect to only find the sentential scope reading when the verb does not permit the implicit insertion of 'program' or 'meal'. This seems to be the case:

- (24) a. Nur Brahms erkannte genau jeder Dritte auf der Straße.  
 only Brahms recognized exactly every third on the street  
 'Only Brahms did exactly every third person recognize on the street'.  
 b. Nur Reis lagern die meisten Menschen.  
 only rice store the most people  
 'Only rice do most people store.'



## 6. Conclusion

In sum, when *nur* does not take wide scope as in the Brahms and rice examples, it takes ‘constituent’ scope within the topicalized phrase as in (25c) (with perhaps additional silent material in the topicalized phrase), rather than reconstructed scope as in (25b).

- |      |    |                    |                     |
|------|----|--------------------|---------------------|
| (25) | a. | [Nur [[X][QP Y]]]  | linear scope        |
|      | b. | [QP] [[nur X] Y]   | inverse scope       |
|      | c. | [[Nur [X]] [QP Y]] | ‘constituent’ scope |

This together with the observation about the pragmatic set-up of the initial *auch* example in (6) and the independent account of the non-linear scope reading of the *keiner* example in (10) means that the adverbial theory is still viable. What’s more, the *auch* example in (9), where we find that even by Meyer & Sauerland’s criterion *auch* does not reconstruct, independently shows that initial *auch* here takes linear, sentential scope.

What about V2 in such examples? One possibility is that the focus particle is part of the topicalized constituent when that constituent moves to initial position, in accordance with V2, but it subsequently and string-vacuously, perhaps at LF, moves to an adverbial position. I hope this possibility can be explored in future work.

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Elena Herburger  
herburge@georgetown.edu



## Referential anchoring, individual concepts, and weak and strong determiners<sup>\*</sup>

Roland Hinterhölzl

University of Ca'Foscari

### 1. Introduction

In this paper, I argue that the subject plays a crucial role in situationally anchoring the predicate of the clause. It is generally assumed that clausal predication is referentially anchored to the speech situation in terms of temporal (and modal) information expressed on the finite verb. While this is certainly correct, there are contexts in which referential anchoring by the verb alone is not sufficient, as is illustrated in (1).

- (1) a. John visited his mother. ( $e_1$ )  
b. She was sick. ( $e_2$ )  
c.  $e_1 < e_2 < s$ ,  $e_2 < e_1 < s$ ,  $e_1 \circ e_2 < s$   
d. She was sick one week before/after.

Anaphorically linking *she* to *his mother* the meaning of (1b) amounts to the claim that there is an event of sickness in the past whose theme is John's mother. Interpreting only the temporal information on the verb in (1b) yields the (temporal) readings given in (1c): since no particular order between  $e_1$  and  $e_2$  is established, the two events may precede, follow or overlap with each other as long as both of them precede the speech event. This rendition is incomplete since speakers typically interpret (1b) as a claim about John's mother being sick at the time of his visit.

One may assume that this specification in meaning is due to a pragmatic mechanism that instantiates the non-specified discourse relation between (1a) and (1b). For instance, one may propose that the utterance in (1b) is relevant in the context of the utterance of (1a) only if the speaker intends to say that there was a temporal overlap between John's visit and his mother's sickness. Note that this will not do, since there are linguistic expressions that explicitly refer to the time of John's visit as a reference point, as is indicated in (1d), requiring the grammatical presence of a reference time, as proposed by Reichenbach (1947).

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<sup>\*</sup>I thank an anonymous reviewer and Clemens Mayr for helpful comments on a previous version of this paper. All remaining errors are mine.

The proposal that I would like to make in this paper is that the reference time in (1c) is not determined by verbal categories like Tense and Mood directly, but crucially mediated by the subject. The anaphoric subject in (1b) and (1d) refers to a discourse antecedent that has been established in a previous event in the context, namely the event of John's visit, and it is this event with respect to which the predicate (and the temporal adverbs) are (temporally) situated in (1b) and (1d).

There are various possibilities conceivable for achieving this temporal anaphoric link. One way that I will argue for in this paper is the assumption that nominal expressions are individual concepts, that is to say, they are individuated with respect to an event (cf. Carnap 1928, Elbourne 2005). Nominal expressions in this approach are not one-place predicates anymore as in (2a) but must be analysed as two-place predicates, relating an event and the individuals present in the event, as is illustrated in (2b). I will refer to expressions like (2b) as nominal descriptions. A definite description combines a definite determiner with a nominal description that expresses a relation. I assume that the definite determiner combines two presuppositions: a) that there is a unique individual that satisfies the nominal description in e and b) that the event e in its domain is an element of the set of events (pre-established) in the context. This condition will be extended to all strong determiners later. The lexical entry for the definite determiner is given in (2c).

- (2) a.  $\lambda x. \text{man}(x)$   
 b.  $\lambda e. \lambda x. \text{man}(x)(e)$   
 c.  $[[\text{the}]]c = \text{lambda } f_{\langle s,et \rangle}. \text{lambda } e_{\langle s \rangle} : \text{there is a unique } x \text{ such that } f(e)(x) = 1 \text{ and } e \text{ is a member of the set of events in } c . \text{ the unique } x \text{ such that } f(e)(x) = 1.$

The assumption that there is a reference event or a topical situation with respect to which a proposition is evaluated is not new nor is the assumption that individual concepts underlie the reference to individuals (cf. Enc 1987, Musan 1997 and Herburger 2000 among others). Elbourne (2005) treats individual concepts as functions that map events onto individuals (cf. f and g in (3b)) and proposes that the content of the speech act of assertion is analysed as an Austinian proposition, that is, a pair of a topic situation about which the speaker tends to say something and a proposition that is a set of situations, as in (3): if the topic situation is a member of the set, the speaker has spoken truly (cf. Austin 1961, Barwise and Perry 1983, 160, Kratzer 2004, 2006).

- (3) a. Mary greets John.  
 b.  $\lambda s. \text{Mary greets John in } s \ \& \ \text{Mary} = f(s) \ \& \ \text{John} = g(s)$

Note, however, that in this approach nominals and the verb are always evaluated with respect to the same event/situation. But there are good arguments for at least two cases in which a nominal must be evaluated with respect to an event different from that of the verb that takes it as an argument: relativized DPs, as in (4), and DPs with a strong or categorical interpretation, as in (5).

- (4) a. John read the book that Mary recommended.  
 b. in  $s_2$  John read the unique book x in  $s_1$  such that Mary recommended x in  $s_1$

- (5) a. weil hier viele Männer arbeiten (existential, weak, cardinal interpretation)  
 since here many men work
- b. weil viele Männer hier arbeiten (proportional, strong interpretation)  
 since many men here work

In (4) the relative DP *the book* must be evaluated with respect to the embedded event (rather than with respect to the matrix event) and in (5b), contrary to (5a), the DP *viele Männer* is evaluated with respect to an event that is given in the discourse and introduces the set of men that are under discussion.

## 2. From Milsark's generalisation to Brentano's distinction between judgment forms

Milsark (1974) proposed a two way distinction between DPs, a two way classification of one-place predicates and a generalisation about how these elements can be combined. In particular, he proposed that DPs can have either a cardinality or a true quantificational interpretation and divided one-place predicates into those expressing state descriptions (stage level predicates) and those expressing properties (individual level predicates). His famous generalisation has it that properties can only be predicated of strong DPs, as illustrated in (6). In (6c), *sm* stands for weak unstressed *some*.

- (6) a. The man is sick. (strong + SL)  
 b. The man is intelligent. (strong + IL)  
 c. Sm men are sick. (weak + SL)  
 d. \*Sm men are intelligent. (weak + IL)

Diesing (1992) takes up Milsark's generalisation and tries to derive it with a number of assumptions about the interface between syntax and semantics. Following Kratzer (1989), she assumes that weak readings of indefinites are the result of existential closure of a free variable, while strong readings involve quantificational operators. The domain of existential closure is the VP (the vP in present terminology), which contains the base position of subjects. Observing that raising predicates allow reconstruction but control predicates do not, Diesing proposes that the INFL head of IL-predicates is transitive, while SL-predicates may also combine with an unaccusative INFL. It therefore follows that subjects of IL-predicates cannot reconstruct and therefore cannot obtain a weak interpretation. I think the argument goes through but is based on a mere stipulation about INFL-types.

Ladusaw (1994) argues that Milsark's generalisation can be derived from Brentano's distinction betweenthetic and categorical judgments. According to Brentano athetic judgment consists in the presentation of an object, an entity or eventuality, and constitutes a simple judgment. A categorical judgment in contrast constitutes a double judgment, since it consists in the act of the recognition of the object that is made to be the subject and the act of affirming or denying what is expressed by the predicate about this subject. As is pointed out by Ladusaw (1994), the importance of this distinction consists in the fact "that one judgment form involves a presupposed subject in the sense that a

precondition for making the judgment is that the mind of the judger must be directed first to an individual before the predicate can be connected to it” (Ladusaw 1994, 3).

Ladusaw (1994) then proposes that what Brentano called presentations should be equated with (nominal) descriptions and that predication should be treated as a relation between an object and a property (basic in the case of IL-predicates or derived from a description). Since a description (for instance, the description *a cat sleeping in the garden* in thethetic judgment in (7a)) is itself a composition of an eventuality description with various individual descriptions, the theory of argument saturation must be taken to work on two levels, according to Ladusaw, either by restricting a parameter in an eventuality description with another description or specifying an object as the value of the parameter.

- (7) a. There was a cat sleeping in the garden. (thetic judgment)  
 b. The cat was sleeping in the garden. (categorical judgment)

Before we address this point, let us discuss how the present account would treat the pragmatic differences between athetic and a categorical judgment. (7a) can be analysed as the claim that there is a sleeping event in the garden that took place in the past and has a cat in it, as given in (8a). The meaning of (7b) can be analysed as given in (8b) in the present account, that is, as a claim about the existence of an event  $e_2$  such that the unique cat in a contextually given event  $e_1$  is the agent of  $e_2$  that was a sleeping event taking place in the garden, where the predicate  $\text{in}(e,e')$  represents the contribution of imperfective Aspect, which relates  $e_2$  to the reference event  $e_1$ .

- (8) a.  $\exists e[\text{sleeping}(e) \ \& \ \text{past}(e,e_s) \ \& \ \exists x[\text{agent}(e,x) \ \& \ \text{location}(e,\text{in the garden}) \ \& \ \text{cat}(e,x)]]$   
 b.  $a$  is the unique cat in  $e_1$   $\& \ \exists e_2[\text{agent}(a,e_2) \ \& \ \text{past}(e_1,e_s) \ \& \ \text{sleeping}(e_2) \ \& \ \text{location}(e_2,\text{in the garden}) \ \& \ \text{in}(e_1,e_2)].$

The crucial point is, while the cat in (8b) is already individuated with respect to a given event – note that  $e_1$  is not existentially bound since it is not part of the commitment of the speaker that there is such an event, but is rather presupposed by the use of the definite determiner – the cat in (8a) has not been individuated before, but enters the picture as a participant of an event to which the speaker has an existential commitment, accounting for its indefinite, existential interpretation. As Ladusaw puts it “in Brentano’s view of the existential commitment of athetic judgment, only one description is affirmed; only the existence of the eventuality is affirmed, but commitment to that description will indirectly commit the judger to the existence of the cat” (Ladusaw 1994, 5).

In other words, since the speaker in (7a) is committed to the existence of an event of sleeping, he is also committed – by the very meaning of the term *sleeping* – to the existence of an agent and since the agent of sleeping is identified with the cat, he is also committed to the existence of the cat, representing the effects of unselective existential closure of the description in the account of Diesing (1992). In the following section, I will address the issue of how the logical forms in (8) can be derived from standard assumptions in event semantics.

### 3. Two modes of argument saturation

The first option of argument saturation of course consists in functional application that involves an individual and a (derived) property. In the present account, this operation can only occur outside of the vP and involves a prior step of event identification (cf. Kratzer 1996) between the event argument of the subject and the reference event of Tense, as I will argue below. The second option consists in predicate modification. Before we address the interpretation of weak DPs in the vP, let us see what is meant with the operation of event identification.

Kratzer (1996) proposes that the external argument of the verb, typically the agent argument, is introduced by a separate functional head that she identifies with a Voice head defined as in (9). As a consequence a referential DP inserted in [Spec, VoiceP] is interpreted as the agent of the relevant event.

$$(9) \quad [[\text{Voice}^0]] = \lambda x. \lambda e. \text{agent}(x, e)$$

However, note that this voice head must first combine with the meaning of the complement VP to derive the correct interpretation of an agentive verb as in (10a). Assuming that the interpretation of the VP complement of our Voice head is as given in (10b), we note that the meanings of (9) and (10b) are not compatible because of a type mismatch. As a consequence, Kratzer (1996, 122) proposes event identification as a special rule of composition according to which functions  $f$  and  $g$  combine, yielding a new function  $h$ :  $\langle e, \langle s, t \rangle \rangle \ \& \ \langle s, t \rangle \ \rightarrow \ \langle e, \langle s, t \rangle \rangle$ , as is illustrated in (10c). Applying the resultant function in (10c) to the individual *John* in (10a) (via functional application) then yields the correct interpretation in (10d).

- (10) a. John is sleeping in the garden.  
 b. VP =  $\lambda e. \text{sleeping}(e) \ \& \ \text{location}(e, \text{in the garden})$   
 c.  $[[ (9) [(10b)] ] ] = \lambda x. \lambda e. \text{agent}(x, e) \ \& \ \text{sleeping}(e) \ \& \ \text{location}(e, \text{in the garden})$   
 d.  $\lambda e. \text{agent}(\text{John}, e) \ \& \ \text{sleeping}(e) \ \& \ \text{location}(e, \text{in the garden})$

In simple words, the effect of this compositional rule is that the agentive event is identified with the event denoted by the VP, that is, with the event of sleeping in the garden.

Now, I would like to address the question of how weak DPs are interpreted in this account. We noted above that it is crucial that the subject of athetic judgment like (7a) does not denote an object but constitutes a nominal description of the type  $\lambda e. \lambda x. \text{cat}(e, x)$ . The semantic type of this description is not compatible with the meaning of the voice head in (9). In particular, it cannot combine with the Voice head via functional application as in (10d) above. The nominal description must combine via the rule of predicate modification (cf. Heim & Kratzer 1998) generalized to predicates of the type  $\langle s, et \rangle$ .<sup>1</sup>

<sup>1</sup>I thank Clemens Mayr for pointing this out to me.

In the case at hand, that is (7a), this involves the identification of the event argument of the nominal description with the agentive event as well as the identification of its entity argument with the entity argument of the agent relation. Our case is only different in that there is an additional restriction to the final step that comes from the meaning of the nominal description. I assume that the so-called indefinite determiner *a* occupies a Number head specifying the condition that there is *one* individual (at least one assignment) for which the nominal description *cat* is true in a given event, hence the final abstraction over this argument does not involve the  $\lambda$ -operator but can and must be strengthened to the existential operator, as is illustrated in (11).

(11)  $\lambda e \exists x. \text{cat}(e,x) \ \& \ \text{agent}(e,x) \ \& \ \text{sleeping}(e) \ \& \ \text{location}(e, \text{in the garden})$

It must be noted, however, that in the present account a strong DP cannot be interpreted in the  $vP$ , that is in [Spec, VoiceP], as in Kratzer's account. The event argument of the definite description *the cat* in (7b) cannot be identified with the event argument of the verb, due to the presupposition of the definite determiner. Furthermore, functional application will fail to apply to it as long as the definite description is not assigned a value for its event argument. In the following section, I will argue that this value assignment happens at a later step in the derivation.

#### 4. The role of Tense and Finiteness in referential anchoring

We are now in a position to explain why subjects in [Spec, TP] serve to anchor the predicate denoted by the verb (phrase), as in (1) above. It is T that – by establishing a relation between speech time and reference time – introduces two more event arguments in addition to the one introduced by the verb. According to Reichenbach (1947), Tense establishes a link between speech time and reference time, as is illustrated in (12). The event denoted by the verb is then situated with respect to the reference time by Aspect, as is illustrated in (13).

(12) *The meaning of tense according to Reichenbach (1947)*

- a.  $[[\text{Past}]] = \lambda s. \lambda r. r < s$
- b.  $[[\text{Present}]] = \lambda s. \lambda r. s \subseteq r$

(13) *The meaning of aspect according to Reichenbach (1947)*

- a.  $[[\text{Perfect}]] = \lambda e. \lambda r. e < r$
- b.  $[[\text{Imperfect}]] = \lambda e. \lambda r. r \subset e$

I propose that the Spec-head relation between the subject and T is interpreted as the identification of the event arguments of the subject and T. In other words, the reference time of T (and henceforth of the verb) is identified with the event with respect to which the subject is evaluated in the discourse. This means that the subject and the verbal predicate (modulated by verbal aspect) are evaluated with respect to the same topical situation. The assertion then corresponds to the claim that there exists a (new) situation denoted by the verb that is situated via Tense and Aspect with respect to this topic



situation. If we now assume that value assignment to free variables is not unconstrained but restricted to specific syntactic positions and also make the reasonable assumption that the values for speech time and reference time are assigned in FinP in Rizzi's expanded C-domain (Rizzi 1997), it follows that the subject serves to anchor the predicate. For reasons of minimality, the Fin-head will enter into an Agree-relation with the constituent in [Spec,TP], rather than with the T-head. After the subject has been assigned a referential value for its event argument, either in [Spec,FinP] or in [Spec,TP] (via the Agree-relation), the property derived via  $\lambda$ -abstraction over the verb's agent role can be predicated of it, giving rise to the interpretation represented in (8b) of the sentence in (7b) above.

However, note that not all subjects qualify as *anchors* for the main predicate. In particular indefinite DPs are not evaluated with respect to a pre-established event in the context. As we have seen above, the event argument of the indefinite DP is identified with the event argument of the verb in this case. Thus, the predicate has to be anchored in an alternative way.

#### 4.1 Alternative anchors in English

In English, the adverbial *there* is inserted in [Spec,TP] in this case. I will argue that *there* is not an expletive element but serves semantically as an alternative anchor in the clause, as is illustrated in (14a,b).

- (14) a. John visited his mother.  
 b. There was a child crying in the garden.  
 c. I went to the local bar last night. Into the room walked a man with a green hat  
 ...

In the present account, *there* is a function that maps an event onto its location and by referring back to the event of John's visit, provides the event with respect to which the predicate *was a child crying in the garden* is temporally and locally evaluated.

In conclusion, subject-verb agreement probably results from the grammaticalisation of this important relation between subject and Tense, but what is crucial is that a referentially anchored expression enters into a Spec-head relation with T, allowing for the temporal location of the event denoted by the predicate. That is why PPs, by denoting the resultant location of a predicate expressing a change of state (location) can serve as subject/anchor in cases of locative inversion, as illustrated in (14c). The theory that I am proposing also permits a direct way of accounting for cross-sentential anaphora and bridging relations: the use of the definite determiner in the PP *into the room* in (14c) is sanctioned by the bridging relation between the local bar in the topical situation and the room that pertains to it based on the requirement that the locative PP is evaluated with respect to the very same topical situation. Similar considerations apply to the use of the definite determiner in the DP *the garden* in (14b).



There is substantial cross-linguistic evidence for the analysis in (17) that comes from parallel German and Dutch data. In German, the different positions of strong and weak subjects can be made evident with TP-related temporal and locative adverbs, as we have seen in (5) above. In Dutch, as in German, a weak subject is realized in a lower position, but differently from both German and English, the anchoring substitute is spelled out in terms of the weak form of the R-pronoun (*daar,er*), as is illustrated in (18).

- (18) a. omdat er hier veel mannen werken weak reading  
       because LOC here many men work
- b. omdat veel mannen hier werken strong reading  
       because many men here work

To summarize, the systematic ambiguity of sentences like *some men were drunk* in English does not result from the reconstructability of the subject into a vP-internal position with SL-predicates in the present account (contra Diesing 1992), but involves the licensing of the subject in two different positions (that are visible in German and Dutch). The higher position [Spec,TP] is only compatible with discourse anaphoric arguments, that is, with arguments that receive a presuppositional or strong interpretation, and serves to anchor the subject and predicate with respect to the same reference event. The lower position hosts non-presuppositional weak subjects that are evaluated with respect to the event denoted by the verb. In this case, [Spec,TP] is occupied by a possibly silent locative pronoun that serves as an alternative anchor for the predicate.

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Roland Hinterhölzl  
rolandh@unive.it

## A fresh look at compositionality\*

Paul Horwich

New York University

### 1. Introduction

My discussion will have three parts. I'll begin with a thesis:– roughly, that a sentence's meaning what it does is simply its property of having a certain structure and having words with certain meanings. Then I'll mention some of the implications of that thesis. And finally I'll consider a few objections to it.

This last and defensive part will be the longest. For I know from bitter experience that the thesis will strike most readers as clearly wrong – even bizarre. I think that this is because it goes against a long tradition of theoretical work in semantics. It seems to me, however, that if one can loosen oneself a bit from the grip of all that tradition, the thesis can be seen to possess some quite attractive features. In the first place, it has considerable intuitive plausibility. In the second place, it is wonderfully simple. And in the third place, it enables us to slice through a number of thorny difficulties. So it's certainly worth an airing.

### 2. My thesis

So much for the advertising. What exactly is the thesis? Well it's a claim – an *a priori* claim – about *what it is* for a non-idiomatic complex expression of a language (e.g. a sentence-type of English) to mean what it does. It specifies how the *meaning-properties* of such expressions are *constituted*. The heart of it is just that the meaning-what-it-does of a non-idiomatic complex expression reduces to what I call the expression's "*construction-property*" – its property of *being the result of imposing such-and-such structure on words with such-and-such meanings*. (In what follows, "complexes" are restricted to "non-idiomatic complexes").

For example, according to this thesis, the *meaning-property*, 'x means MARS ROTATES' – which is possessed by the English "Mars rotates", the Italian "Marte gira", the German

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“Mars rotiert”, etc. – is constituted by the *construction*-property, ‘x results from applying a word meaning *\_ROTATES* to a word meaning *MARS*’. (Capitalized expressions will be used to name the meanings of the corresponding lower case expressions).

To put it more generally. Suppose an expression, *e*, is the result of imposing structure *P* on words,  $\langle w_1, w_2, \dots, w_k \rangle$ . Then *e*’s meaning property is constituted by, ‘x results from imposing *P* on words whose meanings are  $\langle W_1, W_2, \dots, W_k \rangle$ ’.

OK. That’s the claim in a nutshell. Of course it’s highly cryptic as it stands, and the reader has every right to expect further clarification. But I’m hoping that what I will now go on to say about its implications, and then about various objections, will provide at least some of that clarification.

### 3. Import of the thesis

I’d like to emphasize two significant implications of this thesis.

First: it becomes very easy to see *why* compositionality holds (*when* it does) – to see *how* the meaning of a non-idiomatic complex is determined by the meanings of its elements and their arrangement. After all – on this view – the fact that a complex means what it does simply *is* the fact that its words have the meanings they do and are arranged as they are.

Thus, what we might call “Davidson’s Problem” receives a trivial solution. He raised the question of how there *could* be (as there surely *must* be) logical deductions – hence explanations – of facts about the meanings of sentences on the basis of facts about the meanings of their words. And he suggested that the only way of achieving such deductions was to construe sentence-meanings as truth conditions and word-meanings as reference conditions. – For Tarski showed us (at least in the case of certain simple languages) how the former could be deduced from the latter.

But now we find that there is an *alternative* way of achieving these explanatory deductions – a much easier way. And this is potentially quite liberating, given the various difficulties that plague the Davidsonian approach and its Montegovian descendants. To begin with, those approaches make dubious assumptions about sentences-meanings – namely, that they are *truth conditions* or *sets of possible worlds*. (Dubious because, for example, “Water is falling from the sky” and “H<sub>2</sub>O is falling from the sky”, have different meaning but are true in the same possible worlds!). And in addition, *any* such initial assumption imposes a hard-to-satisfy constraint on a decent compositional account. – For many sentences (e.g. counterfactual conditionals, belief attributions, and epistemic modals), it can be extremely difficult to identify (i) a logico-semantic structure, (ii) semantic values for the words, and (iii) semantic combinatorial rules, that, taken together, will deliver the ‘right’ truth condition. In contrast, the approach I’m recommending involves no assumptions at all about the meaning-properties of non-idiomatic complex expressions, except that they are constituted by the expressions’ construction-properties. So these problems simply don’t arise.

A second important implication of my thesis is that compositionality *per se* imposes no constraint whatsoever on how *word*-meanings are constituted. One may be inclined, for one reason or another, to think that a word’s meaning-property is engendered by its *use*, perhaps; or, alternatively, by an associated *stereotype*; or, alternatively, by a *recognition capacity*. Or one might have another specific suggestion. No doubt some of these proposals

are more plausible than others (– indeed, I myself strongly favoring a neo-Wittgensteinian use-theoretic view). But a consequence of my thesis is that *all* of them cohere perfectly with compositionality. So compositionality can't be a basis for deciding between them.

Suppose, for example, that the meaning of “Mars” is engendered by its having underlying property,  $U1(w)$ , and that the meaning of “\_rotates” is engendered by its having  $U2(w)$ . Then – in light of my thesis – the meaning of “Mars rotates” will be engendered by its having the property, ‘x results from applying a word with  $U2(w)$  to a word with  $U1(w)$ '. Thus, no matter what the U-properties are, compositionality will be accommodated.

But what about the famous series of papers by Fodor and Lepore – the papers in which they argue that none of the theories I have just listed is compatible with compositionality, and that none, therefore, can be correct? (See for example, Fodor & Lepore 2002). From my point of view their reasoning goes wrong in making a certain Uniformity Assumption. They presuppose that whichever kind of property provides a *word* with its meaning will also provide a *complex* with its meaning. They claim, for example, that if a *word's* meaning derives from its *basic use*, then a *sentence's* meaning would have to derive from its basic use too. But, as they go on to argue, the basic use of a sentence is not determined by the basic uses of the words in it. And similar reasoning is taken to disqualify many other candidates for what constitutes word-meanings.

However, my thesis implies that their Uniformity Assumption is false. If we advocate a use-theory of *word-meanings*, we should not advocate a use-theory of *sentence-meanings*. We should say, rather, that a sentence means what it does in virtue of its *construction* – that is, in virtue of its words having certain use-properties, and being combined as they are.

Returning to the above example, and supposing that the meaning constituting properties of words are *use-properties*: the idea is *not* that  $U2(w)$  is some sort of *function* or *operator* that applies to  $U1(w)$ , yielding whatever constitutes the sentential meaning-property, ‘x means MARS ROTATES’. So we have no reason to suspect that the meaning-property of any other predicate applied to “Mars” (e.g. the *complex* predicate, “\_rotates slowly”) must *also* be constituted by a use – a suspicion that would push us back towards a problematic Uniformity Assumption. No. The construction-property (= meaning-property) of “Mars rotates slowly” is its being the result of applying (A) to (B) – where (A) is a complex expression whose construction-property is the result of applying a word with  $U3(w)$  (in virtue of which it means SLOWLY) to a word with  $U2(w)$ ; and where (B) is a word with  $U1(w)$ .

#### 4. Objections to the thesis

My thesis about compositionality is *deflationary* in the following sense. The proposed explanation of compositionality is much *thinner* – much more superficial and un-theoretical – than what has standardly been thought to be needed. Consequently, most of the objections take the form: “It's *too* deflationary. – Here's an aspect of the phenomenon that cannot be accommodated!”.

Well, perhaps that's right. But let's see. I'll only have space here to consider a small proportion of the many such objections that have been thrown at me. (Others are addressed in Horwich 1998, 2005).

*Objection 1: Your claim conflicts with the explanatory significance of compositionality.— Intuitively, the compositionality of a language is a very significant fact about it – explaining (as Davidson emphasized) the quasi-infinite capacity that we are able to achieve with respect to understanding such languages. But how can this explanatory significance possibly be squared with the sort of triviality attributed to compositionality by the deflationary thesis?*

But I am not denying the great causal/explanatory import of a given language being compositional. So I am not attributing triviality to the fact that English (say) is predominantly compositional. What is trivially easy, according to me, is to see *how* compositionality occurs when it occurs – to see how the meaning-properties of the sentences of a compositional language are determined by the meaning-properties of its words.

So there is no real tension here. On the contrary, it seems to me that a point in favor of my proposal is that the explanatory significance of compositionality becomes easier to understand. For it becomes easier to see how the meaning of a sentence issues in its overall use (including the circumstances in which it tends to be accepted, and what other sentences tend to be inferred from it). In other words, it becomes easier to see the role of compositionality in explaining the torrent of linguistic activity of which we are capable.

To help appreciate this point, let me suggest a certain analogy. The overall behavior of a *physical system* is the product of its having a certain construction property – i.e. a property specifying which laws govern the system's basic components and specifying how those components are arranged with respect to one another. Therefore, if we combine my main thesis (that a complex expression's construction-property is what grounds its having the meaning it has) with the further view that each word-meaning derives from its distinctive laws of use, it is unsurprising that we can explain the overall use of each sentence in terms of its construction-property – in terms of its being the result of embedding, within a certain structure, words governed by a specific laws of use. So, we see how compositional meaning properties are causally significant, and therefore why it's explanatorily important that we are able to attach them to such a vast body of sentences, i.e. why the predominant compositionality of our language is important.

*Objection 2: Your claim conflicts with holism.— The suggested model delivers a form of compositionality that is too crude, too extreme, too building-blockish. What we surely need is a more subtle, nuanced form – one that can incorporate a degree of holism, whereby word-meanings are abstracted out of the meanings of sentences, and are not individually identifiable.*

In the first place, this objector appears to be on the verge of *rejecting* compositionality, rather than wanting a subtle version of it. Do we understand sentences because we understand the words in them – or is it the other way around? I don't see how one can embrace the second of these options without denying compositionality. And then we'd have to revisit the question of what explains our understanding of an unlimited number of sentences!

Still, the imagined objector is perfectly right, it seems to me, in maintaining that meaning is "holistic", *in a different sense*. In particular, I believe we must grant that there are



collections of fundamental word-meanings that are mutually inter-dependent in the following way: – it is not possible for a language to have a word with one of those meanings unless it also has words with all the others as well. Or, to put this inter-connectedness point more theoretically: – the law of use for any one of these words will make reference to its deployments in relation to other words with such-and-such laws of use.

But this form of holism is perfectly consistent with supposing (a) that each of the words has its own peculiar meaning-property, specifically different from those of the others, and (b) that the meaning of each sentence is constructed, in the way I am proposing, from these individual meanings.

A second concession we can happily make to the present objection is that sentences are, in a certain respect, the *fundamental* units of a language. For it is plausible, I think, that the fact about a word that engenders its meaning (i.e. the word's 'law of use') is a fact that explicitly concerns certain *sentences* containing the word – a fact of the form "such-and-such sentences containing it are accepted in such-and-such circumstances". E.g. for "bachelor" it might be that "The bachelors are the unmarried men" is *unconditionally* accepted; and for "red" it might be (very roughly speaking) that "That's red" is accepted in the presence of red things.

It is a mistake, however, to think that this concession involves some retreat from the crude, building-block view of sentence-meanings. What we have allowed is merely that certain facts about the *usage* of certain sentences constitute the meanings of words. But the *meanings* of those sentences (amongst others) are explained by the word-meanings thus constituted.

*Objection 3: Your claim conflicts with contemporary truth-theoretic semantics. – Presumably, we ought to take matter to be what the chemists and physicists tell us it is; for they have looked into the question much more carefully and competently than we have. Similarly, we should take meaning to be what the relevant scientists – the linguists who focus on semantics – tell us it is. And what they tell us – the framework for at least 99% of work in the field – is that the meaning of a sentence is its truth condition, that the meaning of a word is some referential characteristic, and that the compositionality of a sentence resides in the fact that its truth condition is logically deducible from the referential characteristics of its words in light of its structure. Thus, the deflationary proposal, in ignoring what science has to say, is on a par with an insistence that matter is continuous, that surely every bit of a bit of copper is a bit of copper, etc. – something only a crank could take seriously!*

This certainly is a formidable objection. For I agree that there is indeed a clash between mainstream formal semantics and my proposal. But it seems to me that mainstream formal semantics is not as successful and unimpeachable as its popularity might suggest. I venture this opinion with considerable trepidation and embarrassment. Who am I – who is any philosopher, or bunch of philosophers – to judge that some entire field of science is radically defective? However, in the end we mustn't allow ourselves to be intimidated simply

by the weight of tradition. We just have to let the skeptical arguments speak for themselves. So here they are, in a nutshell.

In the first place - and as I've already mentioned - the meaning of a sentence appears to be more fine-grained than its truth condition: non-synonymous sentences can have the same truth condition; similarly, two words can have the same reference without having the same meaning. This is an old Fregean point. It involves a conception of "meaning" in which the meanings of terms (i) are supposed to help explain how those terms are deployed (e.g. that one might accept "Hesperus = Hesperus" without accepting "Hesperus = Phosphorus"), and (ii) are supposed to be preserved in a good translation manual. Davidson worried about this divergence between meaning, in that rich sense, and reference/truth conditions; and he tried to fix up his theory in order to accommodate it. But no satisfactory way of doing that has ever been found.

Of course, this objection to truth-theoretic semantics does not entirely discredit the project of trying to find referents for various parts of speech such that the truth conditions of the sentences containing these parts of speech will be deducible. Such projects may well be perfectly coherent, legitimate, challenging, and fascinating. But - if the objection is correct - they do not yield a complete theory of *meaning*.

In the second place (and an implication of the preceding point) we want - or *should* want - a science of semantics that stands shoulder to shoulder with the other empirical sciences in providing causal explanations of observable linguistic phenomena. But mainstream truth-theoretic semantics doesn't do that. Its primary aspiration is to tell us what referents would have to be assigned to words, and what logical forms would have to be assigned to sentences, in order that the known truth conditions of sentences be logically derivable. And its next aspiration is to explain to us - in light of these results - why these sentences bear the logical relations to one another that they do bear. Relatively little attention is given to explaining linguistic *activity* - facts about our *acceptance* of sentences, about the *inferences* we draw amongst them, etc. And this shouldn't be surprising. For, it's hard to see how the derivations of truth-theoretic semantics could make any contribution to explanations of concrete empirical phenomena such as these (see Horwich 2010).

To cut a long story short, what instead needs to be looked at are those *use*-theoretic properties of words that underlie their possession of meanings and referents. These are the sorts of properties that, taken together and in conjunction with structural assumptions, stand a reasonable chance of accounting for the patterns of activity characteristic of different sentences. And, from this point of view, it is quite natural to suppose that a *sentence's* meaning what it does is simply the fact that it has a certain structure and has words whose basic use properties are this, that, and the other.

Finally - my third response to the objection - it's worth remembering how semantics got pushed into the truth-theoretic direction in the first place. An important factor was Davidson's hugely influential argument - in "Truth and Meaning" - to the effect that this was the only way to make sense of compositionality. My speculation is that if the deflationary alternative had been appreciated way back in the 70's, then natural language semantics would perhaps not have got off on the wrong foot, as I think it did, and might now be in a much healthier state than I think it is actually in.

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Paul Horwich  
ph42@nyu.edu



## Antisymmetry and morphology: Prefixes vs. suffixes<sup>\*</sup>

Richard S. Kayne

New York University

### 1.

The antisymmetry proposal of Kayne (1994) took the Linear Correspondence Axiom (LCA) to see sub-word-level structure as well as phrasal structure.<sup>1</sup> This integration of morphology and syntax, as far as the LCA is concerned, recalls Greenberg's (1966) Universal 27:

- (1) If a language is exclusively suffixing, it is postpositional; if it is exclusively prefixing, it is prepositional.

To the extent that (1) is correct, it, too, supports the idea that morphology is similar to and interacts strongly with phrasal syntax, at least as far as affixes (prefixes/suffixes) and adpositions (prepositions/postpositions) are concerned.<sup>2</sup>

A specific example of the relevance of the LCA to morphology comes up if we look at the prefix vs. suffix question:

- (2) prefix - stem
- (3) stem - suffix

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<sup>\*</sup>This paper grew out of the first part of a talk presented at the Roots IV conference at NYU in June, 2015.

<sup>1</sup>See especially sections 4.4 and 4.5.

<sup>2</sup>On the strong relation between morphology and syntax, cf. also Fabb 1984, Baker 1985, 1988, Pesetsky 1985, Halle and Marantz 1993, Cinque 1999, Julien 2002, Ferrari 2005, Starke 2009, Caha 2010, Kayne 2010a, to appear c and Leu 2015. An extended argument in favor of greater separation between morphology and syntax, on the other hand, is given in Di Sciullo & Williams 1987.

For a proposal that (a certain instance of apparent) syncretism between dative and locative is best reanalyzed via the use of silent elements, see Kayne 2008a. For a proposal that apparent homophony in the case of English *there* is but apparent, see Kayne 2004, to appear a; for a similar proposal, again involving silent elements, concerning English *one*, see Kayne to appear b, and on English *that*, Kayne 2010b.

The LCA has the immediate consequence that the structural relation between prefix and stem cannot be the same as the structural relation between suffix and stem. A prefix must (setting aside remnant movement possibilities) asymmetrically c-command the associated stem,<sup>3</sup> whereas a suffix can never asymmetrically c-command the associated stem, given the LCA.

An antisymmetry-based view of syntax and morphology therefore leads to the expectation that we should find asymmetries between prefixes and suffixes, both language-internally and cross-linguistically. A view of syntax and morphology without antisymmetry would not lead to such an expectation.

The LCA-imposed structural asymmetry between prefix and suffix finds support, I think, in a simple question, to the extent that answers to it are available in at least some cases. Why are prefixes prefixes and not suffixes, and why are suffixes suffixes and not prefixes? This question can be asked either internal to one language, or cross-linguistically.<sup>4</sup>

For example, we can ask why English has *re-* as a prefix rather than as a suffix. If *re-* is a prefix rather than a suffix in all languages, then we can ask why that is so. If counterparts of *re-* are prefixes in some languages and suffixes in others, we might be looking at a case of irreducible parametric variation unrelated to any other property of the two sets of languages. Alternatively, it might be that prefixal *re-* vs. suffixal *-re* correlates with other properties, in which case the underlying parameter(s) in question would have broader reach.<sup>5</sup> These kinds of questions about *re-* can and should be asked about any other prefix or suffix.

## 2.

In this paper, I will focus on negative prefixes such as English *un-* (and *in-*), as in *unintelligent* (and *ineffective*),<sup>6</sup> where the negative prefix precedes and is associated with an adjective. As far as I can see, English has no corresponding negative suffix that would follow an adjective and have exactly the same interpretive effect as prefixal *un-*.

The following conjecture seems plausible:

- (4) That English negative *un-* is prefixed, rather than suffixed, to the associated adjective is not accidental.

If (4) is correct, we need to ask why exactly *un-* could not have been a suffix.

In evaluating (4), we have to take into consideration English *n't*, which might be called suffixal, in sentences like:

<sup>3</sup>As noted by Di Sciullo (2005, 78), prefixes may differ from one another in how high above the stem they are.

<sup>4</sup>As in Di Sciullo 2005, sect. 8.2.

<sup>5</sup>This might be the case for the *un-* of *unpack*, which seems to have a close suffixal counterpart in (some) Bantu languages; cf. Givon 1971, 151.

<sup>6</sup>The proposal to be developed will in all likelihood carry over to negative *a-* and to *non-*; for discussion of these and of the differences between *un-* and *in-* (which will not play a role in this paper), see Horn 1989, sect. 5.1. In what follows I will drop explicit reference to *in-*.

- (5) John can't solve the problem.
- (6) This product isn't effective.

In (5) it seems clear that *n't* scopes over *can*, despite following it. But if so, then why could there not be a suffixal *\*-un*, as in *\*intelligentun*, that would scope over *intelligent* in the way that prefixal *un-* happily does?

Part of the answer to this question about *n't* vs. *un-* must lie in the fact that English *n't* is an instance of sentential negation,<sup>7</sup> as opposed to *un-*. As Edwin Williams (p.c.) has pointed out to me, this distinction between sentential negation with *n't* and non-sentential negation with *un-* can be seen clearly with regard to following adjunct phrases. Consider the following contrast:

- (7) He wasn't happy because of anything you said.
- (8) \*He was happy because of anything you said.

Example (7) is natural, with stress on *you*, whereas (8) is not. In other words, *anything* in (7) is acting as a negative polarity item licensed by *n't*. Williams's point is now seen by comparing (7) with:

- (9) \*He was unhappy because of anything you said.

Unlike *n't* in (7), *un-* cannot license a negative polarity item within a following adjunct.<sup>8</sup> Similarly, as Williams points out:

- (10) He wasn't happy because of that, but because of this.
- (11) \*He was unhappy because of that but because of this.

Unlike *n't*, *un-* cannot license a contrastive adjunct pair with *but*. This difference between (10) and (11) holds, too, for adjectival complements paired with *but (only)*:

<sup>7</sup>As is well-known, sentential negation can be 'prefixal' in many languages, e.g. in Italian. On this and on other types of sentential negation in Italian dialects, see Zanuttini 1997. Cf. also Cinque 1999, 223, note 52.

<sup>8</sup>As Klima (1964) had noted, it is possible to have sentences like

- (i) They were unable to give anything much of their time.

in which a polarity item is within a complement. As Chris Collins notes (p.c.), this is also possible with strong NPIs, as in:

- (ii) He is unlikely to get here until midnight.

From the perspective of Collins and Postal (2014), this suggests that *un-* has raised up from within the polarity phrase.

(12) They weren't able to do this, but only to do that.

(13) \*They were unable to do this, but only to do that.

### 3.

Let us now return to (4) and assume that (4) is correct, i.e. that it is not accidental that *un-* is prefixal and not suffixal. If so, we can wonder why exactly (4) would be correct, given that no comparable restriction holds for sentential *n't*.

On the standard assumption that the scope of negation must be represented syntactically,<sup>9</sup> there is nothing surprising, from the perspective of antisymmetry, about the fact that *un-* precedes the adjective it has scope over.<sup>10</sup> If *un-* is a head, this is a special case of heads always preceding their complement. If *un-* is a Spec, then it's a special case of Specs always preceding their associated phrase.

If the scope of negation must be represented syntactically via asymmetric c-command, then at some point in the derivation *n't*, too, must precede the (entire) phrase that it scopes over. Yet in (5), *n't* does not precede *can*, despite *can* being part of the phrase that is in the scope of *n't*. A solution widely adopted for *n't* is that *can* in (5) starts out below *n't* and then moves up past it.<sup>11</sup> Prior to the movement of *can* past *n't*, *n't* does asymmetrically c-command the entire phrase that it scopes over.

The question that remains for *un-*, however, is why it cannot mimic *n't* and participate in a derivation in which a following adjective would move up past *un-*:<sup>12</sup>

(14) They're unhappy.

(15) \*They're happyun.

Starting from 'un happy', why could *happy* not raise, incorrectly yielding (15)? A proposal that comes to mind is as follows. Even though (14) is interpretively close to:<sup>13</sup>

(16) They're not happy.

the phrase minimally containing *un-* in (14) is 'smaller' than the phrase minimally containing *not* in (16).<sup>14</sup> Let us informally call the phrase minimally containing *un-* a

<sup>9</sup>Cf. Collins and Postal 2014, chap. 2 and references cited there. For arguments that scope is a matter of overt syntax, cf. Kayne 1998.

<sup>10</sup>Cf. Cinque 1999, 70 and Julien 2002, 191 on tense prefixes.

<sup>11</sup>And similarly for movement across French *pas* et al.; cf. Pollock 1989 and references cited there.

<sup>12</sup>Cf. also, with a verb stem:

(i) That table is unliftable.

(ii) \*That table is liftunable.

<sup>13</sup>Though see Horn 1989 on the distinction between contradictory and contrary readings.

<sup>14</sup>Cf. De Clercq and Vanden Wyngaerd 2016.



‘very small phrase’ and let us assume that it contains no subject position capable of remaining filled (or perhaps no subject position at all), as suggested by:<sup>15</sup>

(17) What made them unhappy?

(18) \*What made un them happy?

Assume further that such very small phrases allow for few or no movement operations (i.e. have few or no possible landing sites) within them. Assume more specifically that such very small phrases do not have enough ‘space’ for any adjective movement. If so, then the very small phrase reflected in *unhappy* will not allow any instance of adjective movement within it to produce *\*happyun*.<sup>16</sup>

Without antisymmetry, on the other hand, *\*happyun* (and *\*intelligentun*, etc.) could undesirably have had a suffixal *-un* asymmetrically c-commanding the adjective without any movement needing to take place.

It is also necessary to exclude the possibility that *\*happyun* could be derived by raising *happy* out of the minimal phrase containing *un-*. This exclusion might be attributable to some form of locality and/or (again only if antisymmetry holds) it might be understood in reference to an adjective-specific fact, namely to the fact that Italian adjectives cannot be followed by an object clitic, in contrast to (past or) present participles, as noted by Benincà and Cinque (1991, 609) and Kayne (1991, note 35). A relevant minimal pair provided by Guglielmo Cinque (p.c.) is:

(19) un apprezzamento espressoci da tempo (‘an appreciation expressed to-us from time’)

(20) \*un apprezzamento inespessoci da tempo

The past participle *espresso* in (19) can be followed by the object clitic *ci*, but the adjectivalized past participle *inespresso* in (20) cannot be.<sup>17</sup> On the assumption that verb-clitic order is due to verb raising,<sup>18</sup> (20) highlights the point that adjectives (here, even one based on a verb) are immune to a certain kind of movement.

That adjectives are limited in their movement possibilities is also seen in English, under the widely shared assumption that English partial VP-deletion of the sort seen in:

(21) They didn’t talk to Susan, but they did to Mary.

<sup>15</sup>Whether an *un-*initial very small phrase is smaller than a classical small clause (cf. Williams 1975) will depend on whether or not in, say

(i) You don’t want them unhappy, do you?

*them* can be taken to remain within the small clause. For relevant discussion, see Postal 1974.

<sup>16</sup>For the impossibility of such adjective movement to be due to a Negative Island effect (cf. Rizzi 1990), *\*happyun* would need to be distinguishable from *can’t*.

<sup>17</sup>For discussion relevant to the question of what ‘adjectivalization’ amounts to, see Bruening 2014.

<sup>18</sup>Cf. Kayne 1991 for general discussion. For a Romance language/dialect in which object clitics systematically follow even finite verbs, see Tortora 2015.

(22) They didn't invite Susan, but they did Mary.<sup>19</sup>

involves prior movement out of the VP of the phrase stranded by VP-deletion.<sup>20</sup> If so, then the non-strandability of AP noted by Baltin (2006, 763)

(23) \*They didn't become happy, but they did famous.

can be interpreted as reflecting the more limited possibilities of AP-movement as compared with PP- or DP-movement.

In conclusion, then, antisymmetry, combined with limitations on AP-movement and with the requirement that scope of negation must be represented syntactically in terms of asymmetric c-command, is capable of providing an account of the fact that English *un-* is a prefix and not a suffix.

#### 4.

Somewhat closer to *un-* than *n't*, though still not close enough to *un-* to bear directly or indirectly on (4), I think, is the English suffix *-less* in sentences like:

(24) John is clueless about phonology.

This *-less* certainly has something to do with negation, and it behaves like *un-* with respect to (9), (11) and (13), as seen in:

(25) \*They were clueless because of anything you said.

(26) \*They are clueless because of this but because of that.

(27) \*John is clueless about phonology, but only about syntax.

It is again uncontroversial to conclude that *-less* in (24), like *un-*, does not convey sentential negation.

The affixes *-less* and *un-* thus have in common their non-sentential character. For (4) to be correct, it must then be the case that *-less* is not an exact suffixal counterpart of prefixal *un-*, as seems plausible from the interpretation. The suffix *-less* also differs from the prefix *un-* with respect to the category of the stem in question. *Un-* is typically prefixed to an adjective,<sup>21</sup> while *-less* is suffixal, not to adjectives, but to nouns:

(28) John says he feels strengthless today.

(29) You've been moneyless for years now.

<sup>19</sup>There are speakers who reject the direct object case while accepting to a greater degree the PP one – cf. Williams 1977, 130.

<sup>20</sup>The movement idea goes back to Jayaseelan (1990); for different interpretations of what sort of movement is involved, see Kayne 1994, 76, Lasnik 1995.

<sup>21</sup>Though not quite always – see Horn 1989, 284.

vs.

(30) \*John says he feels strongless today.

(31) \*You've been richless for years now.

Let us agree, then, that *-less* is not an exact suffixal counterpart of *un-*, and therefore that the suffixal character of *-less* is in fact compatible with (4), repeated here:

(32) That English negative *un-* is prefixed, rather than suffixed, to the associated adjective is not accidental.

## 5.

A subsidiary question is the following. If it is true that *-less* has to do with negation and if the scope of negation must be represented syntactically, which suggests that what ends up as suffixal *-less* must (at some point in the derivation) asymmetrically c-command its associated noun (and therefore, by antisymmetry, precede it), how does this *-less* come to be a suffix, relative to that noun? In the spirit of the earlier discussion of *n't* and the references mentioned there, the obvious proposal is that the noun in question (obligatorily) moves past *-less*:<sup>22</sup>

(33) *-less* clue --> clue *-less*

The next question is, why is movement of this sort past an affix allowed with *-less*, but not with *un-*? Probably relevant is the close relation that holds between *-less* and non-affixal *without*,<sup>23</sup> which is illustrated in:

(34) John is without a clue about phonology.

(35) ?John says he feels without any strength today.

(36) You've been without money for years now.

These are very close in interpretation to (24), (28) and (29), with *-less*.<sup>24</sup> *Un-*, on the other hand, is not directly paralleled by *without*:

<sup>22</sup>That this movement is obligatory, as shown by *\*lessclue*, may follow from 'anti-optionality' of the sort considered by Chomsky (1986); and similarly for *writer* vs. *\*erwrite* and other cases mentioned by Di Sciullo (2005, 13).

<sup>23</sup>Thinking of German *-los*, it seems unlikely that English suffixal *-less* is closely related to English non-affixal comparative *less*, from which it differs in pronunciation (at least in my English, where the vowel of suffixal *-less* must be reduced and the vowel of comparative *less* must not be).

<sup>24</sup>In addition, Chris Collins (p.c.) points out the following, which is surprisingly close to acceptable,

(i) ?He has been neither money- nor power-less for years.

recalling, as he notes:

(37) John is unhappy.

(38) \*John is without happy.

The close relation between *-less* and *without* means that the negative character of *-less* is now indirectly reflected in the NPI-licensing property that *without* has.<sup>25</sup>

(39) We know that you left without any money.

(40) We would have been better off without any of you on our side.

English *without* is readily taken to be a preposition whose counterpart in many languages is a postposition. Now English is itself decidedly more prepositional than postpositional, but there is reason to think that English actually does have some postpositions. Examples are:<sup>26</sup>

(41) the *-ce* of *once, twice*

(42) the *by* of *whereby*; the *-fore* of *therefore*; the *with* of *wherewithal*

(43) the *about* of *whereabouts*

(44) in a more complex way, the *a-* of *two months ago*

The proposal now is that English *-less* is an affixal postposition, whose complement (for example, *clue* in *clueless*) comes to precede it in the general manner of complements of postpositions.

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(ii) He has been neither without money nor power for years.

<sup>25</sup>The locus of negativity in *without* may be *out* (assuming that *without* = *with+out*; cf. *within*), whose negative character is arguably reflected in

(i) out of; off of

vs.

(ii) \*in of; \*on of

with the *of* of (i) in turn related to that of

(iii) They emptied the glass of its water.

vs.

(iv) They filled the glass with/\*of water.

<sup>26</sup>On these, cf. Kayne 2014; on *wherewithal*, cf. also Kayne to appear d.

It is to be noted that since *-less* arguably scopes over *clue*, and since by earlier assumption, (negative) scope must be represented in terms of asymmetric c-command, it must be the case that at some point in the derivation *-less* asymmetrically c-commands *clue*. Given antisymmetry, *-less* must therefore precede *clue* at that point in the derivation. Consequently the derivation-final order whereby *clue* in fact precedes *-less* must come about via leftward movement.

This leftward movement of *clue* past *-less* is, however, not necessarily local complement-to-Spec movement,<sup>27</sup> and might in fact be phrasal movement.<sup>28</sup> (Whether or not there are languages with a prefixal counterpart of *-less* is a question that needs to be looked into.)

That *-less* can be an affixal postposition, in effect a suffix, is made plausible, as just discussed, by the close link between *-less* and the non-affixal adposition *without*. The postpositional status of *-less* might appear to clash with the adjectival character of *clueless*, etc., as in:

(45) a clueless person; a hopeless proposal; an endless discussion

This apparent clash, will dissolve, though, if Amritavalli and Jayaseelan (2003) are correct in taking adjectives in general not to be a primitive syntactic category,<sup>29</sup> but rather to be instances of nouns incorporating into Case. (Either *-less* then realizes some Case, or their proposal should be revised to replace Case with adposition.) If Amritavalli and Jayaseelan (2003) are on the right track, there is no need, as far as (45) is concerned, to think in terms of any notion of category change. Rather, English, like some other languages, has the property that certain noun+postposition combinations can act as pronominal modifiers; there is in fact no primitive category ‘adjective’ that ‘clue+less’ could ‘change into’.

One final point about *-less* and *without*. There is a difference between them that has to do with the size of the nominal they are associated with, in that *without* is compatible with various determiners, as seen in

(46) They were left without any hope.

(47) They found themselves without a (single) friend.

(48) Don’t leave without the wallet.

while *-less* is not:

(49) They were left (\*any) hopeless.

<sup>27</sup>Cf. Kayne 1994, 48-49, 2003, sect. 4.4; on the possible general absence of maximally local complement-to-Spec movement, cf. Abels 2003 and Grohmann 2003.

<sup>28</sup>Cf. Koopman and Szabolcsi 2000, Kayne 2003, note 5 on noun-incorporation, Jayaseelan 2010, Ott 2016; also Collins 2006 and Kayne 2008b on derived nominals (with a possible extension to cases like *legalize*).

<sup>29</sup>Cf. Kayne’s (2008b) proposal that there is a basic noun-vs.-verb-like distinction in the syntax, with no real room for any other basic category.

(50) They found themselves (\*a (\*single)) friendless.

(51) Don't leave (\*the) walletless.

In this respect, *-less* behaves on a par with what we informally call OV compounds:<sup>30</sup>

(52) John is an avid (\*the/\*a/\*any) newspaper reader.

This parallelism extends to ordinary plural *-s*, which in my English at least is excluded from such deverbal OV compounds, as illustrated by

(53) John is an avid newspaper(\*s) reader.

and similarly for *-less*:

(54) \*hopesless; \*friendsless; \*walletsless

The parallelism extends further to non-*s* plurals,<sup>31</sup> which are fairly good both in OV compounds and with *-less*:

(55) Mary is a real children lover.

(56) Their marriage is childrenless.

Why exactly compounds and *-less* share these properties remains to be fully understood. Of relevance is the fact that the plural restriction is also sometimes found phrasally, as in the well-known<sup>32</sup>

(57) something(\*s) else

as well as in cases brought to light in Collins (2007), such as

(58) Go to bed(\*s)!

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<sup>30</sup>Cf. also a modifier-containing example due to Chris Collins (p.c.)

(i) a chocolate cake-less party.

which recalls:

(ii) a real chocolate cake lover

<sup>31</sup>Cf. Kramer 2016, 548 on Amharic.

<sup>32</sup>Cf. the fact that the nominal part of English deverbal OV compounds has a lot in common with the nominals involved in non-word-like pseudo-noun-incorporation – cf. Massam 2001, 2009 and Lyutikova and Pereltsvaig's (2015, 307ff.) use of Pereltsvaig's (2006) 'small nominal', akin to Williams (1975) on small clauses.

(59) They went home(\*s) yesterday.

and in a similar vein

(60) That poor guy is in the hospital again.

(61) Those poor people are in the hospital(\*s) again.

even in the presence of the definite article. (Example (61) is possible to some degree with *-s* if read with a fully referential use of *the hospitals*.)

Moreover, the restriction concerning determiners seen in (49)-(52) itself recalls one having to do with determiners inside PPs, as arguably illustrated in French by:

(62) \*le prix de les maisons ('the price of the houses')

(63) le prix des maisons ('the price of-e houses')

In this particular case (and in some others in French), the *l-* of the definite article is obligatorily not pronounced. (For a wide range of comparable examples from many languages, see Himmelmann (1998).)

Deverbal compounds of the *newspaper reader* sort have certain properties in common with *-less*, as just seen; at the same time, their word order arguably interacts with ordinary syntax, in particular (but not only) if the following conjectures are (largely) correct:

(64) Deverbal OV compounds are never found in strict V-initial languages.

(65) Deverbal VO compounds are never found in strict head-final languages.

(As (should be) usual, the terms 'V-initial' and 'head-final' are informal, very approximate characterizations of certain derivation-final properties.) These conjectures are akin to Greenberg's Universal 27, mentioned early on in (1), and like his proposed Universal point to the existence of a single 'merge engine' that spans both syntax and what we conventionally think of as morphology.<sup>33</sup>

If we now move back from the link between *-less* and compounds to the link between *-less* and *without*, we can note the following discrepancy:

(66) Yours is not a hopeless proposal.

(67) \*Yours is not a without hope proposal.

Plausibly, this is a side effect of the difference in word order between postposition-like *-less* and preposition *without*; more specifically, (67) is likely to fall under Biberauer et al.'s (2014) FOFC or whatever the FOFC itself derives from.

<sup>33</sup>And perhaps also phonology – cf. Kayne to appear c.

## 6.

If (32) is correct, then English cannot, for the reasons given, have a suffixal counterpart of *un-*.<sup>34</sup> The question now arises as to whether other languages could have a suffixal counterpart of *un-*. One consideration has to do with Koptjevskaja, Tamm and Miestamo's (2015) saying, if I read them correctly, that even prefixal counterparts of *un-* are relatively rare cross-linguistically. Possibly, this might be related to Davison's (1978) point about negative phrases like *no book* being (relatively) rarer cross-linguistically than one might have expected. Why these might be (relatively) rare needs to be looked into. But let me take the position that there remains an important distinction between '(relatively) rare' and non-existent. This distinction will be of importance to the present paper if the following conjecture is correct.<sup>35</sup>

(68) No language has an exact counterpart of *un-* that is suffixal.

If (68) is correct, then I would take the earlier account proposed for English to carry over to all languages.<sup>36</sup> In which case, the language faculty would have the following properties:

- (69) a. Antisymmetry holds.  
 b. The scope of negation is represented syntactically, in terms of asymmetric c-command.<sup>37</sup>  
 c. An adjective cannot move past *un-* or any counterpart of *un-*.<sup>38</sup>

## 7.

I note in passing that the notion of affixal postposition found in the discussion of *-less* is matched by the notion of affixal preposition (*a-*, in this case<sup>39</sup>) arguably called for in:<sup>40</sup>

(70) They were standing atop the mountain.

<sup>34</sup>Here as elsewhere, I abstract away from the possibility that *un-* is bimorphemic, such that *-n-* is the negative morpheme proposed for the general case in English by Leu (2012, sect. 4.3).

<sup>35</sup>Cf. the fact that the index of Horn 1989 has an entry for 'prefixes, negative', but none for 'suffixes, negative'.

<sup>36</sup>Horn (1989) mentions in other contexts the possibility of a 'Neg-First' principle that seems, though, to have little plausibility cross-linguistically, in particular given the numerous languages in which the negative element is sentence-final or near to that; cf. for example Amritavalli and Jayaseelan 2005 on Dravidian languages, Shibata 2014 on Japanese, Simpson and Syed 2014 on Bangla (in finite clauses), and Dryer 2009 on Central African languages. From the text perspective, such (near-)final negation must have been moved across, in all likelihood by phrasal movement, on which, cf. Nkemnji 1995 and Biberauer 2008, sect. 3.3.

<sup>37</sup>Cf. Collins and Postal (2014).

<sup>38</sup>If the conjecture in question were to turn out to be incorrect, then at least one of (a-c) here would have to be incorrect, presumably (c).

<sup>39</sup>Cf. Kayne 2016, sect. 10.

<sup>40</sup>In both cases, the formal status of affixal vs. non-affixal needs to be elucidated.



(71) They went aboard the ship.

with non-affixal counterparts

(72) They were standing on top of the mountain.

(73) They went on board the ship.

as well as in Appalachian English:

(74) I knew he was a-tellin' the truth...

Wolfram and Christian (1975, 100ff.), from which this example is taken, note in particular (p. 102), that “A-prefixing does not typically occur following a preposition” and suggest that “This restriction is due to the fact that *a*-prefixing originally derives from the preposition *on* or *at*, prepositions which would be in conflict with other prepositions such as *for*, *from*, *by*, etc.” This seems basically right, especially if we take the (affixal) prepositional status of this *a* to hold in contemporary Appalachian English, too.

## 8.

In conclusion, a combination of antisymmetry plus reduced movement options for adjectives in the context of very small phrases is capable of providing an account of the fact that English has prefixal *un-*, rather than suffixal *un-*. If English is in this respect typical, then the proposed account will have universal validity.

A key component of this account is that antisymmetry extends to what we think of as morphology, leading to a necessary asymmetry between prefixes and suffixes,<sup>41</sup> with the latter unable to asymmetrically c-command an associated stem.

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<sup>41</sup>Cf. Newell et al. 2017, 17. Prefix vs. suffix differences imposed by antisymmetry are paralleled by antisymmetry-imposed differences between preverbal and postverbal pronominal clitics; cf. Benincà and Cinque 1990. (The Itelmen prefixes discussed in Bobaljik and Wurmbrand 2001 may be akin to Romance pronominal subject clitics.)

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Richard S. Kayne  
richard.kayne@nyu.edu



## When the syntax is not not as simple as it seems\*

Hilda Koopman

UCLA

### 1. Introduction

A particular type of mismatch between the syntax and the semantics can be found in sentences with *can't seem* like the one in (1) (cf. Langendoen 1970, Jacobson 2006, and Homer 2011, the latter of which inspired this squib).

- (1) I can't seem to get away from verbal complexes.
- a. *Paraphrasable as*: It seems that I can't get away from verbal complexes
  - b. *Not as*: It can't seem that I get away from verbal complexes.

As the paraphrases of (1) show, *seem* takes scope over *can't* in (1), not under it. This is surprising as the syntactic structure of (1) looks rather straightforward. *Can* appears to be in T, *not* in POL, and *seem* heads a VP taking an infinitival complement, out of which the subject has raised. The mismatch between the apparent syntactic structure *can't > seem > to get away* and its interpretation raises the question how it should be accounted for.

I will argue that the surface structure must result from a more complex syntactic derivation, which turns out to account for the scope of (1) in (1a).

The apparent scope reversal is restricted to subject raising *seem to*, ability modal *can*, and *not* or any downward entailing expression. These are all required.

- (2) a. No cat/Few cats/Only the mother can seem to figure this out.  
b. They can rarely seem to get enough food.

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\*This is for you, my friend. May we continue to enjoy much future time together. I am particularly pleased to honor you by showing that the Germanic OV languages provide crucial insights into the derivation of this English construction. A first version of this squib was written on a beautiful terrace in Buch in Tirol. For comments and feedback on this squib, I thank Nikos Angelopoulos, the students in my winter 2016 seminar at UCLA, Chris Collins, Viola Schmitt, an anonymous reviewer, and your two terrific editors, Clements May and Edwin Williams.

Homer (2011) presents this scope puzzle as follows, with  $E_{DE}$  referring to a downward entailment expression, and CAN to an abstract (ability) modal.

- (3) a. Surface order (ignoring V-to-T movement):  
 $E_{DE} \dots \text{can} \dots \text{seem}$   
 b. Scopal relations:  $\text{SEEM} > E_{DE} > \text{CAN}$

The relation between the surface structure in (1) and its interpretation is an issue of the division of labor between the syntactic and interpretative component, and not surprisingly the existing literature present all possible points of view.

In early generative work, Langendoen (1970) argued for a syntactic transformation with *can't* raising from below *seem* in subject raising environments. In this account, there is no scope reversal: the linear order in (1) is derived from an underlying syntactic merge structure that encodes the scope, as in (3b). As I will argue in this squib, there is strong empirical evidence that this is correct, and my analysis is in essence a modern update of Langendoen (1970). Jacobson (2006) also denies there is a scope mismatch. She takes the surface syntax to reflect a *not* > *can* > *seem* hierarchy, and proposes that the semantic composition is based on this syntactic structure. The syntax-semantics mismatch in her account is an illusion. Since her account fails to capture the properties discussed in section 2, I will not further address it here. Homer (2011) focuses on the semantics of the *can't seem to* construction. He takes the surface syntax as given, and shows that *seem* is a PPI, which, he proposes, must raise out of downward entailment contexts in the *covert* syntax. In his account there is indeed a mismatch between the syntactic representation and its interpretation, with the interpretative component responsible for deriving the observed scope.

Theoretical expectations depend on specific assumptions. Within antisymmetry (Kayne 1994) linear order reflects asymmetric c-command. C-command, as is widely assumed, corresponds to scope. If scopal elements are never interpreted higher than where they occur in the syntax, as argued in Kayne 1998, the linear order should map onto the scope hierarchy (i.e. order of Merge). Given antisymmetry, the expected hierarchy of syntactic merge is therefore  $\text{SEEM} > E_{de} > \text{CAN}$ , with the surface order derived from that order, and not from  $E_{de} > \text{can} > \text{seem} > \text{to VP}$ . This provides a strong motivation to probe the syntax of this construction further and see if there is independent syntactic evidence for a  $\text{SEEM} > E_{de} > \text{CAN}$  hierarchy.

In this squib, I argue that the syntax is indeed not as simple as it seems. Section 2 discusses independent evidence that the syntactic merge order *must* be the scope hierarchy, as expected in antisymmetry. The linear order *must* therefore result from a more complex syntactic derivation than Jacobson or Homer assume. In section 3.1, I will argue that crucial insights into the derivation for English come from comparative syntax, in particular from the syntax of close cousins of English, the Germanic OV languages. The analysis I will sketch will show how complex verb formation yielding verb clusters, the shared syntax of infinitival *te* (Dutch), *zu* (German), English *to*, and pied-piping parameters, in the sense of Koopman & Szabolcsi (2000), all conspire to yield the properties of this particular construction in English.



## 2. Establishing the syntactic hierarchy

There are two arguments that abstract CAN merges with the VP before *seem* and *to* do. This means that the surface order is derived by movement, as detailed in section 3.

### 2.1 Idioms

Idioms provide the first piece of evidence that the VP is the complement of *can*, not the complement of *seem*. As shown in Langendoen 1970, ex. (2) and (3), *can VP* or *not can VP* can be idiomatic:

- (4)
- a. Abe can't (seem to) afford paying the rent.
  - b. Sam couldn't (seem to) stand the sound of jackhammers underneath his bedroom window.
  - c. Tevye couldn't (seem to) tell the difference between right and left.
  - d. Harry can't (seem to) help falling asleep.

The expression *can afford* in (4a) is an idiom, with the heads *can* and *afford* fixed parts of the idiomatic expression, excluding the complement vP *pay(ing) rent*. Neither *\*I afford paying rent* nor *\*I don't afford paying rent* are well formed. The same holds for (*can stand*) in (4b), and (*can tell*) in (4c). In (4d), we find an idiomatic sequence (*DE can help*). Idiomatic sequences *can seem (to (V))* with all heads, including V fixed, appear to be unattested. What can we conclude? What do we know about the shape of possible idioms? Sportiche (2005), building on Koopman & Sportiche (1991), argues that idioms must minimally contain an uninterrupted sequence of heads. From this it follows that idiomatic *can afford* or *not can help* must form uninterrupted sequences of heads at some point in the derivation. Given the standard assumption that idiomatic composition (just like semantic composition) proceeds bottom up on the basis of the syntactic structure, *can afford*, hence *can V* or *not can help*, hence *not can V* must be uninterrupted sequences of heads in the syntax excluding *seem*. This fixes the syntactic hierarchy as *seem to* > DE > CAN > V, which turns out to correspond to the scopal hierarchy. *Can* takes a bare VP complement, as modals usually do, and a DE merges with *can VP*. *Seem to* in turn combines with the result. This means that a further (syntactic) derivation is called for to derive the linear order.

### 2.2 Aspect

A second argument confirms the relative order of merge of *seem to* and *can*, as *seem to* > DE > CAN. Homer (2011) points out that the *can't seem to* construction is exempt from an aspectual restriction that present tense *seem* otherwise always imposes. The aspect on the main embedded predicate must be stative (or receive a non-episodic reading), with the exception of the *can't seem to* construction.

- (5)
- a. \*They seem to sleep.
  - b. They can't seem to sleep.

- (6) a. \*He seems to swim the butterfly.  
 b. He can't seem to swim the butterfly.

This is expected, however, if *sleep* is directly embedded under CAN, as argued above, and ASP is higher than *can*. Then CAN should satisfy the aspectual restrictions on the infinitival imposed by present tense *seem* by virtue of the structure, which it does.<sup>1</sup>

- (7) a. ...T<sub>pres</sub> seem to THEY NOT ASP CAN sleep  
 b. ...T<sub>pres</sub> seem to HE NOT ASP CAN swim the butterfly

### 2.3 Idioms: Syntax or LF?

The argument above is based on the standard assumption that idiomatic composition is based on the syntactic structure. But could idioms be composed at LF instead? If so, this could still be compatible with a syntactic hierarchy *not* > *can* > *seem to* > *V*.

Homer (2011), taking *not* > *can* > *seem to* > *V* to represent the syntactic order of merge, assumes that idiom formation of *can* and *V* takes place at LF.<sup>2</sup> As he suggests, *can* semantically composes with *V* once the PPI *seem*, has covertly moved out of the downward entailment prison in which the syntax has put it (to a yet undetermined position), where it takes scope over *can*. This proposal faces serious issues, as *seem* or its copy structurally intervenes between *can* and *V*, so idiomatic composition must be assumed to be non-local, or syntactically merged elements must be argued to be structurally absent at LF, a non conventional (and undesirable) assumption.

This account in essence mimics the syntactic structure: *seem* or its copy does not count as intervening between *can* and *V*, because it is not merged there, and *seem* always takes scope over a DE expression, because that is the hierarchical order to start with. How to derive the linear order and motivate it independently is a syntactic problem, not an issue of covert syntax, or non local semantic composition.

Are there other options to salvage the basic *not* > *can* > *seem to* > *V* syntactic hierarchy that I am arguing against? Forming the idiom by structurally lowering *not can* below *seem* at LF is not allowed. "Lowering" (i.e reconstruction) is only possible if a structurally lower copy in a movement chain is interpreted, as in the syntactic account I am arguing for. The question then is if there some other way to lower *not can* at LF, using known semantic tools. The only real option, as suggested to me by Clemens Mayr, would be some version of neg-lowering via some presupposition of *seem*. However, under such an approach *not can* crucially will not take literal narrow scope with respect to *seem*, and it will be unable to semantically combine with *V* at LF.

I therefore conclude that the syntactic hierarchy of merge **must** be *seem to* > E<sub>de</sub> > CAN > *V*. Since this happens to represent the scope hierarchy, there is no syntax LF mis-

<sup>1</sup>The question of how matrix T in the *seem* clause can "see" the embedded ASP can be reduced to locality in the analysis proposed below, as the string HE NOT ASP CAN raises past *seem* into the T region.

<sup>2</sup>The same suggestion was made by an anonymous reviewer.

match, nor is any need for a different understanding of the aspectual restriction discussed in 2.2.

### 3. A sketch of the syntactic derivation – Insights from Germanic OV languages

When *seem* takes a tensed complement clause, the expected surface order and scope in (8a) is found. But when *seem* takes a *to* infinitival, as in (8b), the syntactic derivation that yields the order in (8c) from (8b) faces non-trivial problems.

- (8) a. ...seems that I can no longer get away from verbal complexes  
 b. ... seem to I NO LONGER CAN get away from verbal complexes →  
 c. I can no longer seem to I NO LONGER CAN get away from verbal complexes

A chunk of structure must have raised from the infinitival complement, past *seem* into the T region of the *seem* clause, yielding (8c). Apart from subject raising, and perhaps Neg-raising, raising *can* past *seem* so *can* but not *seem* ends up in T is not a known process for English. The movement of *can*, or a constituent containing it, cannot be head movement because of minimality. It must therefore be achieved by phrasal movement. Since only constituents can move, a phrase containing *can* must move as a phrasal remnant without its VP complement, which ends up preceded by *to*. I assume that the remnant that moves into the *seem* clause does not just contain the ability modal *can*, but also a DE expression *no longer* and the subject.<sup>3</sup> This will account for why each element has a necessary role to play in the converging derivation. Individual elements subsequently extract from the moved remnant. As I show in the next sections, bringing in the syntax of the Germanic OV languages, helps understand how this peculiar and restricted construction can arise from general principles. The first question then is how a remnant is created (properties of *to* play a crucial role), the second is how the remnant containing *can* end up in the *seem* clause (via a verb cluster, or complex predicate formation, as in the Germanic OV languages), and the third is why a DE expression is required (DE expressions raise into the T-region, and pied-pipe *can* bringing it closer to T than *seem*).

#### 3.1 Verbal complexes: a verbal complex in English

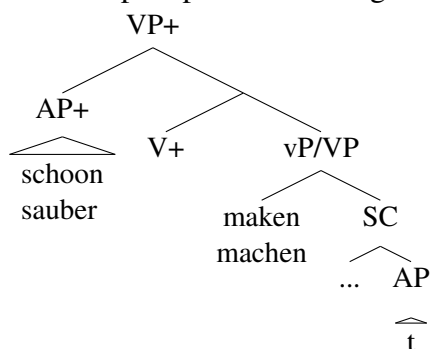
Koopman & Szabolcsi (2000) (henceforth K&S) motivate a uniform account for verb clusters (i.e. verbal complexes) in Dutch, German (as well as Hungarian). *Seem* and *CAN* are typical clustering verbs in Dutch and German, and I will simply extend the (fully specified) analysis to the English *cannot seem to* construction, and show how it can derive the properties of the *cannot seem to* construction (and its restrictions) in English as well.

Here are crucial analytical ingredients of our analysis: (i) complex predicate formation is represented as a specific syntactic configuration (slightly larger than VP, we called it VP+, sometimes labeled as PRED), as in (9). This configuration characterizes particle

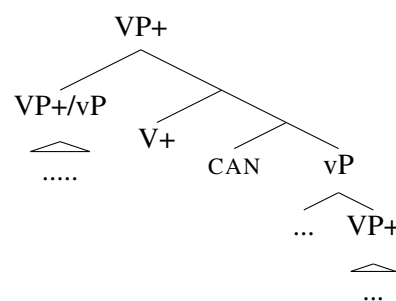
<sup>3</sup>In fact any element which can independently appear between *can* and the subject, like adverbs, and aspect, seem to be able to raise in this construction as well.

constructions (*opbellen* (D), *anrufen* (G), *call up*), adjectival small clauses (*schoon maken* (D), *sauber machen* (G), (*make*) *clean*), “noun incorporation” (*piano spelen* (D), *Klavier spielen* (G), *play piano*), and verb clusters (*gaan kan/kan gaan* (D), *gehen kan* (G), *can go*, *op kan bellen/kan opbellen* (D), *anrufen kan* (G), etc.). As is well-known, the verbal part is a separate constituent, as shown by verb second, participle formation, and *te/zu* infinitives. (ii) Clustering verbs *can*, *seem*, *appear*, *want*, *try*, *make*, etc. must form a complex predicate, i.e. minimally attract a VP+. (iii) Complex predicate formation interacts with language specific pied-piping parameters, yielding different possible outputs, as in (10), and finally (iv) the structures interact with individual requirements imposed by other syntactic atoms (infinitival morphology, *to*, etc.) These movements, we showed, are overt phrasal (remnant) movements, driven by the need to check features in strictly local configurations (Spec-head, i.e. “upward agree”). The derivations are fully spelled out and obey the extension condition.<sup>4</sup>

(9) The complex predicate configuration (10)



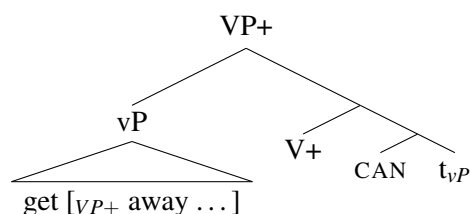
*Can* attracts VP+, which could depending on the language, pied-pipe vP.



### 3.2 A derivation

The derivation here starts at the point where *CAN* merges with a bare vP complement containing a complex predicate [<sub>vP</sub> *get* [<sub>VP+</sub> *away*] *get* ...]. Since *CAN* must form a complex predicate, it minimally attracts this VP+ constituent to its own VP+. VP+ pied-pipes the lexical projection vP, as shown in (11).

- (11) a. *CAN* merges with vP  
 b. *CAN* attracts VP+ (*away get*)  
 to form a verbal complex  
 c. VP+ pied-pipes vP *get away*  
 ...

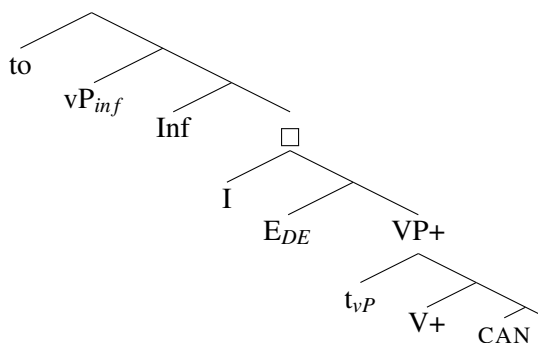


In the next step of the derivation, a DE expression is merged (12a), as well as the subject DP, as in (12b) (either E(externally) merged, or “I merged” (moved): nothing hinges on this). When the complement of *seem* includes an infinitive (as opposed to an adjectival small clause), *to* must appear in the structure. As in Dutch and German *to* (and *inf*) attract

<sup>4</sup>I depart from K&S in allowing subextraction from a remnant.

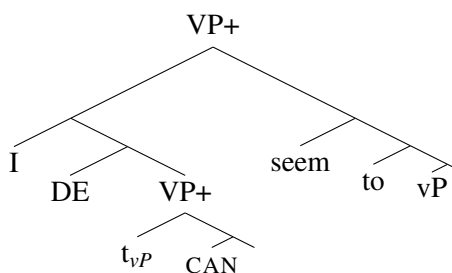
an “infinitival VP”. Which VP in (11) is attracted? The vP in Spec, VP+, or, perhaps more expected, the VP headed by *can*? The output of the latter derivation is excluded: *can* will fail to combine with *to*, since *can* lacks an infinitival form.<sup>5</sup> *To* will instead attract the local vP (get away from..), which is a licit case of specifier movement, hence simply an option that UG allows. This step creates the desired remnant constituent, with only *can* remaining in the VP+, which will be attracted by the complex predicate with *seem*.

- (12) a. Merge E<sub>DE</sub> *no longer*  
 b. merge Subject *I*  
 c. Merge INF, attract vP (not *can*)  
 d. Merge *to*  
 □ marks the node that VP+ will pied-pipe in the next step



In the next step, *seem* merges, scoping over DE and *can*. *Seem* must form a complex predicate, it attracts VP+, now containing only CAN. I assume that VP+ pied-pipes the subject and the DE expression. (V+ heads omitted for convenience).

- (13) a. Merge *seem*, attract VP+ containing CAN  
 (V+ omitted for convenience)  
 b. VP+ with CAN pied-pipes the DE *no longer* and the subject *I*.  
 NB: This step “smuggles” CAN past *seem*.



As we observe, *seem* is not c-commanded by the DE expression. Note that this step *must* be the highest point at which scope is calculated: even though *cannot* ends up marking the polarity of the clause as negative,<sup>6</sup> as the Horn tests show (*He can't seem to do this, can he?*), it does not appear to interact with the calculation of relative scope over *seem*.

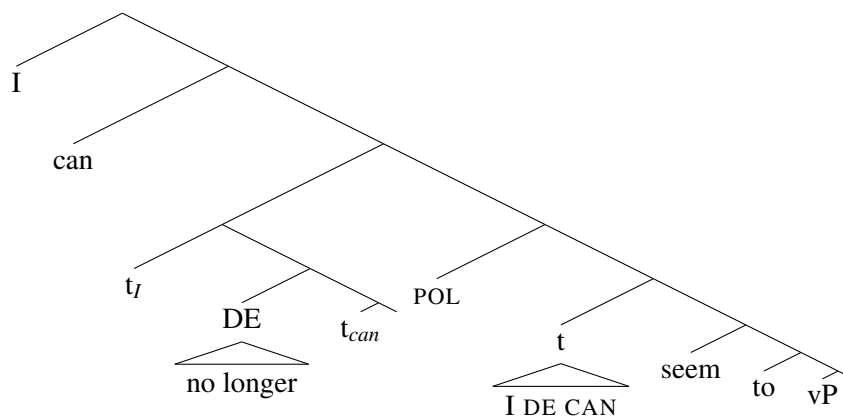
In the next step in the derivation POL is merged. POL attracts the DE (which perhaps marks POL as negative). I assume not only negative phrases, but all downward entailment expressions in question end up in the T-region, VP external. If this time DE pied-pipes CAN, we can understand why a DE expression is a necessary ingredient in the construction: it further shifts *can* to a higher position in the tree, and thus explains why *can*, but not *seem* ends up closer to T: movement to POL, brings CAN closer to T than *seem* through

<sup>5</sup>If abstract ability CAN moved to *to*, this derivation would have to result in *to be able to* with *be* required to satisfy the properties of *to*, and showing the surface distribution of the *to* complement in which it is contained.

<sup>6</sup>Many thanks to Chris Collins for discussion of this issue.

pied-piping. When T merges, *can* is closest to T, and merge with T, as we know it must. Finally, the subject merges in Spec, TP, as shown below, completing the derivation.

(14)



#### 4. Conclusion

The syntax of the *can't seem to* construction in English turns out to not be as simple as it seems. Probing the syntactic structure yields independent evidence for the particular syntactic hierarchy that underlies the syntactic derivation, and shows that the syntactic hierarchy is also the scopal hierarchy, as expected under antisymmetry. There is no scope mismatch between the syntactic structure and the interpretation.

I have argued for a derivation in which complex verb formation, as abundantly observed in the sister Germanic OV languages, also underlies the derivation of the surface order in this English construction, which wears its Germanic syntax on its sleeve, and used the assumptions, derivations and parameters argued for in Koopman & Szabolcsi 2000, with pied-piping possibilities (and who pied-pipes who in different combinations) playing an important role in the derivation, as does *to*, which turns out to be instrumental in forming the remnant. Further restrictions, questions and implications will (have to wait to) be addressed in future work.

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Hilda Koopman  
koopman@ucla.edu





## In Soviet Russia, alcohol is dependent on you\*

Manuel Križ

Institut Jean-Nicod (ENS, EHESS, CNRS)  
Département d'Études Cognitives, École Normale Supérieure, PSL Research University

### 1. Introduction

Russian, like many other languages, has a means of marking indefinite DPs, in particular those headed by numerals, as semantically dependent on some plurality, in the sense that for every member of the plurality, the witness for the indefinite is to be chosen separately. In Russian, this is achieved by means of the preposition *po*.<sup>1</sup> (1), for example, means that the boys drank one bottle each — they cannot have shared.

- |     |                                 |     |                                  |
|-----|---------------------------------|-----|----------------------------------|
| (1) | Mal'čiki vypili po butylke.     | (2) | Každyj mal'čik vypil po bulylke. |
|     | boys drank PO bottle            |     | every boy drank PO bottle        |
|     | 'The boys each drank a bottle.' |     | 'Every boy drank a bottle.'      |

The appearance of *po* is licensed not only by definite plurals, but also by the quantifier *every*, as shown in (2).<sup>2</sup> This makes it tempting to think that *po* is simply a marker of low scope with respect to a quantifier: the standard silent distributivity operator, attached to the verb phrase, in (1), and the universal quantifier in (2). Indeed, this idea has been taken as the basis of an analysis of similar dependency markers in other languages (Brasoveanu & Farkas 2011, Henderson 2014). Other authors have ascribed independent distributive force to such dependency markers while attempting to also explain their compatibility with overt universal quantifiers (Balusu 2006, Cable 2014, Kuhn to appear).

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<sup>1</sup>In fact, there are two different *po* in Russian. One assigns dative case and goes with bare indefinites and indefinites headed by the numerals *odin* 'one', *tysjača* 'thousand', *million* 'million', *milliard* 'billion', and those numerals which end in *odin*. The other goes with plural indefinites headed by other numerals and assigns nominative case (Pesetsky 2013). The latter has a slightly greater range of uses (Pereltsvaig 2008), but both behave alike on all points discussed in this note.

<sup>2</sup>In addition, *po* is licensed by adverbial quantifiers over times and occasions, and in habitual and generic statements (e.g. Kuznetsova 2005, Pereltsvaig 2008).

The purpose of this note is to point out that Russian *po* differs in its meaning from other dependency makers on indefinites that can be found in languages such as English and Hungarian, and to present a number of puzzles that are posed by this element.

## 2. Homogeneity and *po*

### 2.1 Homogeneity

Plural predication is trivalent, in that sentences with definite plurals (and their negations) are sometimes neither true nor false. This phenomenon is known as *homogeneity*.<sup>3</sup>

- (3) The girls danced.  
**true** iff all the girls danced.  
**false** iff none did.  
**undef.** iff some, but not all did.

Negation simply switches around truth and falsity, but leaves undefinedness alone, so that both (3) and its negation are undefined when only some of the girls danced.

### 2.2 Homogeneity removal with explicit quantification

This trivalence effect disappears with overt markers of distributivity (Schwarzschild 1994, Löbner 2000), such as adverbial *each*, but is present with silent distributivity.

- (4) Context: *Some, but not all of the boys ate a sandwich.*  
 a. The boys each ate a sandwich.      **false**  
 b. The boys ate a sandwich.            **undef.**

Notably, homogeneity also disappears with dependency-marked indefinites in English (adnominal *each*) and Hungarian (reduplicated numerals).<sup>4</sup> (5a), and its counterpart in Hungarian, are plainly false as soon as one boy neither ate nor partook in a sandwich.<sup>5</sup>

<sup>3</sup>Schwarzschild 1994, Löbner 2000, Gajewski 2005, Križ 2015.

<sup>4</sup>The points made here about English adnominal *each* appear to replicate with German adnominal *je(weils)*. Data are not currently available for the numerous dependency-marked indefinites in other languages.

<sup>5</sup>Things are more involved when not every boy ate a sandwich of his own, but every boy at least shared a sandwich (Márta Abrusán, p.c.). In this case, the judgements for Hungarian in the text replicate when the dependent noun phrase is focused; for example, (i), where focus is marked through movement, is true in this situation.

- (i) A fiúk nem egy-egy sendvicset ettek.

However, the judgement is unclearer for (6b), and it is possible that that sentence incurs a homogeneity violation in such a situation. This would actually be expected, since it would be due to homogeneity with respect to a sandwich, whereas the dependent numeral is supposed to remove homogeneity with respect to

- (5) a. The boys ate one sandwich each.  
 b. A fiúk ettek egy-egy szendvicset.  
 the boys ate one-one sandwich

To the extent that the simple syntactic negations of these sentences are acceptable, they seem to be quite true in such a situation. In general, these sentences are most natural when uttered with emphasis on negation in response to an assertion of their positive counterpart.

- (6) a. The boys didn't eat one sandwich each.  
 b. A fiúk nem ettek egy-egy szendvicset.  
 the boys not ate one-one sandwich

As a further test, one can see what happens when clauses with a dependency marker are embedded under an inherently negative verb such as *doubt*. With definite plurals, we clearly see the pattern of inference that emerges with homogeneous and non-homogeneous sentences:

- (7) a. I doubt that the girls danced.  $\rightsquigarrow$  I think that no girl danced.  
 b. I doubt that the girls all danced.  $\rightsquigarrow$  I think at least one girl didn't dance.

By this diagnostic, too, English and Hungarian sentences with dependency markers come out as non-homogeneous.

- (8) a. I doubt that the boys ate one sandwich each.  
 $\rightsquigarrow$  I think at least one didn't eat a sandwich or shared.  
 b. Kétlem, hogy a fiúk ettek egy-egy szendvicset.  
 doubt.1SG that the boys ate one-one sandwich

This constitutes a new argument for Kuhn's (to appear) contention that dependent indefinites of the Hungarian type should be analysed as having their own distributive/quantificational force, and not, as it were, as parasitic on the silent distributivity operator.<sup>6</sup>

the plurality of boys, on which it is dependent. The predicate *ate a sandwich* is undefined of an atomic individual that ate only part of a sandwich, and so the (non-homogeneous) universal quantification over boys is still undefined if everyone at least shared a sandwich but not everyone had one of his own (cf. Križ 2015). How precisely focus manages to remove this effect is unclear, but the observation fits with a general tendency of homogeneity-like effects to disappear under focus.

It is plausible that the situation in English is, in fact, similar, depending on whether there is narrow focus on *each*. We will leave this as a matter for further investigation.

<sup>6</sup>On this view, a challenge is posed by the fact that Hungarian reduplicated numerals are also licensed by *every*. Kuhn's formal system is set up in such a way that the quantificational force of the dependent indefinite is effectively vacuous in this case. However, neither his framework, nor any other incarnation of the Plural DRT (Brasoveanu 2006) on which it is based, is currently equipped to handle homogeneity-based trivalence and the homogeneity-removing effect of quantification. Further technical developments will be necessary to remedy this.

### 2.3 Homogeneity and Russian *po*

Russian *po* differs from the aforementioned cases in that it does not remove homogeneity. To the extent that plain negated sentences with *po* are acceptable, the interpretation reported is in accordance with homogeneity:

- (9) ??Mal'čiki ne polučili po knige.  
 boys not received PO book  
 'The boys didn't get a book.' ~> None of them got a book.

In contrast, homogeneity clearly disappears when there is an overt quantifier above *po*:

- (10) Mal'čiki ne každyj polučili po knige.  
 boys not each received PO book  
 'The boys didn't all get a book.'

Embedding under *not believe* and *doubt* also confirms a homogeneous interpretation:

- (11) Ja ne dumaju / somnevajus', čto mal'čiki prinesli po cvetku.  
 I not think / doubt that boys brought PO flower  
 'I doubt that the boys brought a flower.' ~> I think no boy brought a flower.

For the non-homogeneous pattern, an explicit universal quantifier is needed:

- (12) Ja ne dumaju / somnevajus', čto každyj mal'čik prinës po cvetku.  
 I not think / doubt that every boy brought PO flower  
 'I doubt that every boy brought a flower.' ~> I think at least one didn't bring a flower.

Another hallmark of homogeneity is the fact that undefined sentences are most naturally rejected not with *no*, but with some other, more hesitant-sounding expression. In English, this function is served by *well*, and a similar device exists in Russian, which is employed also in the presence of *po*.

- (13) Context: *The girls went to a café. All of them except Mary had cake.*  
 A: The girls had cake at the cafe. V kafe devuški s''eli po pirožnomu.  
 B: Well, Mary didn't. Nu počemu že, Maša ne ela.  
 B': ??No, Mary didn't. ??Net, Maša ne ela.

Only when homogeneity is removed by an overt (in this case, adverbial) quantifier is rejection with *no* fully natural:

- (14) A: The girls all had cake. Devuški každaja s''eli po pirožnomu.  
 B: No, Mary didn't. Net, Maša ne ela.

### 3. Distributivity in Russian

Taken on its own, the fact that *po* does not remove homogeneity, unlike dependent indefinites in other languages, suggests that it is, indeed, simply a marker of low scope with respect to a silent distributivity operator. Such an analysis, however, faces the obstacle that the silent distributivity operator does not, in fact, seem to exist in Russian (Pereltsvaig 2008). Unlike its English counterpart, (15) has no reading on which the book is allowed to vary by boy.

- (15) Mal'čiki pročitali knigu.  
 boys read book  
 'The boys read a book.'

Furthermore, Russian has a class of indefinite determiners which have been argued to mark low scope with respect to a quantifier (Yanovich 2005, Pereltsvaig 2008). These so-called *nibud'*-indefinites cannot appear with a definite plural without an overt distributor *each*, which would be inexplicable if a silent distributivity operator were available.

- (16) Mal'čiki \*(každyj) pročitali kakuju-nibud' knigu.  
 boys each read which-NIBUD' book  
 'The boys each read some book.'

One might think that silent distributivity in Russian, is, in one way or another, blocked by the explicitly distributive alternative with *po*. This, however, can be shown not to be the case. Prepositional phrases with *po* cannot be used in object positions other than those that would normally be occupied by a direct accusative object; they cannot, for example, appear in the position of a dative complement of the verb. If some kind of blocking were at play, silent distributivity with respect to a dative argument should then be available, since *po* cannot be used here, but this is not the case. (17) never allows each girl to have helped a different boy.

- (17) Devočki pomogli (\*po) mal'čiku.  
 girls helped PO boy.DAT  
 'The girls helped a boy.'

This leaves two possibilities. Either Russian does have a silent distributivity operator, but its appearance is somehow syntactically dependent on *po* so that it can never appear without it; or else Russian does not have silent distributivity at all and *po* has quantificational force, but unlike other dependency markers, it keeps homogeneity (in the same way that the silent distributivity operator, which of course also has quantificational force in that it quantifies over atomic individuals, does).

An argument from Kuhn (to appear) points in the direction of the second possibility. Kuhn discusses the following Hungarian sentence:

- (18) A diákok két előételt és egy-egy főételt rendeltek.  
 the students two appetiser and one-one main.dish ordered  
 ‘The students ordered two appetisers (together) and one main dish (each).’

(18) conveys that the students collectively, for the whole table, ordered two appetisers, and that in addition each of them ordered one main dish. Kuhn points out that if a silent distributivity operator were present at the VP level to distribute the predicate over the plurality of students, then no reading could be obtained on which only two appetisers were ordered collectively.<sup>7</sup> Instead, both the two appetisers and the main dish would be interpreted in the scope of distributivity and could vary by boy. Since there cannot be silent distributivity here, the argument goes, the dependent indefinite must be contributing its own quantificational force (which does not also capture the regular indefinite it is conjoined with). The same argument can be made for Russian *po* as well:

- (19) Mal’čiki zakazali dve kolbaski i po bokalu vina.  
 boys ordered two sausages and PO glass wine  
 ‘The boys ordered two sausages (together) and one glass of wine (each).’

Together, these arguments indicate that Russian *po* should be analysed as having its own quantificational force in a way similar to the distributivity operator that keeps the homogeneity of plural predication. However, this needs to be implemented in such a way that its quantificational force is without global effect in the presence of an overt universal quantifier, as such quantifiers are compatible with *po* and succeed in removing homogeneity even in its presence (cf. (10) above). Further technical developments to introduce trivalence into a system derived from Plural DRT (Brasoveanu 2006) / Dynamic Plural Logic (Nouwen 2003) or related frameworks (such as Dotlačil’s (2011) version of team logic) may lead to a solution to this problem.

#### 4. Independent dependency

Perhaps the most puzzling property of Russian *po* is its ability to appear, under certain unclear pragmatic circumstances, when there is no plurality anywhere in sight to distribute over. One such case is (20), uttered with a single addressee.

- (20) Skažu po bol’šomu sekretu.  
 say.FUT. 1SG PO big secret  
 ‘I’ll tell you a big secret.’

<sup>7</sup>Letting the indefinite *two appetisers* take wide scope over the distributivity operator would merely result in a nonsensical reading on which every student ordered the same token-identical two appetisers.

If the addressee of (20) were a plurality of individuals, the presence of singular *po* might be expected as an indication that the speaker is going to tell a big secret to each of the multiple addressees. In the absence of this condition, with a singular addressee, the appearance of *po* is mystifying.<sup>8</sup>

The same can be observed with the *po*-numeral construction. (21) can be uttered by a speaker who has just asked about one and the same thing five times in a row. In this case, there is not even an implicit plurality of events, subjects matters, or times such that five askings happened with respect to each member of this plurality; there are only five askings in total.

- (21) Ty ne serdišsja, čto po pjat' raz sprašivaju?  
 you.SG not be.angry.PRES.2SG that PO five times ask.PRES.1SG  
 'You're not cross with me for asking five times?'

It is entirely unclear at this point how to account for these apparently vacuous uses of Russian *po* when analogous sentences with dependency markers in other languages are infelicitous in the same situations.

## 5. Conclusion

In this note, I discussed some peculiar properties of the Russian dependency-marker *po*, which indicates covariation of the witnesses of the marked indefinite with the members of some plurality. Unlike similar such markers in English and Hungarian, it does not remove the homogeneity-based trivalence of plural predication. Nevertheless, it is not simply a marker of low scope with respect to a silent distributivity operator (which is also homogeneous) or a quantifier, since silent distributivity does not seem to be available in Russian. An analysis of *po* which ascribes quantificational force to it, but also captures its trivalence and explains its ability to co-occur with overt universal quantifiers seems to necessitate further technical developments in the realm of dynamic logics designed to deal with pluralities and dependencies in witness choice. Whether such an analysis will eventually be able to shed light also on certain mysterious uses of *po* where no dependency seems to be present, will remain to be seen.

Along the road, we also found a new argument for Kuhn's (to appear) claim that Hungarian-style dependent indefinites must be analysed as carrying their own quantificational force, based on their ability to remove trivalence.

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<sup>8</sup>Note that the addition of an overt singular dative argument, who is told the secret, does not change anything. (i) is likewise felicitous.

- (i) Skažu Maše po bol'šomu sekretu.  
 say.FUT.1SG Mary.DAT PO big secret  
 'I'll tell Mary a big secret.'

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Manuel Križ  
manuel@kriz.fr



## Phrasal comparatives and Parasitic Scope\*

Winfried Lechner

National and Kapodistrian University of Athens

This squib describes an analysis for a restriction found with Phrasal Comparatives, revealing an underlying homology between this and a seemingly unrelated class of constructions.

### 1. Phrasal comparatives

Phrasal Comparatives (PC), exemplified by (1), are degree constructions in which the standard marker *than* precedes a single, usually nominal, remnant.

- (1) a. Ann is taller [than Bill].  
b. Ann bought more books [than Bill].

Currently, there are two prominent accounts of PCs, the *Reduction Analysis* (Bresnan 1973; Lechner 2004; Merchant 2009; i.a.) and the *Direct Analysis* (Hankamer 1973; Napoli 1983; Hoeksema 1983; Heim 1985; Kennedy 1999; i.a.), which mainly differ across two dimensions. First, while the RA maintains that the degree complement of PCs embeds hidden structure, for the competing DA, PCs owe their characteristic shape to the presence of a base-generated PP headed by *than*. Second, the two accounts are associated with two different sets of assumptions to render the syntactic representations compositionally interpretable. Adopting a canonical semantics for degree predicates on which gradable adjectives denote individual-degree pairs ((2)a), it is common for ellipsis analyses to model the comparative morpheme *-er/more* as the quantificational determiner  $MORE_2$  ((2)b).  $MORE_2$  expresses a second order relation between degree predicates (Heim 2000; Gawron 1995):

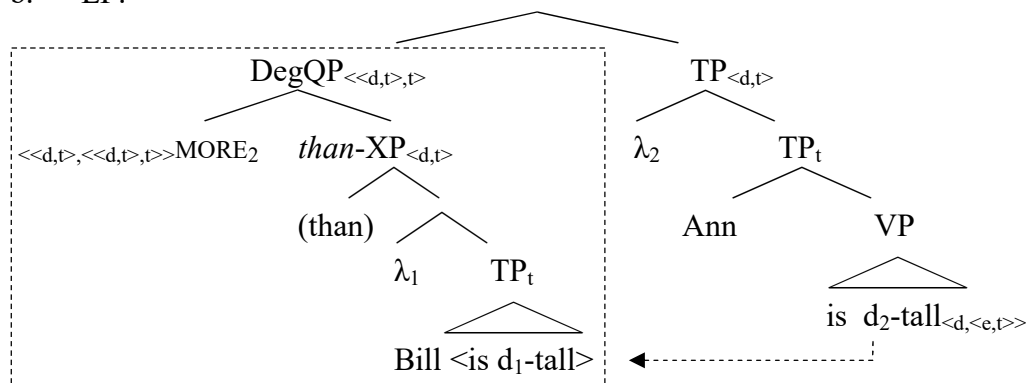
- (2) a. **[[tall]]** =  $\lambda d.\lambda x.x$  is d-tall ( $=_{\text{def}} \lambda d.\lambda x.LENGTH(x) \geq d$ )  
b. **[[MORE<sub>2</sub>]]** =  $\lambda D_{\langle d,t \rangle}.\lambda D'_{\langle d,t \rangle}.\max(D') > \max(D)$  [Heim 2000]  
c. **max**  $=_{\text{def}} \lambda D.\text{id}.D(d) \wedge \forall d'[D(d') \rightarrow d' \leq d]$

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\*This is for Martin, who I have had the honor to get to know as an exceptional teacher, an inspiring linguist, a caring advisor, a connoisseur of polymathian scope and most of all, a unique, beloved friend.

(3) tracks the RA-derivation of example (1)a. As made explicit by (3)b, the generalized degree quantifier (DegQP) *MORE tall than Bill* cannot directly combine with its sister node (the gradable property *tall*) and accordingly needs to covertly raise in order to avoid a type mismatch. Movement results in the creation of a derived degree predicate:

- (3) a. Ann is taller [<sub>than-XP</sub> than Bill].  
 b. LF:



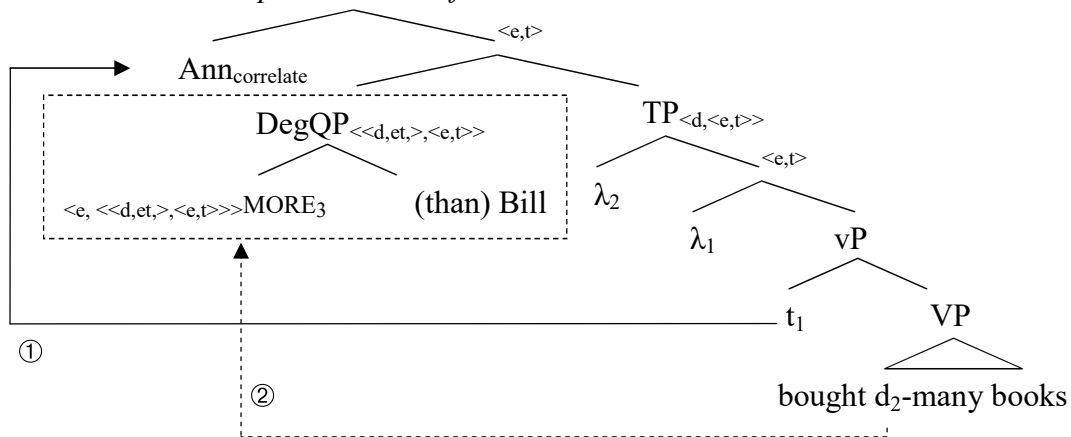
- c.  $\iota d.$ Ann is d-tall >  $\iota d.$ Bill is d-tall

Under the base-generation account, the comparative morpheme denotes the 3-place relation  $MORE_3$  defined in (4), which applies to the remnant, a degree relation and the correlate (Bhatt and Takahashi 2011; Kennedy 2009, i.a.):

$$(4) \quad \llbracket MORE_3 \rrbracket = \lambda x. \lambda A_{\langle d, \langle e, t \rangle \rangle}. \lambda y. \max(\lambda d. A(d)(y)) > \max(\lambda d. A(d)(x))$$

While on this conception, predicative comparatives can be interpreted *in-situ*, the derivation of attributive PCs such as (1)b involves the two covert movement steps detailed in (5)a. First, the correlate *Ann* moves to a propositional node, followed by QR of the complex unit  $MORE_3$  *than Ann* inbetween *Ann* and its binder index. This establishes a relation of what has become to be known as *Parasitic Scope* (Barker 2007; Beck and Sauerland 2000; Nissenbaum 1998, i.a.). In constellations of Parasitic Scope, one operator takes scope inbetween another operator and the second operator's  $\lambda$ -binder (nuclear scope).

- (5) a.  $\text{Ann}_{\text{correlate}}$  bought more books than  $\text{Bill}_{\text{remnant}}$ .  
 b. *Parasitic Scope derivation of PCs*



- c.  $\text{id. Ann}$  bought  $d$ -many books  $>$   $\text{id. Bill}$  bought  $d$ -many books

Diagnostics from a variety of phenomena including case matching, anaphor licensing, extraction, disjoint reference effects, restrictions on the number of remnants and scope with respect to intensional operators indicate that PCs cannot be given a uniform treatment cross-linguistically, but are subject to systematic typological variation (Beck et al. 2004, 2009; Kennedy 2009; Merchant 2009; Bhatt and Takahashi 2011; Lechner, to appear a,b; i.a.). To illustrate on the basis of two prominent classes, PCs in languages such as German and English are uniformly derived by ellipsis. By contrast, Polish, Russian, Greek and Hungarian, among others, employ both RA and DA, disambiguating between the ellipsis and base generation option by different choices for the standard marker. As we will see below, this clean taxonomy does not survive exposure to the full paradigm of data, though.

## 2. The Attributive Comparative Generalization

In a number of languages, attributive PC-formation is subject to a curious restriction which is a consequence of the *Attributive Comparative Generalization* in (6) (Lechner 1997 for German; Pancheva 2009 for Polish, Bulgarian and Russian).

### (5) *Attributive Comparative Generalization*

In attributive (degree) comparatives, the correlate  $c$ -commands the comparative DP.

As documented by paradigm (7) from Pancheva (2009), combining subject comparatives with object remnants in Polish leads to strongly degraded results. (Pancheva's original ??/\* judgements are throughout scaled to \* for typographic reasons.)

- (7) \**SUB<sub>MORE</sub> - DO<sub>correlate</sub>* [Polish; Pancheva 2009: (6)]
- a. Marek<sub>correlate</sub> zwiedził więcej miejsc<sub>DO</sub> od Anny.  
 Marek visited more places than<sub>DA</sub> Anna<sub>GEN</sub>  
 ‘Marek visited more places than Anna.’
- b. \*Więcej uczniów<sub>SUB</sub> zwiedziło Czechy<sub>correlate</sub> od Słowacji.  
 more students visited Czech R. than<sub>DA</sub> Slovakia<sub>GEN</sub>  
 ‘More students visited the Czech Republic than Slovakia.’

Pancheva also demonstrates that the effect visible in (7) is operative in base-generated PCs only. (Recall that Polish belongs to those systems which has both access to DA and RA.)

But reflexes of the Attributive Comparative Generalization are also attested in German (Lechner 1997, 2017). This is surprising inasmuch as German is a language in which PCs are widely held to be indiscriminately derived by ellipsis:

- (8) \**SUB<sub>MORE</sub> - DO<sub>correlate</sub>* [German; Lechner (1997)]
- a. Die Maria<sub>correlate</sub> mag bessere Komponisten<sub>DO</sub> als der Peter.  
 the Mary<sub>NOM</sub> likes better composers<sub>ACC</sub> than the P.<sub>I</sub><sub>NOM</sub>  
 ‘Mary likes better composers than Peter likes.’
- b. \*Bessere Komponisten<sub>SUB</sub> mögen Biber<sub>correlate</sub> als Mozart.  
 better composers<sub>NOM</sub> like Biber<sub>ACC</sub> than Mozart<sub>ACC</sub>  
 ‘?Better composers like Biber than Mozart.’
- (9) a. Sofia besucht ältere Städte als Peter.  
 ‘Sofia visited older cities than Peter.’
- b. \*Ältere Touristen besuchen Sofia als Varna.  
 ‘Older tourists visit Sofia than Varna.’

It is suggested that the Attributive Comparative Generalization is the consequence of two independent factors: (i) the assumption that attributive PC-formation implicates Parasitic Scope and (ii) standard syntactic locality conditions of the type familiar from configurations of multiple movement, which essentially have the effect of limiting possible Parasitic Scope configurations to those described by (6). These conditions reveal themselves, among others, in the laws governing the distribution of anaphors, to be taken up in the section to follow.

### 3. Reflexivization

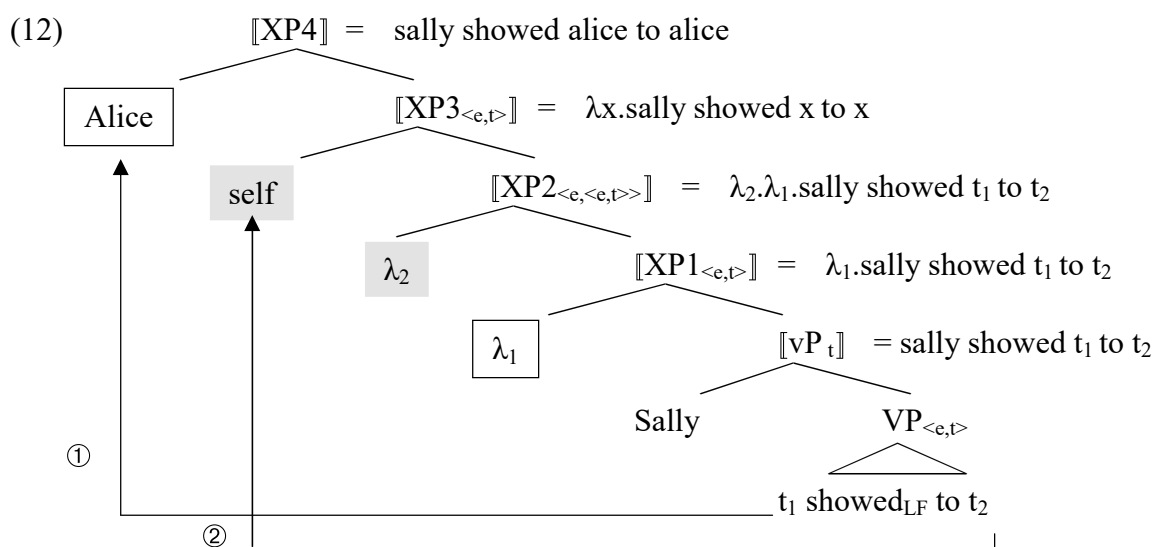
It is well-known that Principle A of traditional Binding Theory is afflicted by a number of conceptual shortcomings, among them: the intransparency of the semantic contribution of the anaphor; the question why anaphors require a linguistic antecedent; and the lack of a deeper motivation of the c-command condition. Searching for answers to these and related questions, Lechner (2007, 2012) proposes a semantically transparent analysis of reflexivization that embeds aspects of the categorial grammar tradition (Bach and Partee 1980; Keenan 1987/1989; Szabolcsi 1987) within a derivational model of the grammar. Specifically, it is suggested that the core properties of Principle A fall out from the two

assumptions that *self* serves as a arity-reducing reflexivizer ((10)), and that LF-representations are modulated by the same syntactic principles which are operative in configurations of multiple overt displacement (Nissenbaum 1998; Richards 2001):

$$(10) \quad \llbracket \text{self} \rrbracket = \lambda R_{\langle e, \langle e, t \rangle \rangle} . \lambda x . R(x)(x)$$

On this view, the derivation of the intended truth conditions of a sentence like (11), shown in (12), involves two LF-movements. In a first step, the antecedent *Alice* raises, followed by QR of *self* to a position inbetween the antecedent and its binder index, generating a relation of Parasitic Scope.

(11) Sally showed Alice<sub>1</sub> to herself<sub>1</sub> (in the mirror).



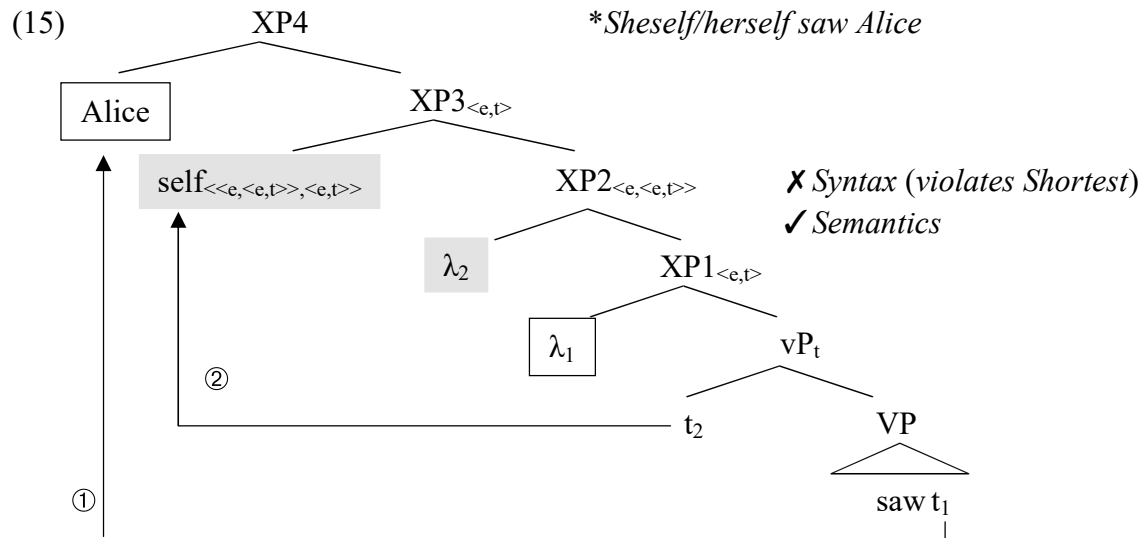
Assuming that Parasitic Scope formation is subject to the same syntactic principles which regulate multiple movements to a single head, the derivation creates order preserving, crossing dependencies (Richards 2001). (13) states this *syntactic* requirement in a more precise way:

- (13) *Syntactic Requirement: higher nodes move first*  
 Economy ('Shortest' or MLC) dictates that higher node moves first and that additional movements land right below previously moved nodes ('tucking-in'; Richards 2001).

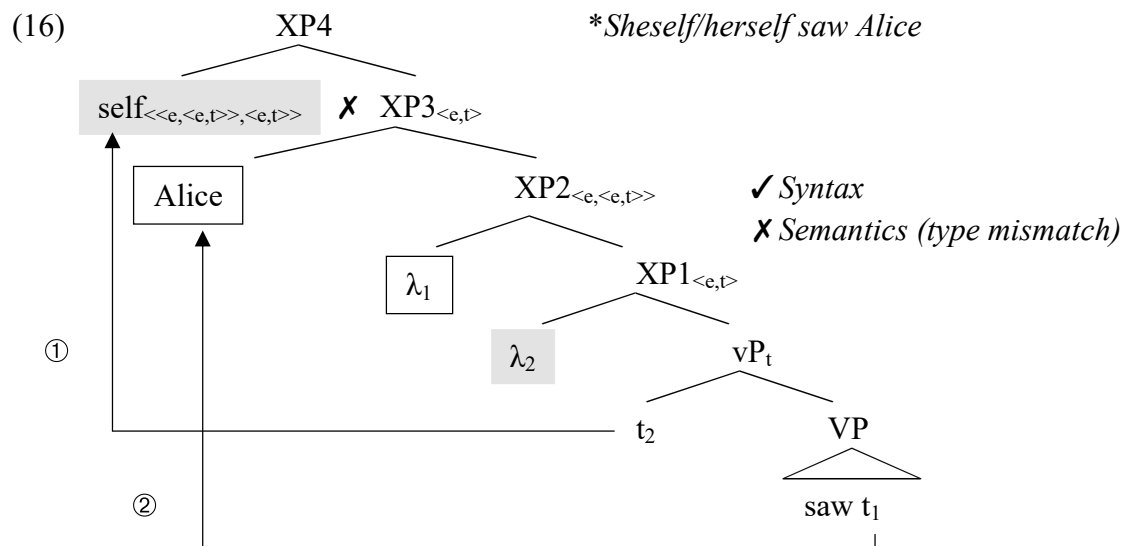
The particular format of the lexical entry for *self* also imposes a type-theoretic *semantic* requirement on the computation: the antecedent must move first, in order for *self*-movement to be able to provide a suitable two place-relation for the reflexive to combine with. Together, this semantic condition and the syntactic restriction (13) derive the c-command condition of Principle A. (For expository convenience, I switch to the transitive example (14)).

(14) \*Sheself/herself saw Alice.

If the antecedent moves first, as in (15), the result is semantically well-formed, but the derivations violates the syntactic requirement (13), which mandates that higher nodes are attracted prior to lower ones:



Reversing the order of movements, as is done in the alternative parse (16), ensures consistency with Shortest. The output representation fails to be compositionally interpretable, though, due to a type mismatch between the denotations of *self* and its sister XP3.



Thus, constellations that violate the c-command condition of Principle A are excluded by the conflicting demands of the semantic and the syntactic side of the derivation. Empirically, successful conflict resolution manifests itself in the *Parasitic Scope Generalization* (PSG; (17)):

(17) **Parasitic Scope Generalization (PSG)**

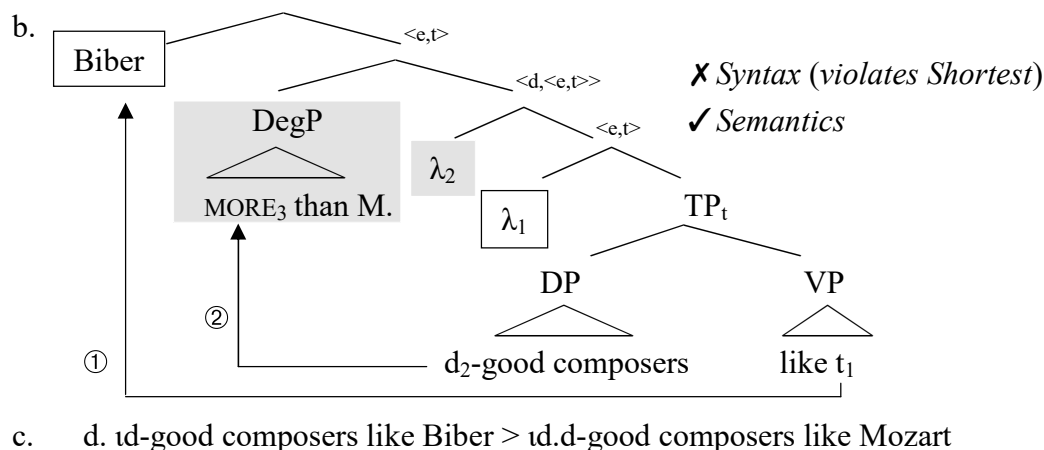
In contexts where movement of  $\alpha$  feeds creation of an  $n$ -place relation ( $n \geq 2$ ) by movement of  $\beta$ , the base position of  $\alpha$  c-commands the base position of  $\beta$ .

To exemplify,  $\alpha$  in (12) would be witnessed by *Alice* and  $\beta$  by *self*.

## 4. Explaining the Attributive Comparative Generalization

Returning to PCs, it was seen above that Slavic and German prohibit (attributive) subject PCs like (18)a. As the tree in (18)b reveals, the derivation of (18)a precisely mimics that of illicit cases of binding by non-c-commanding antecedents (see (14)). The correlate (*Biber*) and the DegQP (*more than Mozart*) move covertly, with the former creating the diadic relation which serves as the input of the latter. But since the comparative originates in a position *higher* than the correlate, the derivation fails to abide by the PSG (17). Hence, (18)a is blocked for exactly the same reasons that (14) is, revealing an underlying homology between two at first sight unrelated constructions.<sup>1</sup>

(18) a. \*Better composers like Biber than Mozart. [in German]



A prediction of the analysis, which is corroborated by the contrasts in (19), is that indirect object (dative) comparatives should not be able to co-occur with direct object (accusative) remnants, because these combinations display the same signature characteristic of (18), with the comparative DP c-commanding the remnant (see also Pancheva 2009).

<sup>1</sup>Extrapolation of the degree complement, which is orthogonal for present concerns, is ignored.

- (19) *\*IO<sub>MORE</sub> - DO<sub>correlate</sub>* [Lechner (1997)]
- a. Maria hat dem Peter<sub>correlate</sub> bessere Komponisten<sub>MORE</sub> vorgestellt  
 Mary has the Peter<sub>DAT</sub> better composers<sub>ACC</sub> introduced  
 als dem Fritz.  
 than the Fritz<sub>DAT</sub>  
 ‘Mary introduced better composers to Peter than to Fritz.’
- b. \*Maria hat besseren Komponisten<sub>MORE</sub> den Peter<sub>correlate</sub> vorgestellt  
 Mary has better composers<sub>DAT</sub> the Peter<sub>ACC</sub> introduced  
 als den Fritz.  
 than the Fritz<sub>ACC</sub>  
 ‘Mary introduced Peter to better composers than Fritz<sub>ACC</sub>.’
- c. Maria<sub>correlate</sub> hat ihn besseren Komponisten<sub>MORE</sub> vorgestellt als ich.  
 Mary has him<sub>ACC</sub> better composers<sub>DAT</sub> introduced than I<sub>NOM</sub>  
 ‘Mary introduced him to better composers than I<sub>NOM</sub>.’

Moreover, the analysis correctly exempts the deep subjects in (20), which are generated below accusative correlates, from the verdict of the PSG:

- (20) *SUB<sub>MORE, passive/unaccusative</sub> - DO<sub>correlate</sub>* [ibid]
- a. Ein besserer Vertrag<sub>MORE</sub> als der Maria wurde  
 a better contract<sub>NOM</sub> than the Mary<sub>DAT</sub> was  
 nur dem Peter<sub>correlate</sub> angeboten.  
 only the Peter<sub>DAT</sub> offered  
 ‘Only Mary was offered a better contract than Peter.’
- b. Ein schlimmerer Fehler<sub>MORE</sub> als mir ist dem Pete<sub>correlate</sub> unterlaufen.  
 a worse mistake<sub>NOM</sub> than me<sub>DAT</sub> is the Peter<sub>DAT</sub> occurred  
 ‘A more serious mistake occurred to me than to Peter.’

In sum, the PSG not only captures the distribution of attributive PCs, but also affords a common analysis of reflexives and PCs. Notably, rendering these intricate underlying structural similarities visible crucially implicated Parasitic Scope derivations. This finding, which signals that syntactic principles co-determine the shape of admissible LF-representations, supplies a strong argument in support of a syntacto-centric model in which symbolic information is transduced from the syntactic to the semantic component, and against parallel architectures as e.g. envisioned by proponents of categorial grammar.

## 5. Puzzles

While attractive both from an empirical and conceptual perspective, the unified account outlined above also has consequences in various areas which are in need of further clarification. To begin with, the Attributive Comparative Generalization requires a re-assessment of the typology of PCs. German has, after all, base generated PCs, even though they do not reveal themselves readily. Next, in German - but not in Slavic - the prohibition on subject and dative PCs is systematically abrogated with numerical amount comparative. The amount PCs in (21) (*more composers*) contrast with degree comparatives (14) and (19)b, respectively (*better composers*):



- (21) *SUB/IO<sub>MORE, amount</sub> - DO<sub>correlate</sub>*
- a. Mehr Komponisten<sub>MORE</sub> mögen Biber<sub>correlate</sub> als Mozart.  
 More composers<sub>NOM</sub> like Biber<sub>ACC</sub> than Mozart<sub>ACC</sub>  
 ‘More composers like Biber than Mozart.’
- b. Maria hat mehr Komponisten<sub>MORE</sub> den Peter<sub>correlate</sub>  
 Mary has more composers<sub>DAT</sub> the Peter<sub>ACC</sub>  
 als den Fritz vorgestellt.  
 than the Fritz<sub>ACC</sub> introduced  
 ‘Mary introduced Peter to more composers than Fritz<sub>ACC</sub>.’

The paradigm (21) suggests that amount PCs can - unlike degree comparatives - be given an ellipsis analysis, which exempts them from the PSG. Pursuing this analytical options generates two questions: why do attributive PCs falling under the PSG not admit the reduction analysis? And why do amount comparatives not require the direct analysis? Tentatively, one might entertain the hypothesis that the difference between amount and degree PCs is related to the fact that amount comparatives are headed by an isomorphism invariant logical operator (*more d-many*), while degree PCs include in their meaning model dependent adjective denotations (*more d-good*). How to translate this idea into an analysis remains unclear at the moment, though.

Third, and related to the above, the present account entails that the typology of PCs is more articulated than standardly assumed in that German does not treat all PCs as elliptical. PSG-sensitive attributive PCs in German are base generated. It has to be seen to which extent this conclusion is consistent with other commonly employed tests for the presence of hidden structure (disjoint reference effect, scope, etc..).

Finally, there is an independent property characteristic of PCs that appears, at least at first sight, to be regulated by a version of the Attributive Comparative Generalization (6). In certain environments, the event time of the silent predicate of PCs can be temporally underspecified, subject to the structural condition that the comparative DP be c-commanded by the remnant (Lechner 2004). To exemplify, the object PC in (22) admits an ‘atemporal’ reading which is missing for subjects comparatives like (23):

- (22) *DO<sub>MORE</sub> - SUB<sub>correlate</sub>: atemporal reading*  
 John<sub>correlate</sub> will visit more friends<sub>MORE</sub> than Sam.  
 a. ...than Sam will visit d-many friends  
 b. ...than Sam (has) visited d-many friends
- (23) *SUB<sub>MORE</sub> - DO<sub>correlate</sub>: no atemporal reading*  
 More friends<sub>MORE</sub> will visit John<sub>correlate</sub> than Sam.  
 a. ... than d-many friends will visit Sam  
 b. \*... than d-many friends (have) visited Sam

The distribution of atemporal readings is captured by the *Atemporal PC Generalization*, which includes exactly the same structural condition (underlined) that was seen to be operative in the Attributive Comparative Generalization (6):

(24) *Atemporal PC Generalization*

In atemporal PCs, the correlate c-commands the comparative DP.

A further objective of future inquiries in this domain should accordingly consist in determining to which extent the two phenomena (atemporal readings vs. distribution of PCs) can be reduced to a common source.<sup>2</sup>

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<sup>2</sup>MORE<sub>3</sub> copies the whole predicate, including the temporal specification, into the position following the remnant. Thus, a common analysis might be hard to obtain simply for the fact that it is difficult to devise a phrasal analysis for atemporal PCs (Lechner 2017).

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Winfried Lechner  
wlechner@gs.uoa.gr



# German affixes *-lich*, *-tum*, *-schaft*, and Umlaut

Jean Lowenstamm

Université Paris Diderot & CNRS

## 1. Introduction

German noun-forming affixes *-tum* and *-schaft* behave in similar fashion in several respects. For instance, the sets of their complements noticeably intersect, e.g. *Beamtentum* ‘civil service’/*Beamtenschaft* ‘the community of civil servants’ (<Beamten ‘civil servants’), etc. Also, both *-tum* and *-schaft* lend themselves to adjectivization by means of suffixation of *-lich*. In that case however, they respond differently: while *-tum* undergoes Umlaut, e.g. *altertümlich* ‘medieval’ (<Altertum ‘Middle Ages’), *-schaft* does not, e.g. *wissenschaftlich*/*\*wissenschaftlich* ‘scientific’ (<Wissenschaft ‘science’). Shedding light on this differential behavior is the topic of this squib. While the literature is unanimous in viewing *-lich* as an irregular umlauter, I will argue, on the contrary, that *-lich* is a fully consistent umlauter. On the other hand, I will argue, *-tum* and *-schaft* occupy different syntactic positions, in consequence of which *-tum* and *-lich* may spell out at the same phase (hence the possibility of Umlaut), though *-schaft* and *-lich* never will (hence no Umlaut ever).

In a first section, I lay out just enough information for the reader unfamiliar with Umlaut to follow the argument. As well, I briefly recapitulate the view put forth in Lieber (1987) for background. Then, in section 2, I propose the basics of a framework for handling the relationship between affixes and roots. In section 3, I show how Umlaut can be handled in that framework. Section 4 is devoted to *-schaft* and why it can never umlaut. A brief conclusion follows.

## 2. Umlaut

Umlaut refers to the phenomenon whereby the back vowel of a stem – au, a, o, u – becomes fronted (noted *äu*, *ä*, *ö*, *ü* respectively, according to spelling conventions) upon

suffixation.<sup>1</sup> Affixes fall into the three categories in (1) with respect to their ability to front a stem vowel.

- (1) a. Some affixes *never* trigger Umlaut, e.g. *-bar* <sub>Adj</sub>]: *Zoll* ‘customs’/*zoll-bar* ‘liable to customs’ (\**zöll-bar*)  
 b. Some affixes *always* trigger it, e.g. *-er* <sub>Plural</sub>]: *Buch* ‘book’/*Büch-er*  
 c. Some affixes trigger it in seemingly unpredictable fashion, e.g. *-lich* <sub>Adj</sub>]: *Mann* ‘man’/*männ-lich* ‘manly’ vs. *Amt* ‘office’/*amt-lich* ‘official’

Lieber (1987) represents the phonological equipment of umlauters in the form of a [-back] floating autosegment as shown in (2a). In the presence of the floating autosegment, the specification of the target stem vowel for [back] is delinked (2b), and the floating [-back] of the suffix subsequently docks onto that position (2c).

- (2) a. 
$$\begin{array}{c} [\text{Suffix W}] \\ | \\ [-\text{bk}] \quad [-\text{bk}] \end{array}$$
 b. 
$$\begin{array}{c} v \text{ Y} + [\text{Suffix W}] \\ \neq \\ [\pm\text{bk}] \quad [-\text{bk}] \quad [-\text{bk}] \end{array}$$
 c. 
$$\begin{array}{c} v \text{ Y} + [\text{Suffix W}] \\ \swarrow \quad | \\ [\pm\text{bk}] \quad [-\text{bk}] \quad [-\text{bk}] \end{array}$$

In addition, Lieber accounts for the behavior of sporadic umlauters by proposing that each such affix comes in two versions at all times, one with the [-back] floating autosegment responsible for the implementation of Umlaut, the other without. This is shown in (3) with *-lich*.

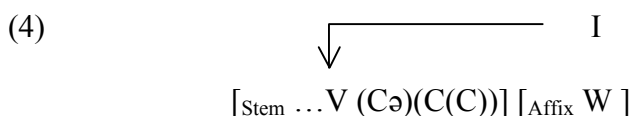
- (3) a. 
$$\begin{array}{c} -\text{lich} \\ | \\ [-\text{bk}] \quad [-\text{bk}] \end{array}$$
 b. 
$$\begin{array}{c} -\text{lich} \\ | \\ [-\text{bk}] \end{array}$$

In consequence, any instance of suffixation of sporadic umlauter *-lich* is expected to yield two well-formed realizations of the adjective – one with umlaut, the other without – though not all such pairs are necessarily part of the active vocabulary of most speakers. Following Lieber’s conjecture on the bi-allomorphic representation of irregular umlauters, *eigentümlich* ‘peculiar’, the adjective corresponding to *Eigentum* ‘property’ (<Eigen ‘own’), must involve the Umlaut triggering allomorph of *-lich* (3a); while *wissenschaftlich* ‘scientific’ involves its non-Umlaut triggering allomorph (3b). But, because the allomorphs are in free variation, *eigentumlich* and *wissenschäftlich* would have been just as likely instead of, or even alongside, the attested forms. I take exception with this last prediction and I intend to show that, while *eigentumlich* is indeed as well-

<sup>1</sup>For comprehensive presentation and analysis of Umlaut, cf. Wurzel 1970, Wiese 1996 and references therein. See Pöchtrager 2014) for a vigorous rejection of Umlaut as a *bona fide* phonological phenomenon.

formed as attested *eigentümlich*, *wissenschaftlich* is hopelessly ungrammatical (as will be any attempt at umlauting suffix *-schaft* in any context).

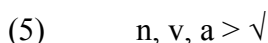
As I pointed out in the introduction, my intention is to argue that there is no such thing as an irregular umlauter. From that perspective, Lieber’s two-allomorph solution is not an option. Rather, my proposal must be that all umlauters are endowed with a fully stable property, a floating I element, which discharges in the form of Umlaut. This is shown in (4).



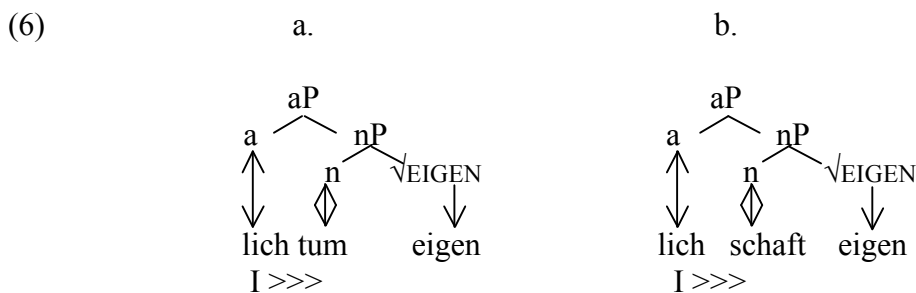
In the next two sections, I develop my proposal as to what morpho-syntactic configurations define the reach of umlauters.

### 3. Roots and affixes

Following Marantz (1997), Borer (2005), and others, I accept the idea of an inert lexicon consisting of a list of uncategorized roots, e.g.  $\sqrt{\text{CAT}}$ ,  $\sqrt{\text{DRINK}}$ ,  $\sqrt{\text{SMALL}}$ , etc. Upon selection by a categorial head *n*, *v*, *a*, nouns, verbs and adjectives arise:  $[\text{nP } n \sqrt{\text{CAT}}]$ ,  $[\text{aP } a \sqrt{\text{SMALL}}]$ ,  $[\text{vP } v \sqrt{\text{DRINK}}]$ . I take the strict view in (5) of the respective hierarchical positions of roots and categorial heads, namely the former dominate the latter, *not vice versa*. I return to this crucial point below.



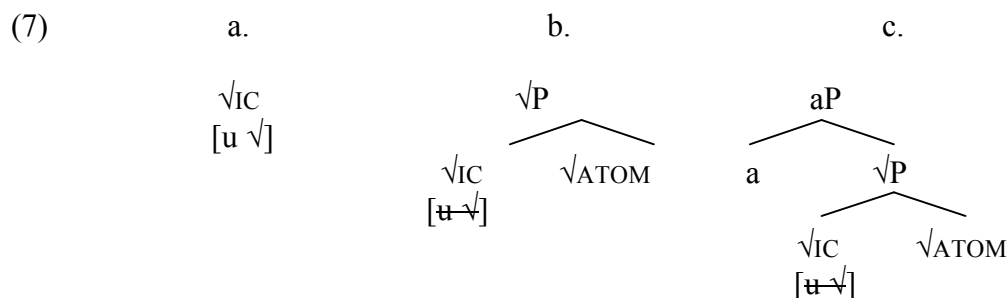
Most authors agree that affixes correspond to categorial heads in one-to-one fashion as indicated in (6) with the examples of the adjectives derived from *Eigen-tum* ‘property (possession)’ and *Eigen-schaft* ‘property (characteristic)’.<sup>2</sup>



In both (6a,b), affixes appear in identical syntactic configurations. On that view, nothing can lead to the expectation that they will deliver an output to phonology such that *-lich* (noted in (6) with its Umlauting property) will be able to distinguish between *-tum* and *-schaft* and umlaut one *...tüm-lich* but spare the other *...schaft-lich*.

<sup>2</sup>The double arrows in (6) express my indifference with respect to the exact nature of that correspondence: either a) the affix projects the category, or b) the affix realizes the category.

Drawing from Lowenstamm (2014), I propose a different view of affixes, namely affixes are themselves (bound) roots. I will illustrate the proposal with the example of the English adjective *atomic*. On the view advocated here, *-ic* is a bound root, viz  $\sqrt{\text{IC}}$ . Its boundedness is represented by means of an uninterpretable feature (7a) which a) requires it to merge a complement, b) specifies which complement it must merge (let us assume for the sake of illustration that English *-ic* takes roots as complements). Only when merger has taken place and the uninterpretable feature been checked can the bound root project at the phrasal level (7b). The complex root thus formed can then be categorized, by head *a* in the case at hand.



Crucial at this point is the identification of *types* of selectional behavior on the part of bound roots. I submit that German bound roots manifest three such types. They are reviewed in the next section and a connection with Umlaut is established.

#### 4. Types of selectional behavior and link with Umlaut

The first type is the selection by a root of a categorized object, *aP*, *vP*, or *nP*. Typically, such selectors will be exclusively sensitive to the *categorial identity* of their complement. They will be entirely oblivious to its internal complexity. Noun forming *-keit* exemplifies this: it forms deadjectival nouns and it is incapable of discriminating between the simple and complex adjectives it embeds, e.g. *Bitter-keit*, (<*bitter* ‘bitter’) *Hager-keit* (<*hager* ‘lean’) both simple vs. *Ein-sam-keit* (<*einsam* ‘lonely’), *Statt-lich-keit* (<*stattlich* ‘magnificent’), *Greif-bar-keit*, (<*greifbar* ‘tangible’), all complex in different ways. The uninterpretable feature of  $\sqrt{\text{KEIT}}$  is therefore  $[\text{u } \text{aP}]$ . For the sake of generalizing, I represent category selectors as  $[\text{u } \text{xP}]$  where *x* (in lower case) ranges over the set  $\{\text{a}, \text{n}, \text{v}\}$ . Note that  $\sqrt{\text{KEIT}}$  never triggers Umlaut.

It follows from the preceding characterization that if an affix has access to the finer structure of its complement, it cannot be a category selector. Such is the case of plural *-er*. Indeed,  $\sqrt{\text{ER}_{\text{PL}}}$  rejects morphologically complex bases: *\*Frei-heit-er* (<*Freiheit* ‘freedom’) *\*Wissen-schaft-er*, *\*Üb-ung-er* (<*Übung* ‘exercise’), etc. It selects *unsuffixed complements*, e.g. *Buch/Büch-er*, *Loch/Löch-er*, *Fach/Fäch-er*, *Haus/Häus-er* (note the correlation between the rigid requirement governing the attachment of  $\sqrt{\text{ER}_{\text{PL}}}$  and the fact that it never fails to trigger Umlaut). In order to select so discriminately,  $\sqrt{\text{ER}_{\text{PL}}}$  must be structurally lower than the categorial layer. It is my proposal that  $\sqrt{\text{ER}_{\text{PL}}}$  selects roots. Accordingly, its uninterpretable feature is  $[\text{u } \checkmark]$ .

The third type, the universal selector, selects both roots (as  $\sqrt{\text{ER}_{\text{PL}}}$  does) *and* categorized objects (as  $\sqrt{\text{KEIT}}$  does). Adjective forming *-lich* exemplifies this behavior: it



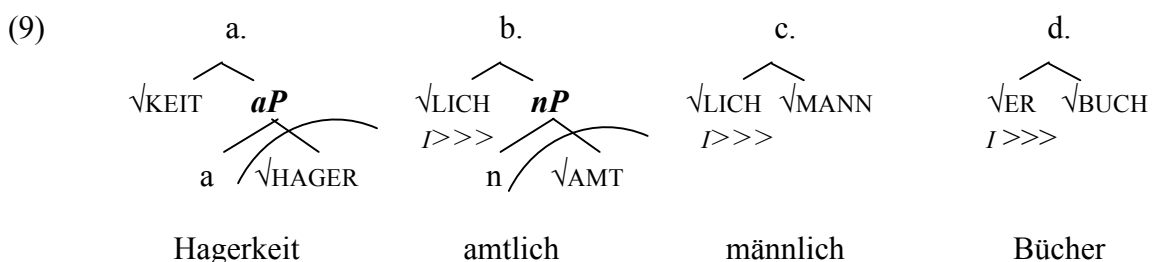
attaches to unsuffixed bases, e.g. *Mann/männ-lich*, *Amt/amt-lich* and to suffixed bases as well, e.g. *wissen-schaft-lich*, *ganz-heit-lich* (<*Ganzheit* ‘entirety’). The uninterpretable feature associated with the universal selector is [u X] where X (in upper case) is a variable ranging over the set  $\{\sqrt{\quad}, \{aP, vP, nP\}\}$ . Note Umlaut on *männ-lich*, though not on *amt-lich*, a point directly dealt with below.

While this tripartite distinction is established independently of Umlaut, it provides a framework within which the behavior of Umlauters can be defined in exact fashion. The generalizations appears in (8):

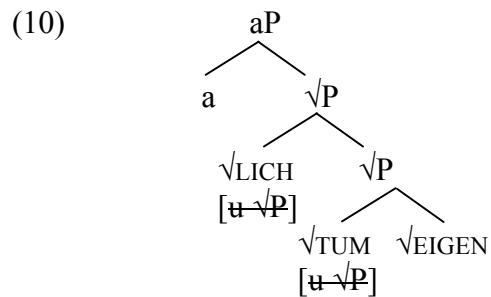
- (8) a. when Umlauters select roots, they umlaut their complement
- b. when they select categorized objects, they do not
- c. if they select both, they are sporadic Umlauters

This is represented in (9) with  $\sqrt{\text{KEIT}}$  (9a),  $\sqrt{\text{LICH}}$  in its dual capacity (9b,c), and  $\sqrt{\text{ERPL}}$  (9d), where once more the Umlauting potential of the last two is indicated. Thus, when  $\sqrt{\text{LICH}}$ , a typical sporadic Umlauter, selects in the same position (9b) as  $\sqrt{\text{KEIT}}$  (9a) no Umlaut takes place, hence *amtlich*. But when  $\sqrt{\text{LICH}}$  occupies the same position (9c) as  $\sqrt{\text{ERPL}}$  (9d), Umlaut takes place, hence *männlich*.

A phasal interpretation suggests itself: assuming that *n* is a phase head,  $\sqrt{\text{LICH}}$  and the root of its complement are separated by a phase head in (9b), therefore belong to distinct spellout episodes. In (9c) by contrast  $\sqrt{\text{LICH}}$  and its complement root are not separated by a phase head, therefore will be spelled out together, hence Umlaut. Space limitations prevent discussion of non-phonological correlates of the distinction just demonstrated. A single example will give an idea: when  $\sqrt{\text{LICH}}$  selects noun *Vertrag* ‘contract, deal’, no Umlaut takes place and a strictly compositional interpretation ensues for *vertraglich*: ‘contractual’. But when  $\sqrt{\text{LICH}}$  selects complex root [ $\sqrt{\text{VP}}$   $\sqrt{\text{VER}}$   $\sqrt{\text{TRAG}}$ ], a non-compositional interpretation arises (along with Umlaut) for *verträglich*, viz. ‘easygoing, compatible’.



On this view, *eigentümlich* can be assessed in straightforward fashion:  $\sqrt{\text{LICH}}$  directly selects the complex root formed by  $\sqrt{\text{TUM}}$  and its complement, spells out together with that complex root, and consequently releases its umlauting potential. This is shown in (10).



The data analyzed in (9) and (10) corresponds to the usual description of German i.e. *amtlich* vs. \**ämtlich*, *männlich* vs. \**mannlich*, *eigentümlich* vs. \**eigentumlich*. But on the view that  $\sqrt{\text{LICH}}$  is a universal selector, nothing can block its merger of *root*  $\sqrt{\text{AMT}}$ , yielding *ämtlich* alongside *amtlich*; conversely, nothing can block its merger of *nP* [<sub>nP</sub> n  $\sqrt{\text{MANN}}$ ], yielding *mannlich* alongside *männlich*; similarly, there is no reason to block selection of *nP* *Eigentum*, thus deriving *eigentumlich*. And indeed, neither *ämtlich*, *mannlich*, or *eigentumlich* offends well-formedness in any way. In fact, *ämtlich* was standard well into the first half of the 20<sup>th</sup> century. The most recent attestations of *eigentumlich* I have found go back to an 18<sup>th</sup> century collection of sermons delivered by Franciscus Peikhart, a Jesuit preacher attached to Stephansdom in Vienna (Peikhart 1752).

(11)

**Dann erstlich ist dieser  
Namen Christo, und niemand ande-  
ren eigentumlich, weisen der Engel zu  
Mariam auf eine besondere Art ge-  
sprochen hat:**

If correct, the fact that *eigentumlich* has not been part of the experience of speakers for many generations, makes its acceptance highly significant. Not only do contemporary speakers recognize it as well-formed, they also construe its meaning as fully compositional as obviously intended in (11) and in crucial contradistinction with the meaning of *eigentümlich*. That is, a ‘new’ adjective on account of a minimal difference with an already known adjective is readily assigned a place in the familiar *vertraglich/verträglich* pattern whereby the *unumlauted* version of a *-lich* adjective must have compositional meaning.

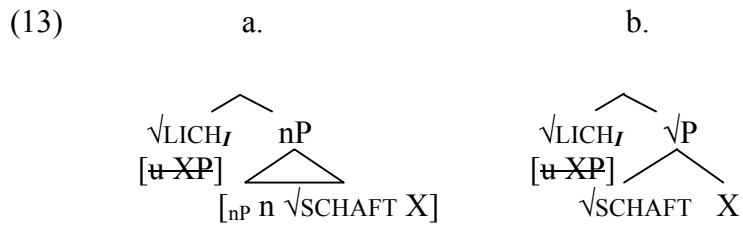
Generalizing from the discussion in the two preceding paragraphs, I propose (12).

(12) Given a universal selector  $\sqrt{W}$  [<sub>u</sub> XP], and a root  $\sqrt{Y}$ , both [<sub>√P</sub>  $\sqrt{W}$   $\sqrt{Y}$ ] and [<sub>√P</sub>  $\sqrt{W}$  [<sub>x</sub>  $\sqrt{Y}$ ]] are well-formed expressions. If  $\sqrt{W}$  is an umlauter, it will front the vowel of its phase mate.

(12) defines exactly under what circumstances minimal pairs with/without Umlaut arise. Such pairs are much more numerous than the “corpus” would have it, though once more

many forms may be familiar only to speakers of a particular regional, social, occupational, or generational dialect.<sup>3</sup>

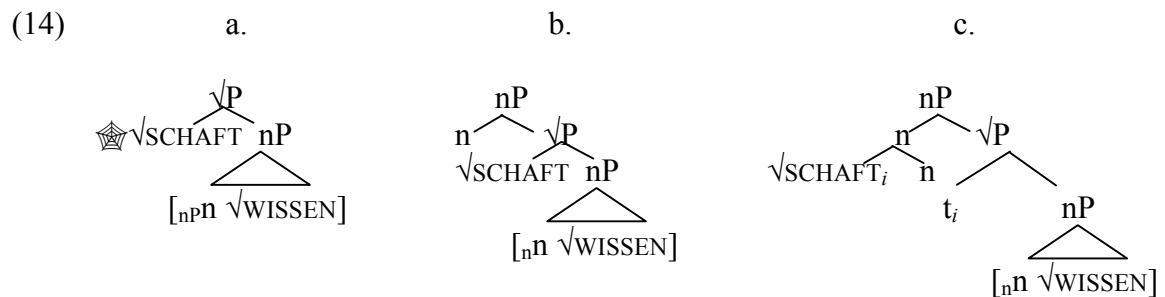
While the rise of minimal pairs of the type under discussion follows from (12), a question is being begged by the same token: if  $\sqrt{\text{LICH}}$  is indeed a promiscuous selector, it is *a priori* as likely to select  $\sqrt{\text{SCHAFT}}$  as part of an entire “*Xschaft*” noun (13a) or root  $\sqrt{\text{SCHAFT}}$  itself directly as in (13b), in effect as it did  $\sqrt{\text{TUM}}$ . According to the first scenario,  $\sqrt{\text{LICH}}$  and  $\sqrt{\text{SCHAFT}}$  pertain to separate phases and  $\sqrt{\text{LICH}}$  is not expected to release its harmonic potential. But in the second case, both roots will be spelled out at the same phase and Umlaut is expected in that case.



Yet,  $\sqrt{\text{SCHAFT}}$  never appears as [...schäft...]. Is it an accident? Or does something truly immunize it from Umlaut? To put it differently, what causes  $\sqrt{\text{SCHAFT}}$  to remain outside the scope of (12)? I address those questions in the next section.

### 5. $\sqrt{\text{SCHAFT}}$ and what protects it against Umlaut

$\sqrt{\text{SCHAFT}}$  selects categorized objects, as evidenced by the fact that its complements are attested independent items. As such, it directly contravenes the ban against roots dominating categories (5). This is shown in (14a). What prevents the derivation from crashing? I propose that the violation of the canonical hierarchy of roots and xPs inherent in the complex root in (14a) is dealt with as early as the next step of the derivation, viz. upon categorization of the complex root (14b). An escape hatch now becomes available: the head of the root phrase immediately moves up and left-adjoins to its categorizing head, *n* in (14c).



<sup>3</sup> Thus *blutig* ‘bloody’ (<*Blut* ‘blood’) is not supposed to have an umlauted version. Yet, *blütig* ‘thoroughbred’ is in common use among horse breeders. Skeptics are encouraged to Google *blütig* in connection with any of *Pferd* ‘horse’, *Stute* ‘mare’ *Fohlen* ‘foal’, *Jährling* ‘yearling’ etc.



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Jean Lowenstamm  
jean.lowenstamm@linguist.jussieu.fr



**The algebra of grammar:  
A lesser known work of Viennese fin-de-siècle linguistics**

Hans Christian Luschützky

University of Vienna

**1. Introduction**

Theoretical linguistics was not been a show-case discipline at the University of Vienna throughout the nineteenth and well into the twentieth century. In contrast to other parts of the German-speaking area, where theoretical grammar, in the sense of abstract analysis of structural principles underlying the grammatical organization of language as such, was cultivated by scholars like August Ferdinand Bernhardt or Karl Ferdinand Becker, in both cases against opposing authorities like Jacob Grimm,<sup>1</sup> the Viennese academic tradition confined its conception of general linguistics to largely descriptive and compilatory work. This culminated in Friedrich Müller's bulky account of the world's languages, which was largely based on his collections and notes taken during a three-year circumnavigation initiated by the Imperial Academy of Sciences (Müller 1876-1888). In the first chapter of the first volume of this work, under the heading "Language as such (in abstracto)" ("Die Sprache an und für sich (in abstracto)"), a strong stance against the formal analysis of linguistic structure is taken. Müller, who is recorded in the history of the language sciences as the founder of linguistic ethnography, explicitly denies any relationship between language and logic, characterizing the latter as a purely formal branch of science, confined to judgements and akin to mathematics in the use of algebraic calculuses, while the former is claimed to be an object of historical science, dealing with particular forms pertaining to reality (Müller 1876, 14). The deduction of grammatical principles from logical categories is rejected by Müller as "totally misguided" ("vollkommen verkehrt").

This verdict *ex cathedra* seems to be in consonance with the contemporary neogrammarians' aversion to all kinds of abstraction, expressed in Hermann Paul's famous dictum "[...] 'away with all abstractions' must be our slogan if we want to succeed in determining the factors of what is really going on" (Paul 1880, 13).<sup>2</sup> Although, as Paul hastened to

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<sup>1</sup>Grimm's discontent with works on general grammar based on logical principles like Bernhardt 1801 or Becker 1841 seems to have been the typical suspicion of the collector's mind towards deductive reasoning, cf. Gardt (1999, 275).

<sup>2</sup>In the original formulation: "[...] 'weg mit allen abstractionen' muss für uns das losungswort sein, wenn wir irgendwo die factoren des wirklichen geschehens zu bestimmen versuchen wollen".

clarify in a footnote in the second edition of his seminal book (Paul 1886, 11), that the notion of abstraction used in this slogan was meant to designate a particular kind of ideas and not the general concept of abstraction as a mental operation, but nevertheless an epistemological bias against conceptual rigor and strict formalism remains palpable and characterizes mainstream linguistics of that period. Even a scholar as open-minded as Georg von der Gabelentz, who pointed the way ahead in several branches of linguistics, remained negative with respect to the value of what he called “general or philosophical grammars”, setting them apart as “for the most part children of our philosophical era, beautiful children for some part, but deprived of viability” (Gabelentz 1891, 11).<sup>3</sup>

At the University of Vienna, the perennial debate about the nature of linguistic science as either inductive or deductive, if at all perceived by the academic guild entrusted with the subject of language studies, was settled in favor of the former. As late as in 1923, Paul Kretschmer, who was the first to hold a chair of General and Comparative Linguistics, established in 1899,<sup>4</sup> expressed the attitude against the deductive analysis of language in all clarity, deploring that mainly syntax had suffered most from the confusion of linguistic inquiry with logical reasoning. Rather than logic, Kretschmer claimed psychology to provide account of the “facts of language” (Kretschmer 1923, 3),<sup>5</sup> thus continuing the reliance of the Neogrammarians on experimental psychology as the key to the explanation of linguistic structure and its change over time. This was most explicitly pursued in the work of Albert Thumb and Karl Marbe on analogy, a strongly inventive study of psycholinguistics *avant la lettre* (Thumb and Marbe 1901). In the field of syntax, Kretschmer’s urge for a psychological foundation for linguistic reasoning was fulfilled by his own successor, Wilhelm Havers,<sup>6</sup> who downgraded the role of logic as a skeleton of grammar by reappraising the notion of “popular logic” (“Volkslogik”) and by confronting the “logic of reason” (“Verstandeslogik”) with the “logic of sentiments” (“Gefühlslogik”; Havers 1931: 32-35).

The notion of General Linguistics is equivocal across time and space, embracing on occasions fields of study that strongly intersect with neighboring disciplines. The impulse for what was later associated with the specific intellectual climate in terms of linguistic theorizing at the Alma Mater Rudolphina Viennensis in the decades before and after World War I came typically enough not from the language sciences themselves but from psychology, as in the case of Karl Bühler, and from philosophy, as in the case of the Vienna Circle.

<sup>3</sup>In the original formulation: “die s[o] g[enannten] allgemeinen oder philosophischen Grammatiken, meist Kinder unseres philosophischen Zeitalters, schöne Kinder zum Theil, aber nicht lebensfähig”.

<sup>4</sup>Kretschmer held the chair of “Allgemeine und Vergleichende Sprachwissenschaft” in the Department of Oriental Studies after the premature death of Friedrich Müller. In 1923, the Department of Indo-European Studies (Indogermanisches Institut) was founded with Kretschmer as its head, and his *venia legendi* adapted to “Allgemeine und Indogermanische Sprachwissenschaft” (cf. Pfeiffer 2001).

<sup>5</sup>“Nicht die Logik, die die Gesetze des richtigen Denkens sucht, sondern nur die Psychologie, die alle Erscheinungen des Seelenlebens objektiv beobachtet, kann den sprachlichen Tatsachen gerecht werden”.

<sup>6</sup>Havers held the chair of General and Indo-European Linguistics until 1953, navigating the department through the critical years of the Nazi regime relatively safely by entering compromising concessions in terms of adherence to organizations to a minimal degree and keeping maximal possible distance from the ideological perversion of Indo-European studies at that time. His firm moral principles as a catholic Rhineland may have rescued him from posing in the Alma Mater’s hall of shame, so that he is not recorded in the literature reviewing the dire spirits of this tenebrous chapter of the past, e.g. Taschwer (2015).



## 2. The Stöhr syndrome: inveterate polymathy

In the summer of 1898, one of the most polymathic representatives of modern thinking on the threshold to the twentieth century was hit by a cruel stroke of fate. At the age of 60, in the third year after his move from the German division of the Charles-Ferdinand University of Prague to the University of Vienna, where he had been offered the newly created Chair for the Philosophy of the Inductive Sciences,<sup>7</sup> Ernst Mach remained hemiplegic after a cerebral vascular accident and had to resign from teaching. One of his most brilliant younger colleagues, not much less polymathic than Mach himself, was appointed as his successor after Mach's formal retirement in 1901.

Adolf (also Adolph) Stöhr, born 1855 in St. Pölten (Lower Austria), is characterized in the biographical literature and in reference works mainly as a philosopher and psychologist. However, his intellectual activities were remarkably multifarious. According to Angetter (2010, 291), in 1873, at the age of eighteen and freshly graduated from high school (Gymnasium), he served as an official interpreter for Arabic, Persian and Turkish at the fifth World Exhibition in Vienna. This experience could have paved his way into diplomatic service, which he considered as an occupational goal – registering at first for the study of law – but the main subjects he eventually chose for study were botany, in particular plant physiology, and philosophy.

Stöhr's record of publications is impressive, with the center of gravity lying in the second half of his academic career and in the fields of logic, philosophy and psychology, covering such disparate topics as ethics, cell biology, elementary physics and visual perception. The bulk of monographs and textbooks he produced in the two decades following his appointment eclipsed his earlier works, two of which were devoted to the logical foundation of language phenomena, the first one on the theory of names (Stöhr 1889) and the second on the algebra of grammar (1898).

Although sometimes referred to as a linguist (e.g., by Austeda 2006, 251), Stöhr is not recorded in prosopographical or biographical handbooks of linguistics (e.g., Auroux & Stammerjohann 2009). This is not surprising in view of the fact that he remains unmentioned also in encyclopedias of philosophy,<sup>8</sup> even in the German-speaking area, e.g. Volpi (ed., 2004). Johnston (1972, 199) calls Stöhr “one of the least known of Austrian thinkers”, while ironically citing from an enthusiastic dedication of Stöhr's disciple Felix M. Cleve, who reports that Ernst Mach considered Stöhr's oeuvre as something that “will be understood and admired in 200 years” (Johnston 1972, 437). In fact, Stöhr's works are cited frequently by Mach, always appreciative, adverting to their originality and scientific potential (e.g., Mach 1905, 113, where the problem of logical metalanguage is discussed).

While Stöhr's study on the theory of names is still recorded sporadically in bibliographies on theoretical onomastics, his monograph on the algebra of grammar has received attention only from some of its author's contemporaries, without further impact on the development of the field. An exception to the general neglect is Arens (1969, 531), by whom Stöhr is remembered *en passant* in a chapter devoted to the (exclusively) German

<sup>7</sup>The official designation of the chair was “Philosophie, insbesondere Geschichte und Theorie der induktiven Wissenschaften”.

<sup>8</sup>E.g. the *Stanford Encyclopedia of Philosophy*, <https://plato.stanford.edu/cite.html> (accessed March 1, 2017).

tradition of content-related grammar (“inhaltsbezogene Grammatik”), a direct derivative of Humboldt’s conception of the “inner form of language”. Arens puts Stöhr’s ambitious quest for the essence of meaning on a par with Julius Stenzel’s ideas on the foundations of concept formation (Stenzel 1925). However, similar to the case of Stöhr, this author’s works on the philosophy of language (e.g. Stenzel 1934) are eclipsed by his prolificacy in other fields (Greek thinkers, metaphysics, and philosophical historiography, in this case), likewise received by contemporaries only (e.g. Cassirer 1929, 129), so that the appraisal remains ephemeral.

### 3. The graticule of language

Stöhr’s attempt to construct an account of grammar that is independent of any particular manifestation in terms of phonology, morphology and syntax departs from a strict division of two domains of semantics, viz., the theory of names and the theory of grammar. The latter, according to Stöhr, is autonomous in the sense that it is entitled to pretend that all problems of the theory of names are somehow settled, whether this be the case or not. Having himself produced a treatise on the theory of names roughly a decade before the publication of the work devoted to grammar, Stöhr could feel safe to have settled the issue of the semantics of underived terms to a degree that allowed him to tackle the problem of their combination.

Algebraic representation of the logical structure of expressions is implemented in its utmost strictness in Stöhr’s approach: the lexical meaning or reference of the items as well as their sound shape is absolutely irrelevant to the representation, nor does their grammatical value in terms of parts of speech have any bearing at the algebraic level; only the logical content of operations is taken into account. The strictness of the abstraction from any linguistic guise of the items and relations in language structure is expressed implicitly by Stöhr when he refers to typological variation of languages as “structural style” (“Baustil”).

The basic element of the algebra of grammar is the minimal sign, which is not called *morpheme*, since that term, coined in 1880 by Baudouin de Courtenay, was not yet current at the time (cf. Mugdan 1986, see also Luschützky 2000). Stöhr’s definition, distinctively simple and straightforward, has escaped the attention of morphologists to the present day, so that it may be worth being quoted here: “Let a specifically configured combination of sounds which, according to general agreement in a language, denotes a particular sense, but cannot be further decomposed into meaningful combinations, be expressed algebraically with the sign *a*.” (Stöhr 1898, 5).<sup>9</sup>

The body of Stöhr’s treatise consists in a detailed analysis of semantic categories and relations reduced to their logical essence, encompassing syntax and morphology in their full extension, i.e. including intersentential links and word-formation. For example, the chapter on “incorporating derivations” contains a list of semantic patterns ranging from the formation of collectives of the type *man* → *mankind*, to concepts of motion and direction like *hill* → *downhill* or *home* → *homeward*, to causality, privativity and so on. For

<sup>9</sup>“Eine bestimmt geordnete Combination von Lauten, welche nach allgemeiner Übereinkunft innerhalb einer Sprache einen bestimmten Sinn bedeutet, jedoch nicht weiter in sinngebende Combinationen zerlegt werden kann, sei algebraisch durch das Zeichen *a* ausgedrückt”.

the exemplification of his algebraic formulae with real language forms, Stöhr relies mainly on Ancient Greek, with specimens from other languages also interspersed, e.g. Hungarian. For instance, motivation as a component of an event is illustrated with the Greek constructions *Διὰ τὴν νόσον* ‘because of the illness’ and *τῆς ὑγείας ἕνεκα* ‘for the sake of health’, with the comment that one and the same event may be induced by an existent illness as the driving force, but at the same time have the purpose to bring about health.

Fritz Mauthner, one of the most sober-minded of all sceptics and most radical of all relativists ever harbored by philosophy of language in its enchanted castle, could not resist referring to Stöhr’s reasoning as a showcase example for illicit generalization of logical categories over grammatical facts, yet shared with Stöhr the admiration for Mach and his contempt for metaphysics. In the third volume of his *Beiträge zu einer Kritik der Sprache*, devoted to the relationship between language and logic, Mauthner dismisses Stöhr’s endeavor to develop an algebraic ratiocination of language as an example for the futility of any attempt to capture the layout of grammar by means of logical analysis (Mauthner 1913, 4). The gap between Stöhr’s “artificial language” (“Kunstsprache”) and the grammars of “real languages” (“Grammatiken der Wirklichkeit”) is judged as unbridgeable by Mauthner, who acknowledges Stöhr’s incisive discernment but at the same time curls his lip at the undue faith of the author of *Algebra der Grammatik* in the kind of logic that he considers to be unique (“er ist zu gläubig für die Logik und ihre Algebra” [emphasis in original]). Mauthner misses exhaustiveness in the logical relations encoded by Stöhr’s algebra, but this is a drawback of which any formal account of grammar can easily be accused, and the reproach is also unjust in view of Stöhr’s explicit admission that his catalogue of derivational types is incomplete (Stöhr 1898, 15).

Stöhr believed in the practical applicability of his algebra as a pivot for interlingual conversion, especially between typologically distant languages, thus anticipating the endeavors to program algorithms for automatic translation. He compared his system of language-independent representation of meaning to ideographic writing systems, which can be interpreted by speakers of any language (Stöhr 1898, 137), and recommended his system as the basis for a future artificial language (“wirkliche Kunstsprache”) that would bridge all the disparities of human tongues.<sup>10</sup>

Despite of its notational peculiarities and technical ambition, Stöhr’s text is agreeably accessible thanks to the clarity of his unpretentious style, but at the same time it is radically hermetic. More than in other works, he refrains from spelling out his position in the context of previous and contemporary research. The twenty-four chapters of the treatise on grammar do not include any reference to philosophical traditions or to linguistic research of the time; there are no footnotes and no references to any literature. This is probably a deliberately chosen allure, meant to signalize the genuinely philosophical, i.e. unpreconditioned character of his thinking, and it evokes a semblance to the style of the young Wittgenstein’s *Tractatus*, although it lacks the harshness and apodictic appeal of this distinctive piece of writing that was published in the year of Stöhr’s death in German as *Logisch-philosophische Abhandlung* and struck the attention of the Vienna Circle.

<sup>10</sup>Because of this aspect, Stöhr’s algebra would have deserved to be mentioned in Eco (1993), but that work concentrates on the more remote history of the idea of a universal language.

The direct involvement of Stöhr in the genesis of the Vienna Circle was impeded by his fatal illness (he died in 1921 at the age of 66).<sup>11</sup> After Otto Neurath's expulsion from Germany, where he had been imprisoned under the accusation of aiding and abetting high treason, the formal founding of the Vienna Circle was prepared by him and his brother-in-law Hans Hahn, who had moved from Bonn to hold the chair of Mathematics in Vienna (Stadler 2015, 41). According to Sigmund (2015, 84), in early 1921 they were in search of an exponent of academic philosophy who would revalue the image of the enterprise, aiming at Stöhr, but due to his unavailability it took a year until this role was taken over by Moritz Schlick.

The lack of attention that Stöhr's *Algebra der Grammatik* received after its publication, in an era when the pathways along which the philosophy of language developed were full of blind bends and linguistics was not receptive for approaches of the kind, has the sole benefit of having left this text a refreshing *trouvaille* for the erudite connoisseur, a species of which the consignee of this *donum natalicum* is a most sublime representative.

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<sup>11</sup>For biographical details see Austeda (ed., 1974). In 1954 a Street in Strebersdorf, a part of the 21<sup>st</sup> district of Vienna, was named after Stöhr, in a neighborhood that is remarkably topical, remembering a whole band of coevals and colleagues of Stöhr in the Philosophical Faculty of the Alma Mater Rudolphina: Stöhr-gasse departs from Arnimgasse, which is not named after the famous romantic poet Achim von Arnim, but after his great-nephew Hans von Arnim (1859-1931), a classical philologist and colleague of Stöhr from 1900 till 1914; it crosses Miklosichgasse, named after Franz von Miklosich, the founder of Slavic philology, and runs parallel to Bonitzgasse, named after Hermann Bonitz, the first professor in the Department of Classical Philology, founded in 1849. From Bonitzgasse departs Jirečekgasse, named after Josef Konstantin Jireček, a Professor of Slavic Philology coeval to Stöhr. West of Stöhr-gasse, Arnimgasse and Miklosichgasse unite to Stowassergasse, named after Joseph Maria Stowasser, the author of the Latin dictionary from which, since its first publication in 1894 to the present day, almost all Austrian grammar-school pupils, including the author, have acquired their Latin vocabulary.

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Hans Christian Luschützky  
hans.christian.luschuetzky@univie.ac.at

# Universal weak NPis – is there ever freedom of choice? \*

Friedrich Neubarth

OFAI & University of Vienna

## 1. Introduction

Negative Polarity Items (NPI) and Free-Choice Items (FCI) seem quite well understood nowadays, after half a century of meticulous investigation. One major breakthrough was in the early 90s when Zwarts (1990, 1998) identified two different types of NPIs with different licensing requirements, strong (e.g., *even a single X*) and weak (e.g., *any, ever*), showing that different logically definable contexts trigger different behavior with NPIs, thus opening the door to a more differentiated analysis. In the beginning, the dual nature of English *any* was not fully recognized: Klima (1964) offers a transformational analysis for *any* solely tied to negation, whereas (Vendler 1967, ch. 4) focuses on the properties of *any* in contrast to other universal quantifiers *every, each, all*. Many linguists have taken the distinction between NPI and FCI uses as substantial. Dayal (1998, 2004, 2013) in her analyses of FCI *any* involving (inherent) modality does not explicitly refer to polysemy, but she does assume two distinct semantic representations for the two manifestations of *any*.

I still contend that it is not only desirable, but really indispensable to find a semantic characterization that covers both interpretations. Meanwhile, Chierchia (2013) has come very close to this desideratum by providing and utilizing a deeper understanding of the principles that relate logic to grammar and by showing that our system of calculating meaning opens up an intricate variety of contexts that offer themselves for grammaticalization of particular items in a given language. No wonder we find ample variation among languages, but also a surprising number commonalities.

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\*I won't ever forget that phone call when Martin reminded me of a promise I had given, but towards which I had already developed a memory of great vagueness. He told me that if I hand in my thesis on a particular Wednesday "*dann geht sich alles aus*" – an expression that is typical of Viennese and not even translatable to Standard German, roughly meaning 'to make it' in that context. This is typical for Martin – to give existential support by saying the right words in the right moments. Now, for this worthy occasion, I feel it is due time to tighten a few of the many loose ends I left there. Thanks once more. I am also very grateful for crucial comments from an anonymous reviewer and the editors. Without their help this paper could not have attained the form (and meaning) it has got.

Both uses of *any* employ characteristic restrictions. As a NPI, *any* must reside in the scope of a downward entailing (DE) operator/quantifier (as in (1)); as a FCI it gives rise to some sort of a universal interpretation, but only in accordance with some additional restriction that prevents the application of full exhaustification within a given world (2). In other words, while the whole set of potential referents is activated, a DP headed by a FCI still refers to a singleton (set or individual), unspecific, just fulfilling the properties provided by the noun phrase. This explains why FCIs are often found in the context of certain modals that permit permutation over the set of potential referents. Notice that in (2b) the set of buttons is fixed, so widening is not a necessary condition. (2c) is an instance of subtriggering, first brought to attention by LeGrand (1975) and discussed extensively in the cited work of Dayal. In contrast, (3) shows that in simple declarative statements, neither a NPI nor a FCI interpretation is available. The sentence is perceived as ungrammatical, although it is not entirely clear which module of grammar should be made responsible for this kind of ungrammaticality – it seems that it is not syntax.

- (1) Gustav never/rarely eats anything for breakfast.
- (2) a. Any pilot could be flying this spaceship.  
 b. Press any of these three buttons!  
 c. Gustav talked to any woman he met at the party.
- (3) \*Gustav talks to any woman.

In my thesis (Neubarth 2006), I attempted to treat *any* as having a single, unified meaning, building upon Krifka's (1995) analysis of *any* as a determiner that conveys non-specificity. A DP with *any* takes the noun as the most general property. The set of alternatives includes all DPs that denote more specific properties; the union of all alternatives "*is exhaustive in the sense that all the alternatives together make up the foreground*" (Krifka 1995, 9). In simple, upward-entailing sentences, any alternative is stronger than the sentence with *any* in the foreground. The fact, that the foreground and its alternatives are in a logical entailment relation justifies treating the assertion itself as scalar. Employing Gricean reasoning, in particular Grice's maxim of Quality, Krifka argues that by asserting the foreground, all stronger alternatives should be rendered as false (as an implicature). But if all alternatives make up the foreground, and all alternatives should be false by virtue of being stronger, then the foreground should be false as well, which leads to a contradiction. The relation of strength is reversed in downward-entailing contexts, so the foreground expresses the strongest statement with respect to all alternatives, hence no contradiction occurs.

So much for the existential interpretation of weak NPIs. But, as already noted, *any* can also attain a universal interpretation, comprising the whole set of alternatives in its meaning. Then a simple assertion as in (3) would mean that Gustav talks to every women in the whole world – since *any* is not a quantifier per se, no contextual restriction could apply, and such an interpretation is not only implausible, but logically impossible. In those cases where *any* receives an interpretation as a FCI, the denotation of *any* can either be captured by a modal or sufficiently restricted – as in the case of subtriggering.



It may be hard to find a case where one could show that a systematic distinction between NPI and FCI would be untenable. However, there is one specific context where strictly distinguishing between a NPI and a FCI *any* becomes obscure: the standard of comparison. Unlike *any*, the temporal NPI *ever*, and also its counterpart in German *jemals* (and other languages), are generally taken to be rather typical NPIs that would never function as FCIs. Nevertheless, NPIs contained in the standard of comparison clearly receive a universal and not an existential interpretation.<sup>1</sup> This is problematic if NPIs are taken to generally have an existential meaning (which is often used as a criterion to discern them from FCIs).

There are several ways to incorporate this into a theory dealing with NPIs and FCIs as different items. Either one could acknowledge that the standard of comparison is the only context where a FCI counterpart to the NPI *ever* can ever appear. Then the polysemy account of *any* and *ever* could be maintained, but an explanation of why the latter usually, but not always, does not show up as an FCI would need to be provided. Alternatively one could classify the occurrence of these items in the standard of comparison as NPIs ‘in disguise’, where the universal interpretation arises as an epiphenomenon.<sup>2</sup> A radically different perspective that inherently avoids this dilemma would be to regard NPIs or FCIs as two sides of the same coin, two ways of interpreting items that employ exhaustification. Naturally, I will follow this path (already laid out in Chierchia 2013). The main contribution of this paper is to present a case where the accepted distinction between NPIs and FCIs apparently breaks down, showing the need for a more differentiated and more basic conception of these grammatical items.

## 2. Freedom of choice or no choice at all?

What seems to trigger the behavior of the items in question (such as *any* and *ever* in English) is that they indeed come with some universal flavor.<sup>3</sup> Krifka (1995) describes (unstressed) weak NPIs as exhaustive: the denotation of DPs with weak NPIs (but also adverbials like *ever*) comprises the entire set of possible referents that match with the properties expressed by the nominal (potentially including non-standard ones in the sense of Kadmon & Landmann 1993).

<sup>1</sup>A brief mention of this fact is found in Schwarzschild & Wilkinson 2002, fn. 4.

<sup>2</sup>This idea was brought up by an anonymous reviewer. Although it seems to make sense in the traditional view on NPIs and FCIs, pace some typological problems (see section 3), I reckon that adopting a more general perspective that does not strictly rely on a taxonomy of NPI vs. FCI leads to a more insightful understanding of these phenomena.

<sup>3</sup>Historically, certain indefinite NPIs indeed stem from unspecific indefinites. *Any* in Old English also had a plain indefinite meaning akin to German *einig(e)* that was lost in favor of a sole NPI meaning, while acquiring a FCI meaning much later. The etymology of English *ever* is not entirely clear, but it should be noted that it has a universal meaning in word formations like *everlasting* or *forever* and conveys a universal meaning in formations with wh-elements (e.g. *whoever*, *whenever*). Also, it is part of the distributive, universal quantifier *every* and the negative temporal *never*, perhaps with little transparency nowadays. Other items stem from formations involving a distributive marker. The German counterpart to *ever*, *jemals* contains the distributive particle *je*, which is also found in *jeder* (‘every’) and *jemand* (‘somebody’). The latter was a NPI in Middle High German, with a non-NPI counterpart *etwäre* that was lost after a phase of confusion. New High German now lacks weak indefinite NPIs in the nominal domain. Hence, diachronic evidence on NPIs points to both, indefinite determiners and universal expressions, as the source of grammaticalization.

The most sensible way of capturing the semantics of weak NPIs seems to be to assign them a meaning where they actually denote the set of all possible referents that fulfill the properties denoted by the noun phrase (including cardinally modified pluralities, such as *any two X*), or, in case of *ever*, the set of all relevant (accessible) situations/times. What makes these items special is that they neither have (universal or other) quantificational force on their own, nor do they behave like regular indefinites that are assigned reference by existential closure – thus escaping exhaustification. Still, universal (the whole set) or indefinite/existential (a choice of reference not to be pursued upon the set)? In fact, these items can be interpreted either way: the grammatical context together with pragmatic principles determines if neither, one, or both of these interpretations are possible. As an illustrative example, consider a conditional with two different continuations:

- (4) If he can solve any of these four problems
- a. he must be a genius.
  - b. he has good chances to pass the test.

The partitive use of *any* shows that widening is not at stake here. In (4a) the FCI interpretation prevails, whereas in (4b) a condition is expressed that solving a single problem whatsoever still yields good chances to pass the test. These two uses of *any* are tied to two diametrical scales of expectation. While being able to solve each one of the four problems is conceived as rather unlikely in the first case, the second expresses a very low threshold to pass the test: if solving either one of the problems suffices, the whole test must be rather easy. Still two sides of the same coin? Once the full set is the domain of reference, in the second case any choice out of the domain does not make any difference. What seems to be at stake here is that on the one hand, the conditional itself provides some sort of modality, opening the way to a FCI interpretation (Dayal 2004), on the other it qualifies as a DE context that is needed for a felicitous NPI interpretation.

As already discussed, weak NPIs denote an entity out of the set of all entities that fulfill some property that is deliberately kept as unspecific as possible (Krifka 1995). Things marginally change with focus on *any* because then the alternatives become visible (not just as part of the implicature). In upward entailing contexts, stronger alternatives, which have to be true by entailment, contradict the scalar implicature stating that they should be false. However, as with other strong NPIs, reversing entailment is not sufficient alone. They also must not give rise to existential statements (containing the NPI) where the NPI would lead to contradicting implicatures again, e.g., ‘*\*few students read even a single book*’ (see Krifka (1995), Chierchia (2004), Neubarth (2006), among others).<sup>4</sup>

<sup>4</sup>There are three main types of strong NPIs: (i) items that contain a lexically marked minimal quantity (e.g., *budge an inch*), (ii) items that involve an operator that ranges over expectations combined with some standard minimal quantity (e.g. *even a single*), and (iii) items that consist of an additive operator in combination with a counterpart to *only* plus a minimal quantity (e.g., German: *auch nur ein X*, Italian: *anche solo*). The latter can be conceived as fully compositional: *nur/solo* restricts the set that would yield true assertions to its focus while the additive particle forces alternatives to be true, which leads to a contradiction given that the item in focus is a minimal quantity (p.c. Krifka, 2007). The other two types work in a similar fashion, with minor differences, thus forming a consistent class of grammatical items.

Most of this reasoning pertains to the existential interpretation of the items in discussion as a NPI. Returning to FCIs, Dayal (1998) identifies FCIs as involving a universal operator that leads to a presupposition failure when occurring in non-subtriggered epistemic contexts. As indicated before, the dilemma lies between an exhaustive set of potential referents and the requirement to refer to one of these referents modulo a given situation. Universal quantification in the DP domain does this, but FCIs are not universal quantifiers. For that reason, Dayal introduces the relevant contexts as constitutive to the meaning plus introducing an additional constraint that ensures that individuation of referents can be maintained. In an earlier version, she utilizes a ‘Vagueness Constraint’ in order to ensure that FCI *any* is licensed by possibility, but not by necessity operators (without further modification). More specifically, she states the requirement of indeterminacy “*as a grammatical constraint against the extension of the relevant property (the intersection of the nominal and the verbal properties) being the same in every accessible world*” (Dayal 2009, 237). Later, she refurbished the relevant condition in terms of ‘Fluctuation’, and in Dayal (2013), she formulates a ‘Viability Constraint on Alternatives’, aligning her analysis to Chierchia’s (2013) account of NPIs.

The key factor of all these accounts is that FCI *any*, while being an indefinite, hooks up to a universal operator. In Dayal’s most recent account based on a notion she defines as ‘Viability’, this universal operator arises as a (FCI) implicature, that comes about as a result of negating all exhaustified sub-domain alternatives. Viability, in simple declarative sentences, generates a direct clash with the FCI-implicature, since it states that each exhaustified alternative must be true at the world  $w$  w.r.t. some subset of the union of all conversational backgrounds  $g(w)$ . In simple declarative sentences this clash leads to ungrammaticality; FCI licensing contexts imply a plurality of worlds (or situations) in order to resolve that clash. There are deep insights built into this combination of free choice as an implicature and Viability. First, free choice is derived as an implicature, but more importantly, FCIs are not universal quantifiers per se. This enables a novel perspective on freedom of choice – it is virtual; any actual choice of an exhaustified alternative annihilates freedom.

### 3. NPIs within the standard of comparison

Weak NPIs are fully compatible with the standard of comparison, whereas strong NPIs of the sort *even a single* are not. No wonder, since the standard of comparison is a DE context, but it does not provide an anti-additive context for strong NPIs (Zwarts 1990) – or, put in other terms, strong NPIs are not acceptable because existential statements containing the NPI arise. Consider the following examples:

- (5)
  - a. He can throw mobile phones further than any (other) linguist.
  - b. \*He can throw mobile phones further than even a single linguist can.
  
- (6)
  - a. Mutton tastes better than vegetables → Mutton tastes better than carrots.
  - b. Mutton tastes better than carrots or peas → Mutton tastes better than peas.

Example (6) shows that the standard of comparison is in fact DE. That the disjunction in (6b) acquires an interpretation as the union set is a phenomenon that has already been discussed (cf. Schwarzschild & Wilkinson 2002). Comparatives on any standard analysis invoke a universal operator that quantifies over degrees abstracted over some dimension introduced by the adjective combining with the comparative. Neglecting a bunch of important issues, the meaning of a comparative in a nutshell (mainly following Heim 2000) is that for all degrees  $d'$  tied to the standard of comparison, the degree  $d$  tied to the antecedent must be greater than  $d'$  with respect to the dimension and its implicit scalar direction. (E.g., *big* and *small* have opposing scalar directions w.r.t. to the dimension 'size'.) In other words, for every alternative to the antecedent that is provided by the standard of comparison, in order to evaluate the comparative, a degree has to be identified w.r.t. the adjectival predicate, and this degree will be compared to the value obtained from the antecedent. Notice that a universal operator is part of the meaning of comparatives. Naturally, negation scoping over a comparative does not reverse the direction of the scale associated with the adjective, but actually negates the universal (*not*  $\forall d': d \geq d'$ ).

The case of interest is the temporal NPI *ever*. It is licensed unequivocally as an NPI in several (DE) contexts: negation, questions, conditionals, the restriction of universal quantifiers, the scope of *only* etc., and also within the standard of comparison. How can we determine if it is really a universal interpretation *ever* receives there? If we suppose a context where companies start off with a given size and tend to grow, then a sentence like (7a) indicates an expected developmental increase, still tolerating ups and downs that might even exceed the size it has at present time, whereas (7b) explicitly states that there is no point in time where the company was bigger.

- (7) a. Now, the company is bigger than it was before.  
 b. Now, the company is bigger than it ever was before.

The (potentially, but not necessarily) widened temporal reference denoted by *ever* can be tested against the adverbial *again*.<sup>5</sup> Adding *again* to sentence (7b) shows that a restitutive (or repetitive) interpretation is excluded because, according to the standard of comparison comprising all potential points in time, there must not have been a previous state where the size of the company was equally big or even bigger – otherwise the meaning of the comparative would be false.

- (8) \*Now, the company is bigger again than it ever was.

Notice that the universal does not quantify directly over times/situations or individuals, but only indirectly, in that temporal states (or individuals) co-vary with degrees. Therefore, there is no FCI-interpretation in Dayal's (2013) sense – the universal interpretation does not arise as the consequence of a free-choice implicature, but as a result of co-variance with

<sup>5</sup>This adverbial can have two interpretations: a repetitive one, where *again* quantifies over situations, meaning that a particular situation has obtained before and is repeated; and a restitutive one, which is associated with a state that has already held before (as a presupposition), then not, and now holds again (cf. von Stechow 1996).

degrees. The problem is that *ever* on the one hand cannot be used in classical free-choice contexts, while, on the other hand, the standard of comparison does not provide a genuine free-choice context, but rather yields a genuine universal interpretation. So, the facts are not really conclusive, yet. Let us look at Italian, a language that provides two FCIs that are generally not used as NPIs (*qualsiasi*, *qualunque*) and a NPI that belongs to the class of n-words (*nessuno*), with special licensing properties:

- (9) a. Gianni è più grande di {qualsiasi / ?qualunque / ogni / \*nessun'} altro della sua classe → Gianni is taller than anybody else in his class  
 b. Gianni non è più grande di {qualsiasi / qualunque / ogni} altro della sua classe → Gianni is not the tallest  
 c. Gianni non è più grande di nessun' altro della sua classe → Gianni is the smallest  
 d. Nessun' è più grande di {qualsiasi / qualunque / #ogni / nessun'} altro della sua classe → All are of equal height

The first example shows that the Italian FCI counterpart to *any*, *qualsiasi*, lives well in the standard of comparison providing a universal environment. The n-word *nessuno* is out because of the lack of a negative licenser. The negated examples (9)b./c. have different meanings. With FCI *qualsiasi*, *qualunque* and the universal *ogni* the interpretation is just the negation of the universal provided with the comparative, while the n-word, licensed by negation, seems to import negation into the standard of comparison. Therefore negation seems no longer to have scope over the universal. The n-word *nessuno* in subject position can enforce negation on its own – if no one is taller than anybody else, all must be of equal height. The second n-word lives well here, and interestingly, the universal *ogni* is odd, a fact I have no real explanation for – it seems that an n-word in subject position cannot be decomposed into negation and an indefinite, which would be needed for defining the set (*ogni altro*) of the standard of comparison.

Given these facts, we arrive at a situation where the distinction between NPIs and FCIs loses much of its justification. What I would like to argue for, following Chierchia (2013), is to assign the terms FCI and NPI a meaning that relates to the interpretation of certain grammatical items, and not to the semantics of these items. It remains to conclude this paper with an example (re-)adapted from Kadmon & Landmann (1993) and my own work:

- (10) Ich bin froh, dass ich dieses Papier (überhaupt) jemals fertig geschrieben habe.  
 'I am glad that I ever finished this paper.'

The context in (10) is not DE in the strict sense, but it can be taken to conform to von Stechow's (1999) Strawson entailment. Crucially, it is the strongest proposition w.r.t. (earlier, more convenient) alternative times/situations. And, applying Dayal's terminology once more, Viability can be assessed by modalizing the process of evaluating gladness.

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Friedrich Neubarth  
friedrich.neubarth@ofai.at

## Gerne\*

Wilfried Öller & Susi Wurmbrand

University of Vienna, University of Connecticut

*“gerne unterstütze ich Dich wie auch immer...”* Martin Prinzhorn, February 2016

The above is the beginning of an e-mail by Martin, which not only reflects his generosity in providing support to his students, even decades after his advisory duties have ended, but also struck a chord with an interesting grammatical property of the word *gerne*<sup>1</sup> which we have been discussing for a while and will now take up in this squib as a thank you to Martin. Martin has been significant in both authors’ linguistic paths and honoring his diverse and manifold contributions, we will explore the phenomenon from two perspectives, a grammatical and a pragmatic one.

One of the phenomena we address in this squib is the increasing use of *gerne* in imperative constructions, judged as \*/“wrong” not only by teachers but by many ordinary speakers including the authors, who admittedly feel reluctant adjusting to announcements like *Wir haben Sommerschlussverkauf! Kommen Sie gerne vorbei!* ‘Sales are on! Drop in happily!’ Since the primary aim of linguists is not to criticize but to record and analyze linguistic changes, we will try to summarize different usages of the adverb *gern(e)* to see how this new use of *gerne* in imperatives arises.

For the purpose of this squib we distinguish four broad uses which we discuss in turn. In its first use (G1), *gerne* acts as an adverb modifying a (typically) habitual eventuality. *Gerne* in this use is often accompanied by *always* or *not/never*, and conveys that the subject enjoys (*gerne*) or doesn’t enjoy (*nicht gerne*) the activity. *Gerne* always relates to the subject and is used with all persons, tenses and verb valencies (but see below for episodic interpretations in the past).<sup>2</sup>

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<sup>1</sup>*Gern* or *gerne*, which is etymologically related to *begehren* ‘desire’/‘crave’/‘strive for’, can be translated as ‘willingly’/‘gladly’/‘happily’/‘enjoyably’/‘be happy to’/‘like, enjoy’.

<sup>2</sup>In all the German examples, *gerne* functions syntactically as a simple adverbial. Since the meaning is more complex and there is usually no direct translation of *gerne* as an adverbial in English, we only provide paraphrases that best convey the meaning of the utterances.

- (1) a. Wir sind immer gerne zum Wickerl gegangen. G1  
 ‘We always enjoyed going to Wickerl.’  
 b. Wir stehen nicht gerne früh auf.  
 ‘We don’t like getting up early.’  
 c. Schade, dass du nicht gerne schwimmst!  
 ‘It’s a pity you don’t like swimming.’  
 d. Geht ihr gerne ins Theater?  
 ‘Do you (pl) like going to the theatre?’  
 e. Sie hänselte gerne ihren kleinen Bruder.  
 ‘She used to like teasing her little brother.’  
 f. Er demonstriert seinen Konkurrenten gern seine Überlegenheit.  
 ‘He enjoys showing his superiority to his competitors.’

Within passive constructions there is often, depending on context, ambiguity whether *gerne* relates to the (implicit) agent or to the (surface subject) patient argument. Examples such as (2) may be read two ways as indicated by the paraphrases.

- (2) Ich werde                    gerne    gelobt.  
 I    AUX.PASS                GERNE    praised  
 a. ‘I enjoy being praised.’  
 b. ‘People (e.g., approving journalists) often/regularly praise me.’

How far one may go in connecting *gerne* with the implicit agent instead of the surface subject is a frequent issue among native speakers, as is shown by the first page article “Language accidents” by veteran journalist Gudrun Harrer in the renowned daily paper *Der Standard*.<sup>3</sup> Describing a sign at a supermarket cashpoint *Diese Kassa ist leider nicht besetzt. Aber Sie werden gerne an der nächsten bedient*. ‘This cash point is not occupied, but you will happily be served at the next one.’, she sarcastically asks: How do they know at which cashpoint I like to be served?

Almost impossible (if one excludes unrealistic use) is the G1-use of *gerne* in imperative sentences, since feeling enjoyment cannot be commanded. We return to imperatives at the end of this squib.

- (3) a. #Spiel gerne Fußball!  
 ‘Like to play football!’  
 b. #Bring mich gern nach Hause!  
 ‘Like to bring me home!’

When the predicate containing *gerne* receives an episodic interpretation referring to a single event, the use of G1 is usually odd, unless *gerne* is understood to be contrasted with the opposite habitual preference. For instance, (4a) can be used to indicate that yesterday’s event was not enjoyable, although we usually enjoy going to Wickerl. Similarly, (4b) emphasizes a perhaps surprising state of affairs, namely that we liked getting up

<sup>3</sup><http://derstandard.at/2000042923766/Sprachunfaelle>



early yesterday.

- (4) a. Gestern sind wir nicht gerne zum Wickerl gegangen. #G1, ✓G2  
 ‘Yesterday, we didn’t enjoy going to Wickerl.’  
 b. Gestern sind wir gerne früh aufgestanden.  
 ‘Yesterday, we enjoyed getting up early.’ (e.g., strangely enough) (G1)  
 ‘Yesterday, we were happy to get up early.’ (e.g., to accommodate you) (G2)

In addition to the contrastive G1 use of *gerne*, examples such as (4) have another interpretation which we refer to as G2. The use of G2 is found in a much more restricted setting than that of G1 and is subject to the following conditions: i) There are typically two participants in a speaker-addressee situation, usually 1<sup>st</sup> person to 2<sup>nd</sup>. ii) One of the participants is helped, served or being allowed to do something. iii) There is always some, if maybe only a little, doubt concerning the possibility or appropriateness of demanding or making use of the service. iv) The addressee is not held to believe that the action or permission in question is indeed pleasurable to the speaker, the latter merely communicating that s/he is ready, willing and able to conform. In conjunction with *gerne*, these factors add up to indicate a pragmatic use in the realm of facework (see, e.g., Brown & Levinson 1987): a politeness strategy encouraging someone who is or might be afraid of being intrusive by assuring them that this is not the case and that the action causes some form of delight or pleasure. At the same time, the recipient of a courtesy is relieved from the unfavorable role of an applicant, by assuring them that the act of helping in (5a) or taking care of them as in (5b) is not a burden to the subject. One of the participants might be implicit, and speaker and/or addressee might speak on behalf of others and therefore use the 3<sup>rd</sup> person as in (5b) or (5c).

- (5) a. Wir helfen gern.  
 ‘We’ll be happy to help.’  
 b. Unsere Mitarbeiterin wird Sie gerne betreuen.  
 ‘Our employee will be happy to take care of you.’  
 c. Die Arbeiterkammer tut sicher gern was für deinen Vater.  
 ‘(I am sure) The chamber of labor is willing to help your father.’

There is also a tendency for topicalization of *gerne* as in (6).

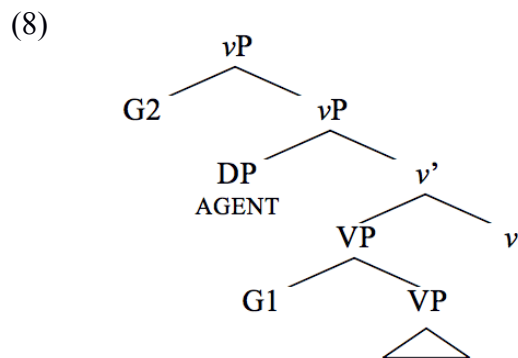
- (6) a. Gerne akzeptieren wir Ihre Kreditkarte.  
 ‘We will be happy to accept your credit card.’ [uttered by a stewardess]  
 b. Gerne machen wir Sie auf die Mailingliste “PLing [...]” aufmerksam.  
 ‘We are happy to inform you of the mailinglist “Pling”.’ [from a mailing list]

Separating G1 and G2 is also supported by the fact that the two uses can be clearly distinguished in dialogues such as (7). While Speaker A clearly disliked the event of getting up early (i.e., the ‘manner’ of getting up was joyless and G1 thus false), (s)he can still truthfully utter a *gerne* statement, as long as the idea of being the initiator of such a joyless activity creates some enjoyment (e.g., as in case of (7) for Speaker B; note, however,

that *gerne* is still speaker-oriented in that it is the speaker who is happy to initiate the event).

- (7) A: Ich bin gestern gerne früh aufgestanden. G2  
 ‘Yesterday, I was happy to get up/enjoyed getting up early.’  
 B: Wirklich? Du bist GERNE früh aufgestanden?  
 Playfully interpreting *gerne* as G1: ‘Really? You enjoyed getting up early?’  
 A: Ja – nein. Das Aufstehen hab ich gehasst, aber ich hab es gerne für dich getan.  
 ‘Yes – no. I hated the getting up, but I was happy to do it for you.’  
G1: false/G2: true

A way to distinguish between G1 and G2 in a structural approach would be to place *gerne* in different positions within an expanded verb phrase structure as in (8). G1 modifies the VP excluding the subject and hence yields a manner-like interpretation. G2 modifies the vP, i.e., the extended projection of the verb including the external argument.



The third use of *gerne* is in conjunction with modal verbs, in particular the modals *können* ‘can’ and *dürfen* ‘may’. This is a very common use of *gerne* and typically expresses that *gerne* is speaker oriented and that the speaker is happy with the possibility given by the modal statement or happy to allow the state of affairs expressed. For instance, in (9a), the speaker happily offers the possibility to cook for the addressee; in (9b), the speaker (S) expresses delight or contentment with the possibility of the addressee eating with S; and in (9c), the speaker happily grants the subject permission to visit his friend, which is only possible if the speaker has some authority over the subject.

- (9) a. Ich kann gerne für dich kochen. G3  
 ‘I would be happy to cook for you.’  
 b. Du kannst gerne bei mir essen.  
 ‘I’d be happy to have you eat with me.’  
 c. Leo kann/darf gerne zu seinem Freund gehen.  
 ‘I happily allow Leo to visit his friend.’

With enough context, the modal and *gerne* can also report someone else’s attitude. This is best in a reportative embedding structure or with subjunctive as shown in (10). In (10a),

the speaker reports that Leo happily granted the speaker permission to cook for him (Leo). In (10b), the matrix subject is understood as the speaker of the modal statement, and both *gerne* and the modal express the matrix subject's (Leo's) attitude in that Leo happily gives the addressee the permission to cook.

- (10) a. A: Hast du schon mit dem Leo gesprochen? G3  
           ‘Have you spoken with Leo already?’  
       B: Ja. Ich kann/könne gerne für ihn kochen.  
           ‘Yes. (He said that) He is happy to have me cook for him.’
- b. Leo hat gesagt, du kannst gerne für ihn kochen.  
       ‘Leo said he is happy to have you cook for him.’

Importantly, the orientation of the modal and *gerne* must match in that either both convey the speaker's perspective (as in (9)), or both convey the perspective of the subject of the reported statement (as in (10))—mixing and matching is impossible. For instance, (11) is, in principle, ambiguous with the two interpretations given (the second interpretation may be easier to access with a subjunctive modal). Such examples, however, cannot mean that the speaker offers the possibility of cooking for Leo (modal is speaker oriented) and that Leo is happy about that (*gerne* is reported context oriented); nor can it mean that Leo grants the speaker permission to cook and that the speaker is happy about that.

- (11) Ich kann gerne für Leo kochen.  
       ‘I am happy to cook for Leo.’ Speaker  
       ‘(Leo said that) He is happy to have me cook for him.’ Reported context

Note that G3 *gerne* can only occur in modal statements expressing possibility or permission. One might even reduce this duality to the expression of permission, as possibility here is dependent on the speaker's will alone. Since giving permission is less favorable to an addressee's face than ascribing a competence, *gerne* is mainly used in combination with *können*; *dürfen* is mostly found in settings that are asymmetrical (e.g. pedagogical) from the start. Universal deontic modal statements expressing orders or requests (e.g., *sollen* ‘should’ or *müssen* ‘must’) are incompatible with *gerne*. As shown in (12), there is, however, an analogue of *gerne* in universal modal statements—the adverbial *bitte* ‘please’, which tones down the order to a polite request and/or intensifies the speaker's desire that the state of affairs expressed by the modal sentence is indeed instantiated.<sup>4</sup>

- (12) a. Er soll bitte/\*gerne für mich kochen.  
           ‘He should, please, cook for me.’
- b. Er muss das bitte/\*gerne bis morgen abgeben.  
       ‘He has to, please, hand this in by tomorrow.’

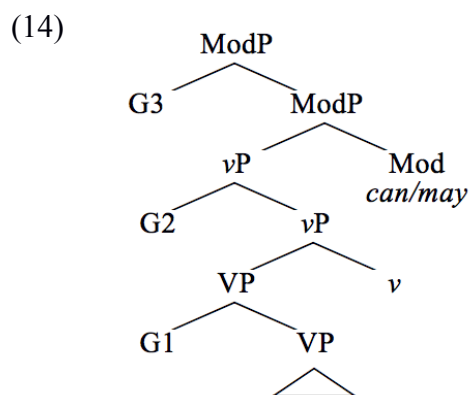
The difference between *bitte* and *gerne* shows up very clearly in modal statements with

<sup>4</sup>Statements such as *Er muss gerne kochen* ‘He must enjoy cooking’ are possible and ambiguous between an epistemic (evidence suggests that he enjoys cooking) and a deontic interpretation (he is required to enjoy cooking, e.g., as a precondition for becoming a successful cook). However, *gerne* in such cases then only involves interpretations G1 or G2 and cannot modify the modal.

the existential modals können/dürfen ‘can’/‘may’ and negation. Negation as in (13a) can be interpreted above (13ai) or below (13aii) the modal (with different intonations)—the former yields a negated possibility interpretation (equivalent to a universal interpretation), the latter a possibility to not do something (see Wurmbrand 2001, among many others). Adding *bitte* and *gerne* disambiguates the sentence. As shown in (13b), the sentence with *bitte* can only have the negated possibility interpretation—i.e., an emphasized request or order that Leo should not come. If, on the other hand, *gerne* is added, the sentence only has the interpretation that the speaker happily offers or allows Leo to not come.

- (13) a. Leo darf nicht kommen.  
 ‘Leo can/may not come.’  
 i. Leo is not allowed to come.  $\neg \diamond$   
 ii. Leo is allowed to not come.  $\diamond \neg$
- b. Leo darf aber bitte nicht kommen.  $\neg \diamond$   
 ‘Leo is not allowed to come.’ (Speaker emphasizes request.)
- c. Leo darf gerne nicht kommen.  $\diamond \neg$   
 ‘Leo is allowed to not come.’ (Speaker is happy to grant permission.)

In syntactic terms, we would say that *gerne* in its G3 use attaches to the TP or modal projection as in (14) (we ignore verb second in the tree) and thus takes very high scope.



Under a pragmatic approach, *gerne* here would be treated as a pragmatic entity whose scope typically is not limited to the lexical item or syntactic phrase it is attached to, but rather extends to and modifies the whole utterance (see, e.g., Dressler & Barbaresi 2017). Structural evidence for the high position of G3 is provided by examples such as (15). In (15a), a G3 interpretation is possible (the speaker is happy to offer the possibility). However, this interpretation disappears in (15b) where *gerne* is forced into a low position in the second conjunct (i.e., G2 or G1), which yields, if at all, only a subject-oriented interpretation and is not compatible with a speaker-oriented interpretation where *gerne* modifies the modal.<sup>5</sup>

<sup>5</sup>As pointed out by K. Hartmann, (15b) may become possible if, facilitated by adding *auch* ‘too’ in the second conjunct, an ellipsis strategy involving the modal can be used.

- (15) a. Du kannst gerne bei mir essen und schlafen. G3  
 ‘You can happily eat and sleep at my place.’  
 b. \*Du kannst bei mir essen und gerne schlafen. \*G3  
 ‘You can eat at my place and happily sleep there.’

The pragmatic switch of *gerne* from adverb to pragmatic particle, which we call G4, is most evident in cases such as in (16) where *gerne* stands by itself, or is a part of phrases or incomplete sentences. In examples like these, which occur very frequently, the *gerne* statement cannot (or not easily) be analyzed as an elliptic use of an adverb but requires recourse to pragmatic factors.<sup>6</sup>

- (16) a. Danke für deine Hilfe! - Gern! G4  
 ‘Thank you for your help! – It was a pleasure!’  
 b. Gerne auch mit Hund!  
 ‘We happily accept dogs!’  
 c. Kellner, bringen Sie endlich mein Bier! - Aber gern!  
 ‘Waiter! Bring me my beer (at last)! – With pleasure!’

This brings us back to our outset, the use of *gerne* in imperative constructions. As we have seen in (3), since imperatives typically involve orders and requests, *gerne* is not felicitous in an imperative. Instead *bitte* is used.

- (17) Schauen Sie bitte/\*gerne nicht weg!

Imperatives with *gerne* do occur in corpora, however, and increasingly so. This may arguably have been encouraged by the frequent G3 and G4 uses of *gerne*. We won’t elaborate here on the often blurred and theory-dependent boundaries between the notions of adverb and particle, but rather turn to the pragmatic implications. An utterance such as (18a) is understood as a possibly encouraging offer or invitation for the addressee to look around. The speaker does not make a genuine request and may be indifferent regarding whether the addressee does indeed look around or not. Although such utterances represent possibilities and not requests, there is a certain anticipation of the addressee’s interest in the suggested action without forcing it on them. The difference between an encouraging invitation and a speaker-induced request is brought out clearly when *gerne* is switched to *bitte* as in (18b), which cannot be understood without the speaker’s desire that the addressee indeed carry out the action.<sup>7</sup>

- (18) a. Schauen Sie sich gerne noch ein bisschen um!  
 ‘Feel free to look around a bit more!’

<sup>6</sup>(16b) is from the almost eponymous website <http://www.gernemithund.de/>. Note that in (16c) the utterer of *gerne* is supporting his own face rather than the addressee’s by somewhat ironically reframing the impolite commando-like order as a less intrusive plea.

<sup>7</sup>The *gerne/bitte* difference in (18) is reminiscent of the interpretational differences in modal contexts such as (13). This connection could be expressed in accounts to imperatives (such as Kaufmann 2012), which analyze imperatives in terms of modalized propositions. It may then be possible to reduce *gerne* in imperatives to the use in G3.

- b. Schauen Sie sich bitte noch ein bisschen um!  
‘Please look around a bit more!’

Asking someone to do what they might have wanted to do anyway and thus communicating the shared ambition and pleasure of both participants seems to be a Columbus’ egg of politeness. On the other side, the G4 use of *gerne* triggers a strong clash with the absurdity of the traditional non-pragmatical literal reading.

Let’s go back to G1 imperatives as in (3). When they are used to soften an act of prohibiting something, they seem less improbable:

- (19) a. Spiel gerne Fußball – aber belästige mich nicht damit!  
‘Go ahead and play football – but don’t bother me with it!’  
b. Bring mich gern nach Hause – aber noch zu mir kommen kannst du nicht!  
‘You can bring me home – but don’t expect me to let you in!’

Here are some more examples taken from actual speech utterances or texts, so the (native) reader can test their proneness to neologisms.

- (20) a. Falls Sie weitere Fragen haben, melden Sie sich gerne!  
‘If you have further questions, feel free to/#happily contact me!’  
[from an e-mail by a German teacher in high school]  
b. Bringen Sie gerne Ihren vierbeinigen Liebling mit!  
‘Feel free to/#happily bring along your four-legged sweetheart!’  
[from an ad for a holiday home]  
c. Begleiten Sie mich gern auf meinem Ausflug in die Naturheilkunde!  
‘Feel free to join me/#Happily join me on my journey to naturopathy!’  
[self-characterization of an alternative healer]  
d. Wenn Sie etwas benötigen, wenden Sie sich gerne an uns!  
‘If you need something, feel free to/#happily let us know!’  
[uttered by an Austrian Airlines stewardess]

Incidentally, the stewardess closed her address to the passengers with *Fühlen Sie sich bereits wohl bei uns!* ‘Feel already comfortable with us!’. But that’s another story for another time.

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Wilfried Öller, Susi Wurmbrand  
a6702821@unet.univie.ac.at, susanne.wurmbrand@uconn.edu





## **Linguistics based modularity and the structure of the cognitive field**

Csaba Pléh

Central European University & Collegium de Lyon

During the last thirty years, roughly corresponding to the time I have known Martin Prinzhorn, a rather dominant approach to the mental organization of language has been the modular one. My intellectual contacts with Martin in a peculiar way always centered on this issue, both in linguistics and in the broader issues of the organization of the mind. The first time we talked about these issues came after the publication of Fodor's (1983) vision of the modular organization of the mind. Fodor basically proposed that most of the human mind is organized into specific systems specialized for certain types of information that are domain or content specific, like a perceptual 'input system'. This is a mental extension of the idea that vision deals with light, hearing with sound etc., familiar from 19<sup>th</sup> century physiology.

In a little paper I wrote about Fodor (Pléh 1985) – much discussed with Martin – I emphasized that it is important to remember that this entire issue is related to multilayer level ideas about perception already introduced by Helmholtz. According to Helmholtz perception is a two level process. On the lower level, there is an automatic (modular) form of reaction in the nervous system that does not result yet in representations, which only emerge in a higher level of interpretation. Helmholtz combined the nativist inspirations from his teacher Johannes Müller with strict and extended empiricist principles. In this view, the basic qualities of sensation are provided by the structure of the sensory apparatus. "The qualitative difference of pitch and quality of tone is reduced to a difference in the fibers of the nerve receiving the sensation" (Helmholtz 1875, 148). This is the level that would be referred to by Fodor (1983) as the level of transducers. Higher organizations, however, are all results of experiential factors according to Helmholtz.

The first innovation of Fodor was that in his vision higher organizations are also pre-fabricated along the lines of his *Language of Thought* (Fodor 2008). His other innovation was in going against a belief held by the entire tradition of perceptual learning research, the belief in an automaticity of processing, with no intervention from 'knowledge' and inference, as Helmholtz has claimed. Hacker (1995) in a detailed philosophical critique, takes issue specifically with the notion of inference as used by Helmholtz. Hacker basically claims that Helmholtz committed several category mistakes in his treatment of sense data, sensation and perception. One of the faults he finds in Helmholtz is the incor-

rect use of the notion of inference. Inferences, according to Hacker, only work over propositions, and the unconscious inference schools all the way down to Helmholtz tried to base mistakenly inferences on sensations.

In the recent modular theories, some aspects that Helmholtz would have claimed to be higher based are also presented as specialized systems, specialized in the sense of being automatic, and sometimes postulated to be innately organized. A picture of the architecture of the mind is proposed where specialized systems would deal with language, faces, melodies etc. (Fodor 1983). This attitude has led to several different proposals regarding the role of knowledge in information processing. Fodor and his followers listed an entire series of features that would characterize modular processing: fast work, automatic, mandatory (reflex-like) processing, encapsulation, domain specificity, and innateness. In a peculiar way, Fodor takes over the inferential metaphor of Helmholtz, while he criticizes the perceptual learning tradition based on Helmholtz. For Fodor (1983, 42), inferences are from proximal stimulus configurations to the distal organization of the external world. At the same time, this architectural model would pack general knowledge related pragmatic aspects of language use under the rubric of the mushy General Problem Solver component of the architecture, thus extracting it from considerations of modularity altogether.

Many discussions in empirical studies of cognition, like developmental revisions of modular theses, and the debates about how to treat the impact of knowledge on processing in a modular frame, are pertinent to the issue of whether these factors are of equal importance. Coltheart (1999) in a survey proposed that they are not of equal importance. In his view, the original modular proposal was too restrictive. The ongoing debates concentrate on whether something is under a top-down influence or not showing signs of an innate organization, and in the case of top-down effects and effects of experience, the processes involved should be excluded from being modular. Coltheart proposed a rethinking, where not all aspects should be treated equally: the definitive feature of modularity would be domain specificity: “a cognitive system is domain specific if it only responds to stimuli of a particular class” (Coltheart 1999, 118), rather much like Helmholtz proposed 150 years ago. All the other features would be considered to be secondary compared to this core one, as Györi (2006) also pointed out for developmental studies.

Mandatory processing and encapsulation would not mean an exclusion of all top down effects from modular systems. They would only imply that a module-based processing is impossible to disengage. Likewise, following Coltheart, the issue of innateness and “rigid” cerebral localization would not be crucial to modularity: one could very well imagine, as Karmiloff-Smith (1992) did, arriving at modules as the result of a process of modularization rather than starting off with them. In the same way, one could very well imagine, according to Coltheart, having modular systems with more distributed processing rather than strictly and narrowly localized processing. The central issue remains domain specificity.

Interestingly enough, this would satisfy many of the proponents of an overall modular approach (referred to by Fodor as the massive modularity thesis) who identify modularity with domain specificity. It would not satisfy, however, Fodor, who claims that domain specificity tends to be circular when it talks about ‘reactions to a stimulus class’ (Fodor, 2000, 113), or else, it navigates on uncertain waters when it tries to exchange the notion

of modularity related to types of information with a notion of processing modularity (*ibid.*, 55-62).

Domain specificity would be too loose a criterion with no consequence regarding other features of modularity. For Coltheart (1999), however, this is the essential point: modularity (understood as domain specificity) would stand even without claiming innateness.

The classical modular view regarding language understanding started by claiming that context, even syntactic context, and frequency have no immediate effects on word recognition. All the classical data to the contrary could be interpreted as the results of post-perceptual guessing strategies, which only have a *post hoc* effect modulating the ease of word use. Similarly, in this view there is no on line interaction between the lexical, syntactic and semantic components of understanding. All of them operate as self-contained systems. Interactions only appear on the level of their outputs, over the results of their computations.

### 1. Ambiguities of linguistic modularity

For about three decades, we have been trying to test these ideas regarding the supposed automaticity and encapsulation of language processing using Hungarian morphological ambiguities. Gergely and Pléh (1994) used the multiple marking of Hungarian noun phrases and the combined ambiguity of some Verb/Noun stems and verbal and nominal affixes between some of the forms like those in (1).

- (1) *fej* N: head, V: to milk  
*fej-em* N: my head, V: I milk it, transitive, definite  
*fej-sz* only Verb meaning: you milk, intransitive, indefinite

In a cross-modal lexical decision task, where subjects listened to sentences and then had to name (read) a presented word, the target words were either related in meaning to the critical word in the sentence, or they were related to the meaning of the word that was irrelevant in the given sentence, as in (2).

- (2) Elhatároztam, hogy megnézlek, ahogy a tehenet FEJED.  
 'I decided to watch as you MILK (YOUR HEAD) the cow.'  
 relevant: *tejed* 'your milk'; irrelevant: *nyakad* 'your neck'  
 control: *képed* 'your image'

Basically, we found support for strong automatic processing with ambiguous words. The stems, the ambiguous suffixed words and even the target words following a disambiguating suffix showed facilitation of 40-50 ms compared to controls, i.e. unrelated words. So modular processing was supposed to work independently of the grammatical disambiguation possibility. However, our later studies showed serious constraints on this automatic activation of both meanings. Thuma and Pléh (2000) using both noun interpretation and verb interpretation priming sentences showed that automaticity was only valid for noun targets. It seems to be that in Noun/Verb ambiguities the noun meaning is activated even if the grammatical analysis should in principle cancel it. With further studies controlling

for frequency effects – since in the above cases the noun meaning was always more frequent – Thuma had shown that though one is entitled to differentiate between a fast and slow cycle, “the fast cycle is also sensitive to grammatical features. The issue of modular processing is thus related to the literature on automaticity-consciousness-metacognition and the issue of slow and fast in processing” (Pléh & Thuma 2013, 65) Contextually irrelevant meanings continue to be active for longer times – few hundred ms – if they do belong to the dominant, more frequent meaning of the word. There is sensitivity to long term effects with an apparent insensitivity to immediate contexts. This seems to be related to the issue of consciousness. Irrelevant meanings are active in the 200-400 ms window. During this time the connection with sentential level and background information and the accompanying suppression has not yet taken place. This window is similar to the one proposed by Dennett & Kinsbourne (1992) for conscious integration. Meunier & Longtin (2007) believe that in the early stages of processing automatic morphological analysis applies to every form that is decomposable into legal morphological forms in the given language. This would be followed by an integration of elements, which also entails a mutual inhibition between incompatible elements. The ease of combination might be a factor in the ‘survival’ of word form representations. The maintenance of the ambiguous form may locally support processing. The entire issue of this kind of modular processing becomes an issue of relating long term effects (dominant meaning) and short term contextual and grammatical processing information where the long term information is used first. This questions the ‘blind processing’ commitment of traditional modularity theories.

## **2. Modularity and ambiguities in the visual arts**

The modular approach as such is not limited to language: it is a claim of general validity. In my vision, this is the aspect that connects the two seemingly separate modules of the mind of Martin Prinzhorn, the linguist, and Martin Prinzhorn the art theorist and curator. Thanks to him I was forced to consider the modular vision of art several times (Pléh 2008 presents these excursions).

The application of the concept of modularity to art is itself multiply ambiguous. One can talk about the modularity of the art in terms of autonomy with regard to social pressures. One could also interpret autonomy as related to the functional independence of art. And finally, architectural autonomy. “Roughly conceived, this idea would suggest two possible, but necessarily contradicting ideas about mental architecture and the cognitive foundations of art: (1) Art is a special form of cognition which is relatively independent of other forms of cognition. Therefore, the unfolding of art (art history) is a saga about the recognition of this autonomy. (2) Art is part of a decomposed view of cognition. Art might relate to different aspects of experience, not necessarily to one single aspect. Therefore, the history of art is a history of experimenting about which aspects of (visual) cognition to connect to artistic expression” (Pléh 2008, 240).

This second architectural interpretation of modularity appears in the neuroscience interpretation of art and is again related to ambiguity. In the ultra-modular view professed by neuroscientists, in particular by Zeki (1999), visual representation would be the composite result of a large number of modular processes. Art in this vision would be a series of attempts to render different aspects of the variety of this multitude of processing. There would be no privileged type of representation for art to grasp. The artist would be

peculiar in the sense that the artist tries to grasp processes and representations that are normally not available to conscious experience. Otherwise, however, art and science would be doing similar things: trying to decompose the complexities of visual experience. “[A]rtists are in some sense neurologists, studying the brain with techniques that are unique to them, but studying unknowingly the brain and its organization nevertheless” (Zeki 1999, 10). Art would thus be the unfolding of a bioprogram, with its special, if you like, autonomous methods.

In this process, ambiguities play a central role. “Some artists such as Arcimboldo and Salvador Dali deliberately made of ambiguity an artistic form. It is rather the capacity of multiple experiences, even though we are conscious of only one at any given moment, that a stimulus can provide” (Zeki 2004, 291f.). Zeki especially gives tribute to Dali for his facing ambiguities as essential aspects of the world itself. Dali “was using the capacities of the visual brain to perceive two or more images in a single painting, which he subsequently interpreted as a delve into the sub-conscious? [...] I am inclined to the view that Dali actually accepted contradictions because he did not consider them to be contradictions, but rather the inevitable consequence of our psychological make-up, which I interpret to be the constitution of our brains. Dali, by contrast [with the Surrealists], wanted to maintain the apparent contradiction, or opposition, between the rational and the irrational, not merge one into the other” (Zeki 2017, 9, 12).

Thus, just as Martin Prinzhorn does with his complex interests and activities, the mind, while modular, teaches us with its complex workings to tolerate ambiguities and cross-talks across disciplines and domains.

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Csaba Pléh  
vispleh@ceu.edu

## Apples, oranges and Structural Analogy\*

Markus A. Pöchtrager

University of Vienna

### 1. Introduction

This short contribution presents some thoughts on the idea of Structural Analogy (Anderson 1992, 2004) between syntax and phonology, i.e. that those two domains of grammar share a similar architecture. For example, Anderson (2004) likens short/lax vowels in English (as in *put*, *hit*, *cat*), which must be followed by a consonant (*\*pu*, *\*hi*, *\*ca*), to transitive verbs, which must be followed by an object: *John examined \*(the patient)*. Likewise, the structure of the syllable has been compared to the structure of a clause—both have even been claimed to be evolutionarily related, cf. Carstairs-McCarthy 1999. One view of the syllable holds that it can be subdivided into onset and rhyme, with the latter further subdivided into nucleus and coda. That structure lends itself to a comparison with clauses with subject, verb and object as the main parts, where again the latter two form a closer union. This idea also seems to fit together with Anderson’s proposal of “transitive” vowels.

Proposals like those have met with interest but also skepticism; both kinds of reactions coming from both phonologists and syntacticians. Some linguists, including myself, are receptive to the idea of parallels (Carstairs-McCarthy 1999, van der Hulst 2006, 2010, etc.). Others reject it (Bromberger & Halle 1989, Carr 2006, Neeleman & van de Koot 2006, etc.) since, so the argument, there are fundamental differences between the two domains making any such analogy unlikely, if not impossible. The example of the syllable from the previous paragraph has been dismissed, amongst other reasons, for lack of semantic relations in phonology (verb and object contract a semantic relation, unlike vowels and following consonants) and the failure to find an equivalent to ditransitive verbs, cf. Tallerman 2006.

Claims for or against a similar architecture across domains cannot stay impressionistic but must be based on explicit formal theories. This is what Neeleman & van de Koot (2006) undertake in great detail, and they conclude that the structural analogy must be rejected.

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\*I would like to thank my anonymous reviewer for valuable suggestions. This squib is a token of my debt to Martin Prinzhorn, who, despite being a syntactician, was one of my first phonology teachers. The kind of phonology I have been doing over the last couple of years is inspired by syntactic theory, and I suspect I have Martin to thank for that. I hope that the conceptual issue I want to raise in this short contribution will be of interest to him.

In their view (p. 1527), the following three properties, which are said to be fundamental to phonology, make it look very different from syntax: (i) lack of recursion, (ii) lack of projection, (iii) lack of anything resembling syntactic dependencies. Much can be said about those alleged properties, but here I will focus on (part of) the first property, the alleged lack of recursion, and we will only touch upon the others.

A similar sentiment can be found in Jackendoff (2007, 39):

“[Phonological] structures, though hierarchical, are not recursive, in that, unlike syntactic structures, they cannot be embedded indefinitely deeply in other structures of the same type. [. . .] For example, a rhyme cannot be subordinate to a syllable that is in turn subordinate to another rhyme.”

There is much to be said about this quote, but I want to focus on the example of a rhyme embedded in a syllable embedded in a rhyme.<sup>1</sup> The claim that this is an impossible configuration presupposes certain ideas about what syllable/rhymes are; that they are well-defined and justifiable objects, the need for which is a matter of consensus. This is not the case: in Government Phonology (GP), the syllable has no theoretical status and the rhyme, though part of the theory, differs in crucial details from other approaches (Kaye, Lowenstamm, & Vergnaud 1990).

The same can be said about Neeleman & van de Koot (2006): their conclusion, that phonology and syntax are fundamentally different, rests on specific assumptions about phonological structures, for example the Prosodic Hierarchy (Nespor & Vogel 1986) with its accompanying conditions of proper containment and the strict layer condition. I do not deny that those assumptions are mainstream, but wish to point out that trivially, the validity of any comparison will depend on the exact nature of *what* is compared, so similarities between two domains or the lack thereof will depend on the specific model chosen.<sup>2</sup>

## 2. Syllables in syllables

It is ironic that GP 2.0, the particular development of GP that I have been pursuing in the last years (starting with Pöchtrager 2006), employs a structure very similar to the one Jackendoff deems impossible. Not identical, because the concepts of syllable and rhyme as such have no place in it, but at least similar. (2a) gives the structure of the bi-“syllabic” word with initial stress, following Pöchtrager (2006). The structure consists of two onset-nucleus (ON) pairs, where the second pair is embedded in the first.<sup>3</sup> (Each onset-nucleus pair is contained in a box for the sake of clarity.) An xN denotes a nuclear head, N<sup>i</sup> etc. a projection thereof; onsets are given in abbreviated form. (2b) gives a more mainstream, flat representation, with the internal structure of onsets and nuclei again abbreviated.

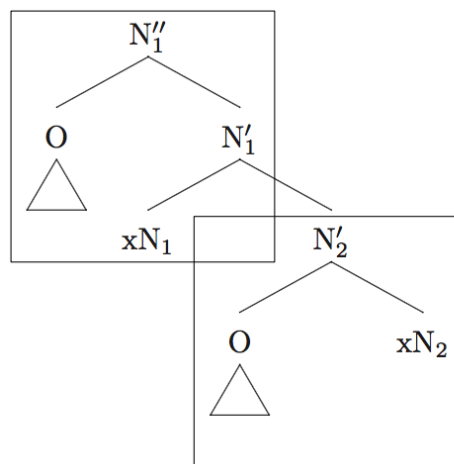
<sup>1</sup>Jackendoff’s example is actually one of embedding, a special case of recursion. Also, the notion of recursion is independent of whether the output is (in)finite (Watumull, Hauser, Roberts, & Hornstein 2009).

<sup>2</sup>A rather extreme example of this is the model by Nasukawa (2015), whose representations look very different from mainstream phonology and much more similar to syntactic structures.

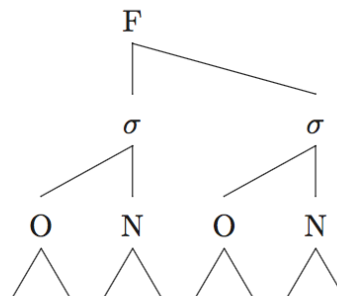
<sup>3</sup>In van der Hulst (2010), a notational variant of that structure is proposed.



(1) a.



b.



As Neeleman & van de Koot (2006) correctly point out, the fact that trees can be used does not imply that trees must be used. It is therefore necessary to look at what kind of predictions are made by tree structures as the one in (2a) which would not find an equivalent in a flatter structure (as in (2b)).

A strong argument for trees in syntax is that they allow the expression of asymmetric relations. A node  $\alpha$  can c-command a node  $\beta$ , without the reverse being necessarily true. Asymmetries are central in syntax, and so they are in phonology, I will claim.

In Pöchtrager 2009, 2015 and Živanovič & Pöchtrager 2010 it has been argued on the basis of data from English, Putonghua and Japanese that melodic primes within a phonological structure, in particular the elements **I** and **U**, are distributed in an asymmetric fashion which relies on notions like c-command, only expressible in hierarchical terms. For example, English has the diphthong *oi* (*boy*, *void*), whose head contains **A** and **U** (giving us *o*), while the offglide is simply **I**. Exchanging **U** and **I** yields ungrammatical *\*eu*. The impossibility of flipping around the two elements has nothing to do with linear order, but follows from a ban on which of the two elements can sit higher (and thus “bind”) the other one. This can be shown by comparison with other languages, where it is never linear order that matters, but always hierarchical structure.

Let us now turn to the structure in (2a), where further asymmetries can be teased out, some better understood than others. Theories of metrical structure employ metrical grids, where the number of grids represents prosodic strength (primary/secondary/no stress), or metrical trees, where the branches are labeled “weak” or “strong”. Neeleman & van de Koot (2006) argue that trees with such labelling violate fundamental principles which trees in syntax must conform to (such as Inclusiveness), since labels like “weak”/“strong” do not follow from inherent properties of the nodes in the tree. Furthermore, so the authors, metrical grids provide an alternative which does not rely on trees and can be integrated with their own proposal of a flat (string-based) organisation of phonology. Notice however that the representation in (2a) also encodes metrical prominence, in that the weaker nucleus

is embedded in the stronger one. What is traditionally achieved by labelling branches is encoded here in the tree itself.

In fact, such a conflation of “syllable” and foot structure only increases the empirical content of the theory, if anything: interaction between the two is expected if they are in fact the same thing. In fact, all phonological phenomena will have to refer to one and the same tree. This is the kind of reasoning that also lay behind Pöchtrager & Kaye 2014, which compared two phenomena: (i) metaphony/umlaut (Germanic, Italian, Korean etc.) which typically goes from unstressed to stressed position and is plagued by lexical and morphological exceptions, disqualifying it as a phonological process, and (ii) vowel harmony, which often goes from stressed to unstressed position, is much more regular and thus more likely to be phonological. If melodic properties are passed on along an asymmetric tree as the one in (2a), then one can stipulate that going downhill (away from stress) is much easier than going uphill (towards stress), hence no umlaut *qua* phonological process.<sup>4</sup> Similar factors might explain why English tapping happens between stressed and unstressed, but not between unstressed and stressed vowel.

A final word on constituency: (2a) predicts that there is a constituent break between the initial onset and the rest of the word. This defines the complementary environments where English allows [h] (in the initial onset) and [ŋ] (everywhere but in the initial onset, i.e. as part of the initial onset’s sister constituent).

### 3. Revisiting the Prosodic Hierarchy

The original motivation for the Prosodic Hierarchy (Nespor & Vogel 1986) was the claim that different processes are sensitive to different domains (syllable, foot, prosodic word etc.). The structure in (2a) seems to conflate two notions: (i) onset-nucleus pair (the closest equivalent to the syllable), where a nucleus (as a head) combines with an onset, and (ii) foot, where a nucleus (as a head) combines with another onset-nucleus pair. Both times, the nucleus is the head which projects. Neeleman & van de Koot (2006) express concern that treating feet as projections of a nucleus makes it impossible to refer to specific domains by a unique label (since a projecting nucleus stays a nucleus, no matter how high it projects). Note that while there might not be a specific label, there is a way to define at least the head of a foot (a nucleus that selects another onset-nucleus pair). If word-final consonants are treated as the onsets of empty nuclei, as per Kaye (1990), then that definition also includes the vowel in words like *sit* as head of a foot, because the *i* combines with an onset-nucleus pair (whose nucleus is empty).<sup>5</sup>

The Prosodic Hierarchy is not only interested in heads, but also in domain edges, which

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<sup>4</sup>Of course, the facts are *much* more complex than presented here. The reader is referred to Pöchtrager & Kaye 2014. Care needs to be taken when looking at counter-examples. Turkish, for example, is usually claimed to have final stress, so vowel harmony would go *towards* it. However, whether Turkish really has stress (or another kind of prominence system) has been seriously challenged (Kamali 2011, Özçelik 2014).

<sup>5</sup>In a word like *wallet* we have an onset-nucleus pair (with an empty nucleus) embedded in an onset-nucleus pair that is itself embedded in a nucleus, showing that the next level of embedding is not automatically of a different category. Obviously it remains to be seen what can be said about higher levels or more complex structures.

it allows reference to. If the argument presented here is to go through, this issue will have to be addressed. To do that, the individual empirical facts requiring reference to edges and thus leading (at least in part) to the postulation of the Prosodic Hierarchy would have to be reviewed on a case-by-case basis. This is a daunting task, and so far we have barely scratched the surface of the lower levels of that hierarchy.<sup>6</sup> Note however that there is a common denominator that will have to be addressed in *each* case: Non-Arbitrariness (Kaye, Lowenstamm, & Vergnaud 1990).

The Non-Arbitrariness Principle (NAP) forms the non-negotiable core of the theory on which everything else rests. It demands that there be a direct connection between what happens and where it happens. Assimilations involve the copying (expressible in various ways) of a certain property from one position to another and, as such, meet the NAP: there is a clear connection between what happens (assimilation) and its context. In the same vein, Harris (1997) has argued that properties can be lost in prosodically unfavourable positions: the reduction of *o* to *a* in unstressed position (say, in Russian) is simply the loss of the element **U**, one of the component parts of an *o* (Harris 1997, Harris & Lindsey 1995).

Consider now final devoicing, a kind of neutralisation.<sup>7</sup> According to Iverson & Salmons (2011, 1636), it is “widely attested at all levels of the prosodic hierarchy”. In fact, it is seen as a merit of the Prosodic Hierarchy that it provides a rich set of categories to refer to those different levels. A rule-based approach would simply have to include the right kind of boundary in its structural description, to limit devoicing, to, say, word-final position.

Notice that this avenue is *not* open to GP. It would remain unclear what the relation is between the end of a certain domain and the effect we see, i.e. “devoicing”. One has to look for a different interpretation. Gussmann (2007, 289ff.), in a similar vein to Brockhaus (1995) and Harris (1997), argues that Polish obstruents lose their **L**-element (responsible for voicing) at the end of a word because “empty nuclei fail to license **L** on their onsets”. Since word-final consonants are invariably followed by an empty nucleus (Kaye 1990), a link can be established between the empty nucleus, which is assumed to have a weak licensing power (presumably because it is empty), and the loss of **L**.

This move is representative of what would have to be said about each and every level of the prosodic hierarchy. Shifting the burden from the boundary type to a proper phonological object (cf. also the discussion in Scheer 2008) makes the phenomenon in question non-arbitrary, and concomitantly and more generally also weakens the case for those different types of boundaries. To the extent that differentiations need to be made (foot-final, word-final etc.) they can only involve the exact position within the tree that the phonological object finds itself in. This is similar to the idea that in syntax a DP is not subject or object *per se*, but acquires that function as a result of the particular position it is embedded in.

There is yet another possibility: Syntax makes use of functional categories (*C*, *T*, *v*) that fulfill various functions. Maybe phonology does as well. Here is how: The idea that

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<sup>6</sup>Similarly, van der Hulst (2006) argues that all domains of grammar need to make a distinction between (roughly) word-level and sentence-level, where different conditions obtain. It is unclear to me at this point whether such a division of labour makes our task harder or easier.

<sup>7</sup>“(De)voicing” is a terrible misnomer as it subsumes various different phenomena, for discussion cf., amongst many others, Brockhaus (1995), Harris (2009), Iverson & Salmons (2011). Here, I will only focus on one single case, but the NAP will have to be observed for all of them.

stress provides extra room has been around in several versions of GP, notably Strict CV (Lowenstamm 1996), for a while, cf. Enguehard 2016 for the most comprehensive attempt. Assume stress is a functional head. The extra space given *is* that head. It can project, take another nucleus as its complement and form what we used to call a foot. (I have nothing to say about potential specifiers.) In that case, the domain of the foot would be reliably identifiable in the same way that a TP in syntax would be identifiable. (Note that this does not free us from finding an account that satisfies the NAP.)

#### 4. Conclusions

I agree with the skeptics of Structural Analogy that the mainstream conception of phonology is often at odds with syntactic organisation. However, GP has shown throughout its history that it is also often at odds with mainstream phonology. In this article I have presented my hope that the two instances of “being at odds” cancel each other out and that looking at phonology through the eyes of syntax can be a fruitful endeavour, if only we are comparing the right things.

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Markus A. Pöchtrager  
markus.poechtrager@univie.ac.at

## Silent V and the IPP\*

Henk C. van Riemsdijk

Arezzo

### 1. Preliminaries

Silent, phonetically empty, elements have played an important role throughout the history of generative grammar. Think of traces (of various kinds), PRO, *pro*, ellipsis (of various kinds), paradigms of functional elements in which some slot(s) are ‘filled’ with zero-morphemes, etc. In all serious work on silent elements, one of the central questions must be whether there really is some element in the syntactic structure, but something that lacks a phonetic expression, or whether there simply is nothing there (see Van Riemsdijk 2002, 2003, 2012). In the cited works I have mainly concentrated on silent verbs, in particular, though not exclusively, motion verbs. But there is a considerable literature on silent nouns as well, (cf. Kayne 2003 and many subsequent articles by the same author, and Van Riemsdijk 2005). What makes these proposals stand out is the fact that they go beyond the domain of functional heads and include semi-lexical, light and sometimes even fully lexical words. In the case of motion verbs, the main question boils down to the question of whether the silent element is thought to be part of the syntactic structure as a lexically specified element that is subsequently deleted (or not spelled-out), or whether it is a lexical item that has its own lemma in the mental lexicon but is specified there as being an element that lacks phonetic content. In my own work, cited above, I have tried to be careful in the sense that the choice between the two alternatives must always be carefully argued, leaving open the possibility that, for example, the silent motion verb GO is actually a silent lexical item that is listed as such in the lexicon in Swiss German, but is a phonetically specified lexical item that becomes silent due to deletion (of non-spell-out) in Dutch. Vanden Wyngaerd (1994) defends the view that silent elements of this kind are due to deletion at PF. Barbiers (1995, 2006) contends that silent motion

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verbs, which must always be licensed in some way by modal auxiliaries (or verbs), come in two varieties: sometimes they are truly silent motion verb complements to modal auxiliaries, and sometimes the modal is itself the main verb that semantically incorporates the motion verb. My own position is not very different, but I have argued that in language acquisition the null hypothesis must be that modality is expressed in the form of an auxiliary because otherwise it becomes hard to explain why the semantic incorporation hypothesis is not always chosen. In the present squib I address one minor but important argument that Barbiers adduces to argue that in Dutch (as opposed to, for example, Swiss German) silent motion verbs are semantically incorporated in the lexical entries of modal (main) verbs. Let us first look at one of the arguments in favor of silent motion verbs.

## 2. Silent verbs

My initial purpose was to reexamine the well-known construction – found in Old English, the Germanic OV-languages and, to a certain extent in the Scandinavian languages as well – in which a modal verb is combined with a directional PP (Van Riemsdijk 2002).<sup>1</sup> Typical examples are:

- |     |    |                                                   |                     |
|-----|----|---------------------------------------------------|---------------------|
| (1) | a. | Du        darfst nach    hause.                   | <i>German</i>       |
|     |    | you        may    to        home                  |                     |
|     |    | ‘You may go home.’                                |                     |
|     | b. | Moeten    wij    nog    de    stad    in?         | <i>Dutch</i>        |
|     |    | must      we    still    the    town    into      |                     |
|     |    | ‘Do we still need to go into town?’               |                     |
|     | c. | Si sött    aber    no    in    chäller.           | <i>Swiss German</i> |
|     |    | she should but    still    into    cellar         |                     |
|     |    | ‘But she should still go down into the basement.’ |                     |

A semantic solution of the type envisaged by Barbiers (1995, 2006)<sup>2</sup> to supply the implied motion verb can undoubtedly be devised. Indeed the majority view,<sup>3</sup> which has been that the modal verbs in such examples are main verbs, must rely on some semantic account for the missing verb. But in Van Riemsdijk 2002, I argue that these constructions should be analyzed differently: the modal is a functional verb, an auxiliary, and hence there is a silent motion verb present in the syntactic structure. The most straightforward evidence comes from the structure of verb clusters in Swiss German.<sup>4</sup> Swiss German, like German and Dutch, is an OV-language. And as in these languages, verbs tend to cluster at the end in complex infinitival constructions. And like in Dutch, the order is often as might be expected under a VO-order, that is, the order is the reverse from what would be expected under the nested structure typically found in OV-languages. Finally, Swiss

<sup>1</sup>The brief summary presented here is largely taken from Van Riemsdijk 2012.

<sup>2</sup>See also Pustejovsky’s work for interesting discussion (Pustejovsky 1995).

<sup>3</sup>See in particular Lightfoot’s influential argument that the modal verbs were reanalyzed from main verbs into auxiliaries in the course of the development of Modern English (Lightfoot 1979).

<sup>4</sup>An argument of this kind was originally presented, though in somewhat rudimentary form, in Jarich Hoekstra’s work, see Hoekstra 1997.



German differs from Dutch in that dependents of verbs in a verb cluster can sometimes appear inside the verb cluster, a property usually referred to as Verb Projection Raising and discussed in Haegeman and Van Riemsdijk 1986. Against this background, consider (2).<sup>5</sup>

- (2) a. wil si het müese i-d schuel *Swiss German*  
 because she would-have must in-the school  
 ‘because she should have gone to school’
- b. das er nonig hät döörfe häi  
 that he not-yet has may<sub>PastParticiple</sub> home  
 ‘that he was not allowed to go home yet’

The surprising thing about these examples is the position of the directional PP, which is found all the way at the end of the clause, at the right edge of the verb cluster. This is surprising because directional PPs may never extrapose. Accordingly the examples given in (2) are bad when there is an overt motion verb.

- (3) a. \*...wil si het müese gaa (‘go’) i d schuel *Swiss German*  
 b. \*...das mer noni händ döörfe gaa (‘go’) häi

In view of this, the examples in (2) appear to be in violation of what we may call the general OV-template:

- (4) Dependents of a verb must always precede that verb, regardless of whether that verb is part of a verb cluster and regardless of whether the dependent in question is in that verb cluster.

This somewhat complicated formulation is chosen to correctly predict that the following verb projection raising variants (that is, variants in which the directional PP is inside the verb cluster) are grammatical provided the motion verb is to the right of the directional PP.

- (5) a. ...wil si het müese i d schuel gaa  
 b. ...das mer noni händ döörfe häi gaa

In (5) the directional PP is inside the verb cluster, but it precedes the verb it is dependent on (*gaa*). If we assume, as most people do, that the examples in (2) involve a main modal verb that subcategorizes a directional PP, it is totally surprising that the directional PP follows the verb it is apparently dependent on, namely the modal verb. Suppose, however, that we assume that the modal is an auxiliary, just as in Modern English,<sup>6</sup> then there is a missing motion verb in (2), call it GAA. We may then suppose that the examples in

<sup>5</sup>Embedded sentences are used here to avoid the complication of Verb Second in main clauses.

<sup>6</sup>There are differences as well, of course. In particular the paradigm for modals in the Germanic languages other than Modern English is not defective in that non-finite forms exist alongside the finite forms.

(2) are identical in all relevant respects to those in (5), except that the motion verb has no phonetic content:

- (6) a. ...wil si het müese i d schuel GAA  
 b. ...das mer noni händ döörfe häi GAA

We thus have a convincing explanation for the existence in Swiss German of examples like (2). Thereby we have strong evidence for the existence of a silent motion verb. Hence no appeal to a semantic inference rule is required.

### 3. The case of Dutch

The very straightforward and, in my view, convincing arguments in favor of an analysis in terms of a silent verb (GAA) in Swiss German<sup>7</sup> are not reproducible in Dutch. The reason is that Dutch has no (or only very marginal) Verb Projection Raising. In other words, sentences like those in (5) cannot be constructed in Dutch. This means that for independent reasons the directional PP could not end up in the clause-final position, even if we were to assume the presence of a silent motion verb (GAAN) for Dutch.

While there is nothing wrong in principle with the assumption that Dutch modal verbs are main verbs and that they incorporate the semantic notion of motion in their lexical entry, we are forced to search for more evidence. This is so because I have argued above that a theory that admits silent verbs in its mental lexicon is forced to assume that the null hypothesis for every language is that verbal modality is expressed by auxiliary (or semi-lexical) verbs, not by main verbs. If we did not make that assumption, there would be no way to prevent a child growing up in the Swiss German speaking part of Switzerland to make the wrong assumption that modals are main verbs that can incorporate a semantic feature of directionality, a result that we need to avoid. And looking further, there are indeed reasons to assume that Dutch is like Swiss German in that its modal verbs are auxiliaries and that there is a silent motion verb GAAN.

As Norbert Corver has observed, Left Dislocation in Dutch treats directional PPs like clausal phrases and unlike DPs, even when those DPs are part of a directional PP whose P has been stranded *in situ*.<sup>8</sup> The difference shows up in the choice of the (fronted) d-word (as Dutch standardly uses contrastive left dislocation (CLD)). Left dislocations with a locative DP are constructed with the d-word *daar* ('there') while Left dislocations with a directional PP are excluded unless the verb is a true motion verb. In that case the d-word, however, is *dat* ('that'), not *daar*. What exactly makes a verb a 'true motion verb' is not so clear, but this does not affect the force of the argument. For the examples given here, we note that *verhuizen* ('move house') is not a true motion verb but *duiken* ('dive') is and accordingly behaves like the truest of all motion verbs: *gaan/GAAN* ('go'). With this in mind, consider the following paradigm:

<sup>7</sup>In addition to the argument from apparently extraposed directional PPs there is a second argument, discussed in detail in Van Riemsdijk 2002, based on the behavior of the *go* infinitive marker and its doubling in Swiss German. For reasons of space I have omitted a summary of this argument here.

<sup>8</sup>For a more detailed discussion, see section 6.6. of Van Riemsdijk 2002.

- (7) a. De hoofdstad, daar/\*dat verhuisde zij pas later naartoe.  
the capital, there/that moved she only later to  
‘The capital, she moved (to) there only later.’
- b. \*Naar de hoofdstad, daar/dat verhuisde zij pas later.  
to the capital there/that moved she only later  
‘To the capital, she moved there only later.’
- (8) a. Naar de hoofdstad verhuizen, dat/\*daar moest zij pas later.  
to the capital move that/there must<sub>Past</sub> she only later  
‘Move to the capital, she only had to do that later.’
- b. Het diepe water in duiken, dat/\*daar mocht hij niet.  
the deep water into dive that/there may<sub>Past</sub> he not  
‘Dive into the deep water, he was not allowed to do that.’
- (9) a. Naar de hoofdstad, dat/\*daar moest zij pas later.  
to the capital that/there must<sub>Past</sub> she only later  
‘To the capital, she had to go there only later.’
- b. Het diepe water in, dat/\*daar mocht hij niet.  
the deep water into that/there may<sub>Past</sub> he not  
‘Into the deep water, he was not allowed to go there.’

As (7b) shows, a left dislocated directional PP in combination with a non-strictly motional verb is not possible unless, as in (7a) the directional P is stranded. In that case the d-word has to be *daar*. (8b) is different in that *duiken* is a true motion verb, and when the whole phrase containing also the verb is left dislocated it is again the d-word *dat* that must be chosen. With the whole verbal phrase, it does not matter whether the verb is a true motion verb or another verb that implies some motion, as shown in (8a). Now, (9) is important because there is apparently no motion verb. Instead there is a modal verb or auxiliary. On the assumption that the modal is a true auxiliary and that the motion verb is silent in these cases the presence of *dat* in the left dislocation is explained if the silent verb is part of the left dislocated verbal phrase, as in (10).<sup>9</sup>

- (10) a. Naar de hoofdstad GAAN, dat/\*daar moest zij pas later.  
b. Het diepe water in GAAN, dat/\*daar mocht hij niet.

#### 4. Barbiers’ argument from IPP

The question as to whether modal verbs are main verbs or rather auxiliaries, that is, functional or semi-lexical verbs, has been tightly connected to the issue of how defective their

<sup>9</sup>As in the other Germanic languages that evidence a silent motion verb (GAA/GAAN etc.), the silent verb must be licensed by a modal auxiliary. Note that the silent verb can be licensed despite the fact that it is part of the left dislocated constituent. Regardless of whether left dislocation is a case of movement, contrastive left dislocation is closely linked to the rest of the clause by a variety of connectedness properties, see Van Riemsdijk 1997 and various other articles in the same volume.

morphological paradigm is. In his important work on the history of English, Lightfoot (1979) has argued that in the older stages of Germanic all modals were main verbs, but that in English the modal verbs ‘degenerated’ to auxiliaries, a development that went hand in hand with the impoverishment of the morphological richness of the English modals. English modals indeed lost all non-finite forms: they lack infinitives and participles. In the other Germanic languages this impoverishment has not taken place. Dutch and German modals, for example do have participles and infinitives.

The conclusion that I have arrived at in my work, in particular Van Riemsdijk 2002, is that in all Germanic languages (and indeed in the unmarked case in all languages) verbal modal elements are functional or semi-lexical). This means that morphological defectiveness is independent of the functional or lexical status of modals in syntax. This independence is evidenced quite straightforwardly when we look at a peculiar phenomenon that is found in (some of) the Continental West Germanic languages, the *Infinitivus Pro Participio* (IPP). The IPP refers to situations where a (modal) verb<sup>10</sup> is expected to exhibit its past participle form but instead shows up as an infinitive. Some examples, taken from Dutch, are those in (11).

- (11) a. Jan heeft zijn moeder nooit willen zoenen.  
 Jan has his mother never want<sub>Inf</sub> kiss  
 ‘Jan has never wanted to kiss his mother.’
- b. Sandra had beter morgen kunnen komen.  
 Sandra would-have better tomorrow can<sub>Inf</sub> come  
 ‘Sandra would have done better to come tomorrow.’

In both of these examples we would have expected the past participle of the modal verb, triggered by the presence of the temporal auxiliary *hebben*. But choosing the participle form of the modals in (11) leads to ungrammaticality:

- (12) a. \*Jan heeft zijn moeder nooit gemogen<sub>PastParticiple</sub> zoenen.  
 b. \*Sandra had beter morgen gekund<sub>PastParticiple</sub> komen.

This is so despite the fact that there are sentences in which the (apparent) modal occurs with a temporal auxiliary but is not accompanied by another verb.<sup>11</sup>

- (13) a. Jan heeft nooit een auto gewild<sub>PatParticiple</sub>.  
 Jan has never a car wanted  
 ‘Jan has never wanted (to have) a car.’
- b. Petra had dat ongetwijfeld beter gekund<sub>PastParticiple</sub>.  
 Petra would-have that undoubtedly better been-able-to  
 ‘Petra would undoubtedly have done that better.’

<sup>10</sup>The IPP phenomenon actually extends to other types of verbs that trigger verb cluster formation such as *proberen* (‘try’). This is irrelevant to the points made in the text. See Zwart 2011 for discussion of IPP in Dutch.

<sup>11</sup>For reasons of space I will leave out a discussion about whether there is a silent verb in the examples of (13).

Barbiers (1995, 2006, and Barbiers and Dooren 2017 forthcoming) argues that in examples with a missing (silent or otherwise) motion verb the IPP effect is present and that therefore we should conclude that (at least in Dutch) there is no silent motion verb but that the modal is a main verb that semantically incorporates the motional component of the meaning.<sup>12</sup> His examples are of the following type.<sup>13</sup>

- (14) a. Jan heeft altijd naar Rome gewild<sub>PastPart</sub>/\*willen<sub>Inf</sub> GAAN.  
 Jan has always to Rome wanted/want  
 ‘Jan has always wanted to [sc. go] to Rome.’
- b. Sandra had ook naar huis gekund<sub>PastPart</sub>/\*kunnen<sub>Inf</sub> GAAN.  
 Sandra would-have also to home been-able-to  
 ‘Sandra would have been able to [sc. go] home too.’

While a successful account of the IPP-effect still eludes us, it is quite clear that the situation is not as simple as presented by Barbiers. Most strikingly, perhaps, the IPP-effect reappears when there is another modal verb in the cluster, as shown in (15) and (16).

- (15) a. Jan heeft altijd naar Rome willen/\*gewild kunnen GAAN.  
 Jan has always to Rome want/wanted can  
 ‘Jan has always wanted to be able to [sc. go to] Rome.’
- b. Jan heeft altijd naar Rome kunnen/\*gekund willen GAAN.  
 Jan has always to Rome be-able-to/been-able-to want  
 ‘Jan has always been able to want to [sc. go] to Rome.’
- (16) a. Sandra had ook naar huis kunnen/\*gekund mogen GAAN.  
 Sandra would-have also to home be-able-to/been-able-to may  
 ‘Sandra would also have been able to be allowed to [sc. go] home’.
- b. Sandra had ook naar huis mogen/\*gemogen  
 Sandra would-have also to home be-allowed-to/been-allowed-to  
 kunnen GAAN.  
 be-able-to  
 ‘Sandra would also have been allowed to be able to [sc. go] home.’

It appears evident from the above examples that the IPP-effect is quite independent of the issue of modal verbs being main verbs or auxiliaries, and that the issue of whether there is a silent motion verb GAAN in Dutch is accordingly not affected by the IPP.<sup>14</sup>

<sup>12</sup>Barbiers extends the argument to all cases in which the modal verb shows up as a participle, that is, without the IPP effect, and no other overt verbal element. I will limit myself here to the case of silent (or missing) motion verbs.

<sup>13</sup>To save space I insert the silent verb GAAN in the example where it would have to be if we assume it exists in the first place, as I am arguing.

<sup>14</sup>Barbiers (1995, 2006, and Barbiers and Van Dooren 2017 forthcoming) presents another set of considerations that he argues sheds doubt on the presence of silent verbs in Dutch. His main observation is that modals tend to be ambiguous between a root and an epistemic interpretation. But, he says, when a main verb is missing the epistemic interpretation is not available. Take (i), for example.

In fact this conclusion can be arrived at far more easily by looking at Swiss German. On the one hand, Barbiers agrees that the evidence from Swiss German (mainly the argument summarized in section 2 above as well as another argument from the behavior of doubled infinitival markers (cf. Van Riemsdijk 2002, section 4.) strongly points in the direction of the presence of a silent verb (GAA) in Swiss German. But at the same time, Swiss German, unlike Dutch but like English, is defective in its morphological paradigm for modal verbs. Indeed, Swiss German modals lack a past participle entirely and the infinitive is used in all cases. One might say a completely grammaticalized IPP-effect.

## 5. Conclusion

Given the fact that semantic incorporation of ‘missing’ verbs is a solution that is perfectly available to languages, it would be foolhardy to make a big jump and to conclude that the existence of silent lexical motion verbs in some languages can be generalized to the assumption that

- all languages that have missing motion verbs use silent motion verbs, and that furthermore

- 
- (i) a. Jan mag dan naar Amerika gaan, hij zal er niet gelukkig worden.  
 Jan may particle to America go, he will there not happy become  
 ‘Jan may be going to America, but he will not be happy there.’
- b. ?\*Jan mag dan naar Amerika GAAN, hij zal er niet gelukkig worden.

The particle *dan* pretty much forces the epistemic reading, and indeed with silent GAAN (‘go’) the sentence is ungrammatical, as shown in (ib). But as a matter of fact, *gaan* does not permit an epistemic interpretation very often unless it is forced by some contextual factors (such as the particle *dan*). Perhaps the most striking factor is the modal *zou* (‘should’) which has a strong tendency to be interpreted epistemically. Its meaning then is ‘be supposed to’:

- (ii) a. Piet zou eerder naar huis gaan.  
 Piet should earlier to home go  
 ‘Piet was supposed to go home earlier.’
- b. Piet zou eerder naar huis GAAN.

In this case, the version with the silent verb GAAN is grammatical and it has the same epistemic meaning as (iia). The inverse situation can arise as well. Take the modal *mag* (‘may’), meaning ‘it may be the case’. With *mag* the epistemic reading is not available regardless of whether the verb is *gaan* or GAAN:

- (iii) a. Piet mag naar huis gaan.  
 Piet may to home go  
 ‘Piet may go home.’ (√deontic, \*epistemic)
- b. Piet mag naar huis GAAN (√deontic, \*epistemic)

Much, clearly, remains rather mysterious in this domain, which future research will have to attend to, but in view of the above observations I do not think that the arguments presented in the present article are affected.

- all languages that evidence constructions with ostensibly missing verbs other than motion verbs use silent verbs in those cases as well.

Indeed, I have repeatedly stressed the importance of studying such ‘missing verb phenomena’ on a case-by-case basis. To mention just one example that raises interesting questions, colloquial German experiences an explosion of the use of the modal verb *können* (‘can’) used with a nominal expression. To give just one example, you very frequently see or hear sentences like (17).<sup>15</sup>

- (17) Ich        kann        Kanzlerin.  
       I        can        chancellor  
       ‘I can function as a (good) chancellor.’

I have not heard Donald Trump say *I can president*, but he seems to think so. It now looks increasingly as if he cannot. After all, if there is a silent verb in (17), its semantics must encompass a daunting competence. And in the case of the American presidency, we are talking about an even more daunting competence indeed.

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<sup>15</sup>The German example is chosen here because Dutch, as opposed to German, has a wide variety of constructions in which a modal verb is combined with a DP. To give just one example, take (i).

- (i) Mag ik een kopje koffie?  
       may I a cup coffee  
       ‘May I have a cup of coffee?’

I am inclined to believe that these constructions should also be analyzed by means of a silent verb, but so far strong syntactic arguments have eluded me. Hubert Haider (p.c.) expresses doubts about whether similar uses of modals, in particular *können* (‘can’, ‘be able to’) will survive. In view of the Dutch facts I am less optimistic (or should I say pessimistic?). That is, I would not be surprised to see this use of modals expand in German as well. Time will tell.

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Henk C. van Riemsdijk  
villasalmi@gmail.com



# Comparing extractions from wh-islands and superiority effects<sup>\*</sup>

Luigi Rizzi

University of Geneva & University of Siena

## 1. Introduction: the problem

It is instructive to compare the results on extraction from wh-islands arrived at in Villata, Rizzi & Franck (2016) with results obtained on multiple questions with superiority violations by Hofmeister et al (2013). Both sets of results concern the relative acceptability of degraded configurations, and are obtained through formal, controlled techniques (Likert scales with a sizable number of experimental subjects: Sprouse, Schütze & Almeida, 2013). They are parallel in certain respects, and interestingly diverging in others. Here are two representative examples of the two deviant configurations:<sup>1</sup>

- (1) a. Extraction from wh islands: \*What does Mary wonder who read \_\_\_?  
b. Superiority violation: \*Mary wonders what who read \_\_\_

Both configurations involve movement of a wh-element across another one, and are judged as degraded at variable degrees, modulated by the properties of the wh-element(s); they differ in that the two wh-elements have scope over different clauses in cases of extraction (in (1a), *what* has scope over the main clause, and *who* over the embedded clause, the indirect question), while they have scope over the same clause in cases of multiple questions (the indirect question in (1b)).

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<sup>\*</sup>I worked out the bulk of this analysis in the context of the research on extractions from weak islands which was published as Villata, Rizzi & Franck 2016. In the end, my coauthors and I decided not to put a full-fledged analysis of superiority in the paper, which was mainly focused on wh-islands, and addressed to an interdisciplinary audience also including experimental psycholinguists; so we only hinted at these ideas in the paper, without fully developing them. Still, I believe the detailed comparison between wh-islands and superiority along these lines is intriguing, and worth making accessible. The analysis very much bears on issues of scope at LF, and more broadly of the syntax-interpretation interface. I know how passionate Martin Prinzhorn has always been on these topics in his teaching and in discussions with his students, so, I very much hope he will like this piece.

<sup>1</sup>This paper focuses on differences in relative acceptability between deviant structures, so from now on I will not use the familiar diacritics expressing the absolute status of a configuration.

Hofmeister et al. (2013) compared the relative acceptability of cases of multiple questions in which the lower *wh*-element is moved to the front crossing over the higher *wh*-element (superiority violations, see below for details), and manipulating the bare (*who*, *what*) or lexically restricted (*which NP*) character of the *wh*-element:<sup>2</sup>

- (2) a. Mary wondered what who read \_\_\_ (bare-bare)  
 b. Mary wondered which book who read \_\_\_ (which-bare)  
 c. Mary wondered what which boy read \_\_\_ (bare-which )  
 d. Mary wondered which book which boy read \_\_\_ (which-which)

Hofmeister et al. (2013)'s results can be summarized as follows:

- (3) i. the bare – bare case (2a) is the least acceptable case in this paradigm;  
 ii. the which – which case (2d) is the most acceptable case;  
 iii. the which – bare and bare – which cases (2b,c) are intermediate

In their first experiment, Hofmeister et al. (2013) found a preference for bare-which over which-bare (hence, (2c) more acceptable than (2b)); in their fourth experiment the two cases turned out to be about on a par, both significantly better than bare-bare, and significantly worse than which-which.

In short:

- (3') bare-bare < which-bare ≤ bare-which < which-which

Let us directly compare these results with what Villata, Rizzi & Franck (2016) found in configurations of extraction from indirect questions. While the which-which condition (4d) was the most acceptable in the extraction environment, too, the which-bare condition (4b) was significantly more acceptable than the bare-which condition (4c), which in turn was about on a par with the bare-bare condition:

- (4) a. What did you wonder who read \_\_\_ ? (bare-bare)  
 b. Which book did you wonder who read \_\_\_ ? (which-bare)  
 c. What did you wonder which boy read \_\_\_ ? (bare-which)  
 d. Which book did you wonder which boy read \_\_\_ ? (which-which)

In short, for extraction from the *wh*-island we have:

- (4') bare-bare = bare-which < which-bare < which-which

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<sup>2</sup>To be compared with a baseline in which the higher *wh*-element is moved and the lower one, the object in these cases, remains *in situ*:

- (2') a. Mary wondered who \_\_\_ read what  
 b. Mary wondered who \_\_\_ read which book  
 c. Mary wondered which boy \_\_\_ read what  
 d. Mary wondered which boy \_\_\_ read which book

So, while the bare-bare case and the which-which case are consistently judged as highly and moderately degraded, respectively, in both (3') and (4'), there is a surprising discrepancy in the acceptability pattern of cases b. and c. in superiority violations and extractions from indirect questions: which-bare is more acceptable than bare-which in extraction contexts (4) (the Villata, Rizzi, Franck results), while the opposite pattern is found in superiority violation contexts (2) in Hofmeister et al.'s first experiment, with bare-which more acceptable than which-bare. In Hofmeister et al.'s fourth experiment the discrepancy is attenuated, with which-bare and bare-which about on a par, but the result in the superiority cases still contrasts with the result in extraction cases, with which-bare significantly better than bare-which in the extraction configuration.

I believe that this discrepancy between (2b,c) and (4b,c) can be amenable to a principled analysis if one takes into account the fundamental distinction between multiple questions and extractions from indirect questions: in extraction cases the two *wh*-elements have scope over two distinct clauses, and are pronounced in the appropriate scope position; in multiple questions the two *wh*-elements have scope over the same clause, and the one *in situ* is not pronounced in its scope position. A classical insight of the analyses of multiple *wh*-questions is that the *in situ* element undergoes covert movement to the left periphery to be assigned the appropriate scope at logical form. No such covert movement takes place in the extraction cases, in which each *wh*-element has been overtly moved to its appropriate scope position. The intuitive idea that I want to develop here is that the reversal in the judgment is a consequence of LF movement, which inverts the two *wh*-phrases in multiple questions.

In order to capitalize on this crucial difference, I will now sketch out an analysis of multiple *wh*-questions and of superiority effects, trying to combine major analytic ideas from the theoretical literature.

## 2. Superiority and multiple *wh*-movement

Consider a simple case of multiple questions illustrating superiority effects:

- (5) a. Who \_\_\_ said what?  
 b. \*What did who say \_\_\_ ?

In a language like English, overt *wh*-movement is restricted to one *wh*-element per clause, hence the second *wh*-element is pronounced *in situ*, in its canonical argument position. The superiority condition (Chomsky 1973) states that the superior, or higher, *wh*-element must move overtly: so (5a) satisfies the condition, while (5b), where the object has been moved, violates it. Plausibly, the logical form of (5) is something like “for what *x* and for what *y*, *x* said *y*”, hence some form of abstract, or “covert”, movement of the *wh*-element pronounced *in situ* must take place to yield the appropriate interpretation (Chomsky 1981). The covert movement idea is immediately supported by the existence of languages in which overt multiple *wh*-movement is possible. In the equivalent of (5) in such languages, both *wh*-elements move to the front (e.g., Rumanian: Alboiu 2002, Soare 2009):

- (6) Cine ce a dat lui Mihai?  
 who what gave to Mihai?

It is tempting to assume that (6) visibly manifests the movement of the second wh-element to the front, which remains covert in English. Notice that in a subset of languages with multiple overt movement the moved elements must appear in a fixed order in the left periphery (see Rudin 1988 for the original typology, and much subsequent work). If they are reversed, as in (7), the structure is ungrammatical:

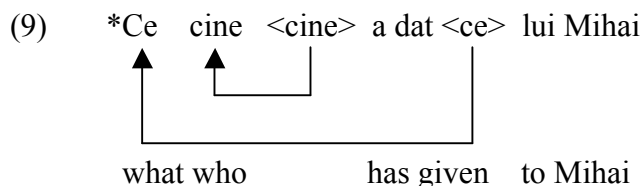
- (7) \*Ce cine a dat lui Mihai?  
 what who gave to Mihai?

It is obviously attractive to consider the hypothesis that the superiority effect in (5) and the ordering constraint in (6)-(7) are the two sides of the same coin (Richards 1997, Pesetsky 2000).

An approach which immediately traces back (6)-(7) to a version of Relativized Minimality (RM) is the one in Krapova & Cinque (2008) for the Bulgarian equivalents. If one considers the two movement steps involved in the derivation of (6), each of them seems to violate RM at the moment in which it takes place (I adopt here the “copy theory of traces”, as in Chomsky 1995, and express the trace as a silent copy of the moved element within angled brackets):

- (8) Cine ce <cine> a dat <ce> lui Mihai  
 ↑ ↑  
 who what has given to Mihai
- 

As in standard practice, I will use the term “chain” to refer to the formal object consisting of a moved element and its trace, a silent occurrence of the same element under the adopted theory. The structure that is derived in (8) has crossing chains, as the arrows indicate, and the intervener always is only one member of the relevant chain: a complete chain never intervenes on any link of the other chain. So, Krapova & Cinque observe that this state of affairs suggests that (i) RM applies on the derived representations, rather than on each application of movement (possibly, at the end of each phase: Chomsky 2001), and (ii) “Z intervenes between X and Y” is to be understood as “all the occurrences of Z intervene”: in (8), only one occurrence of *ce*, but not the whole chain, intervenes between *cine* and its trace, and only one occurrence of *cine*, but not the whole chain, intervenes between *ce* and its trace. The ungrammatical order is correctly ruled out by this interpretation:



Here, both occurrences of *cine* intervene between *ce* and its trace, hence the structure is ruled out by RM, under this interpretation. So, intersecting (or crossing) chains are allowed, while nested chains are excluded.

At this point, one may try to link the superiority effect (5) to the account just adopted for (6)-(7). Many approaches have been proposed to express the covert occurrence of movement in (5a,b). Chomsky (1995) proposed that covert movement is in fact movement of the (relevant) features of the *wh*-element to the relevant scope position. For concreteness, I will adopt a variant of this proposal which understands covert movement as a kind of incorporation/cliticisation of (the relevant features of) the *wh*-element *in situ* into the attracting head, here Q, yielding the following LF representation for (5a) (I continue to adopt the copy theory of traces; the chain created by covert movement in bold; “what” is in fact to be understood here as a cover term for whatever features are moved from the *in-situ* position):

(10) Who [ **what** Q ] [ <who> said <**what**> ]

(This proposal may in fact be considered a cliticization/incorporation variant of Richards’ “tucking in” hypothesis, with the features of the unmoved *wh*-element cliticized onto Q). (10) is ruled in under Krapova & Cinque’s interpretation of RM, while the LF derived from (5b) through covert incorporation of (the relevant features of) *who* into Q yields the following:

(11) What [ **who** Q ] [ <**who**> said <what> ]

This is ruled out under Krapova & Cinque’s interpretation of RM, on a par with (9), as the whole chain (*who*, trace) intervenes between *what* and its trace.

Consider now the corresponding sentences, but with lexically restricted *wh*-phrases:

- (12) a. Which student \_\_\_ solved which problem?  
b. Which problem did which student solve \_\_\_?

(12a) remains non-problematic, on a par with (5a): the relevant features of *which problem* move covertly, yielding an intersecting chain analogous to (10). As for (12b), the assumption has been made elsewhere (Rizzi 2011, Villata, Rizzi & Franck 2016 for arguments and discussion) that lexically restricted *wh*-elements can be attracted both by Q, and by the complex feature conglomerate [Q, N], sitting in a higher position than bare Q in the map of the left periphery. Hence, in such cases we have two attractors available:

(12’) [Q, N] ... [Q] ....

The availability of the second landing site is decisive for permitting a well-formed representation of (12b). Suppose that *which problem* overtly moves to Spec-Q, yielding the following representation at spell-out:

(13) [ which problem Q [ which student solve <which problem> ]]

At this point the complex higher attractor [Q, N] can be merged and trigger covert movement of (the relevant features of) *which student*, yielding the following (again, with the chain created by covert movement in bold):

(14) **Which student** [Q, N] [which problem Q [ <**which student**> solve <which problem> ]]

This representation involves intersecting chains, the configuration which is permissible under K&C's interpretation of RM. In a nutshell, the fact that with lexically restricted wh-elements superiority violations are alleviated in part is related to the additional landing site available for such elements through the complex attracting head [Q, N].<sup>3</sup> The same property was also assumed to have a role in determining the (marginal) possibility of extraction of such elements from indirect questions (Villata, Rizzi & Franck 2016). The special properties of lexically restricted wh-elements wrt. superiority and extraction contexts are thus unified in part, and traced back to a single abstract property, the existence of an additional landing site for such elements.<sup>4</sup>

### 3. A fundamental difference between extraction from indirect questions and multiple questions: covert movement

The two environments also differ in part, though. The fundamental insight that covert movement is crucially involved in computing representations for multiple questions is instrumental to understand the surprising discrepancy between Hofmeister et al. (2013)'s results on multiple questions and the results in extraction cases in Villata, Rizzi & Franck 2016, reproduced below from (2) and (4) for ease of reference:

(15) *Extraction from indirect question: (which-bare) > (bare-which)*

(Villata, Rizzi & Franck)

b. (which-bare) Which book did you wonder who read \_\_\_?

c. (bare-which) What did you wonder which boy read \_\_\_?

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<sup>3</sup>Ur Shlonsky (p.c.) observes that (12b) remains marginal to some extent if compared to (12a), even though it is clearly more acceptable than the bare-bare case *\*What did who read?* So, forming intersecting chains through covert movement must involve an inherent cost (not involved in intersecting chains derived via overt movement: see (6)) responsible for the marginality of the example, for reasons that I will not explore here.

<sup>4</sup>In fact, a related but distinct factor is the set theoretic composition in relevant features of the extractee and of the intervening element. See the discussion of featural Relativized Minimality in Villata, Rizzi & Franck 2016, based on Friedmann, Belletti & Rizzi (2009): see below on the role of this factor in extraction from indirect questions.



Featural Relativized Minimality, as worked out in Friedmann, Belletti & Rizzi 2009 correctly draws the distinction to the advantage of (15b) in this case.

The contrast between Hofmeister et al. (2013) on multiple questions and the result in Villata, Rizzi & Franck 2016 on extraction from indirect questions thus is ultimately related to an independent difference between extraction and superiority environments: the fact that a superiority configuration, but not an extraction configuration, involves covert movement of one wh-element. This critical difference partly reverses the judgment in the superiority case.

To conclude, it is worthwhile to observe that the empirical results obtained through controlled experimental techniques of judgment gathering corroborate the following points of significant theoretical relevance:

1. RM is checked on final representations (logical forms, possibly evaluated at the end of each phase). If it was checked in the course of the derivations, on the individual applications of movement, intersecting chains could never be derived (either by overt or covert movement).
2. The appropriate interpretation of multiple questions in English (and similar languages) is determined by covert movement of (the relevant features of) the wh-element pronounced *in situ* to the appropriate scope position. Covert movement in multiple questions thus plays a critical role in explaining the otherwise surprising reversal of judgment with respect to cases of overt extraction from wh-islands.

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Luigi Rizzi  
luigi.rizzi@unisi.it



**On antecedent contained ellipsis in Continental West Germanic:  
Explaining the subject coreference constraint\***

Uli Sauerland

Leibniz-Zentrum Allgemeine Sprachwissenschaft (ZAS)

This squib discusses Modal Complement Ellipsis (MCE in the following), and more specifically Antecedent Contained Deletion (ACD in the following) in this type of ellipsis. While in English ACD is widely studied and quite well understood (e.g. Sag 1976, Williams 1977, and much subsequent work), ACD has not been observed in Standard German.<sup>1</sup> However, Upper Austrian differs from Standard German in this respect (Bettina Gruber, p.c., Zobel 2007). For example, (1) is acceptable with the interpretation indicated, which requires an ACD analysis. I assume here that root modals are raising verbs, following Wurmbrand 1999.

- (1) *Upper-Austrian German*  
Da Jim<sub>j</sub> hot jed<sub>s</sub> Buach glesn, des<sub>i</sub> a<sub>j</sub> t<sub>j</sub>-t<sub>i</sub>-lesn miassn hot.  
the Jim has every book read that he read must had  
'Jim read every book that he had to.'

Example (1) should be analyzed as ACD for the following reason: The interpretation of the elided VP that is the complement of the modal *miassn* ('must') is parallel to that of the matrix VP *jeds Buach glesn* ('read every book') except that a trace bound by the relative pronoun corresponds to the overt DP *jeds Buach*. A further parallel between (1) and ACD in English concerns extraposition (Winfried Lechner and Clemens Mayr, personal com-

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\*The intellectual stimulation of the winter semester 2006/07 in Vienna directly led to this squib, though through a long gestation process. I thank Bettina Gruber, Thomas Graf, Sarah Zobel, and other students of my *Introduction to Semantics* class, who provided initial data and interesting discussion. Some of the work reported here is based on a collaboration with Lobke Aelbrecht that we could unfortunately never complete. For helpful comments, I am grateful to the comments from the audience of the GGS 2010 workshop at the Freie Universität Berlin and to Winfried Lechner and Clemens Mayr. Last but not least, I thank Martin Prinzhorn for inviting me to Vienna, for his comments on this and many other topics and for the creative, curious atmosphere he embodies and rubbed off on his students to my benefit.

<sup>1</sup>I am not aware of a discussion of ellipsis in German that explicitly discusses VP-ellipsis and ACD. But existing discussion of deletion and/or ellipsis phenomena in German or by German-speaking linguists such as Hartmann (2000), Lechner (2004), and Gengel (2007) have generally not addressed VP-ellipsis.

munication): Fox & Nissenbaum (1999) argue that extraposition of the relative is required for ACD in English, and this holds for Austrian German too. As (2) shows, a version of (1) where the relative clause isn't extraposed is ungrammatical, while otherwise relative clauses in Austrian and Standard German can also occur in situ.

(2) *Upper-Austrian German*

\*Da Jim<sub>j</sub> hot jed<sub>s</sub> Buach, des<sub>i</sub> a<sub>j</sub> t<sub>j</sub>-t<sub>i</sub>-lesn miassn hot, glesn.  
 the Jim has every book that he read must had read

The example in Standard German corresponding to (1) is shown in (3) and it is not fully acceptable in my personal dialect. There is a clear sense that the meaning of (3) is that of (1), but to elide the verb *lesen* ('read') in the relative clause feels unnatural. (3) is fully acceptable only if *lesen* is pronounced in the relative clause. Furthermore in my judgement, the status of (3) is unchanged in a non-extraposed word order (i.e. a Standard German example matching (2)).

(3) *Standard German*

\*?Jim hat jedes Buch gelesen, dass er lesen musste.  
 Jim has every book read that he read must

The factor determining the acceptability of (1) vs (3) is most likely whether deletion of the complement of a modal verb is permitted in the language:<sup>2</sup> while Upper-Austrian German allows this, Standard German doesn't. Aelbrecht (2010) investigated MCE in detail in Dutch, which is closely related to both Standard and Upper-Austrian German. Like Upper-Austrian German, Dutch generally allows ellipsis of the complements of non-epistemic modals. (4) shows the parallel between Dutch and German in this respect with an existential modal.

(4) a. *Dutch* (Aelbrecht 2010, p. 65)

Ik wil je wel helpen, maar ik<sub>i</sub> kan niet t<sub>i</sub>-helpen.  
 I want you PRT help, but I can not help  
 'I want to help you, but I can't help you.'

b. *Upper-Austrian German* (Bettina Gruber, p.c.)

I wue schau hoefn, oba i<sub>i</sub> kau net t<sub>i</sub>-hoefn.  
 I want PRT help, but I can not help  
 'I want to help you, but I can't help you.'

<sup>2</sup>Zobel (2007) reports that in Upper-Austrian German the auxiliary *haben* ('have') licenses complement ellipsis. For example her (i) illustrates this (Zobel reports Upper-Austrian German data in Standard German orthography):

(i) *Upper-Austrian German* (presented in Standard German orthography)

Ich weiß, welchen Kuchen dass der Peter gegessen haben soll, und, welchen dass er hat.  
 I know which cake that the Peter eat have should, and, which that he has  
 'I know which cake Peter should have eaten and which he has (eaten).'

For the data reported in (4), the availability of the interpretation indicated is crucial, since even in Standard German (4) is an acceptable sentence. However, the phrase *nicht können* in Standard German can only have the interpretation *not have time*. This therefore doesn't seem to involve a modal use of *können* at all. In Dutch and Upper-Austrian German and possibly Austrian German more generally, (4) allows a modal interpretation with the elided complement, as indicated by the translation in (4).<sup>3</sup> Unfortunately I presently lack the resources to investigate further the interaction of the type of modal and ellipsis across German dialects, though this seems to be an interesting area for future investigation.

For the present, I focus on a different issue – a subject coreference requirement in the ACD structures. In the following two sections, I first introduce the evidence for this puzzling requirement, and then make a proposal for how to derive the requirement.

### 1. The subject coreference puzzle with ACD

The puzzle I want to address in this squib relates directly to the ACD uses of MCE such as (1) in Upper-Austrian German. The puzzle also exists in Dutch, as Aelbrecht (2010, p. 137–142) discusses. Namely, ACD in both languages is more restricted than in English.

Since the data I have from Upper-Austrian German is at present less complete than Aelbrecht's Dutch data, consider the Dutch data first. Aelbrecht reports that MCE in Dutch generally allows only subject extraction, as in (5a), and blocks object extraction, as in (5b).

(5) *Dutch* (Aelbrecht 2010, p. 55 & p. 69)<sup>4</sup>

- a. [Die broek]<sub>i</sub> moet nog niet t<sub>i</sub> gewassen worden, maar hij mag wel al  
 the pant must still not washed become, but 3S can well already  
~~t<sub>i</sub> gewassen worden~~  
 washed become  
 'Those pants don't have to be washed, but they can be.'
- b. \*<sup>2</sup>Ik weet niet [welke boeken]<sub>i</sub> Mina wel wil t<sub>i</sub> lezen, en [welke]<sub>j</sub> ze niet  
 I know not which books Mina AFF wants read and which she not  
 wil ~~t<sub>i</sub> lezen~~  
 wants read

The only acceptable cases of extraction from MCE in Dutch that Aelbrecht reports are cases of ACD. However, not all cases of ACD are acceptable; the subjects are required to

<sup>3</sup>Winfried Lechner (p.c.) points out that some cases of MCE are also grammatical in Northern varieties of German. Specifically, he mentions the case of comparatives such as (i).

(i) Peter hat mehr getrunken als<sub>i</sub> er<sub>j</sub> t<sub>j</sub> t<sub>j</sub> trinken darf.  
 Peter has more drunk than he drink may  
 'Peter drank more than he is allowed to.'

<sup>4</sup>I added the traces and elided material for clarity. The linear position of both types of silent elements is dependent on the analysis of OV word order, where for concreteness I assume that OV is the underlying order. As far as I can see nothing in the following depends on this assumption.

be coreferent. Specifically Aelbrecht reports a contrast between the acceptable (6a), if the pronoun *hij* is coreferent with the matrix subject as indicated, and the ungrammatical (6b).

- (6) *Dutch* (Aelbrecht 2010, p. 139)
- a. Olaf<sub>j</sub> heeft elk boek gelezen dat hij<sub>j</sub> moest.  
Olaf has every book read that he had to  
'Olaf read every book he had to.'
  - b. \*Olaf heeft elk boek gelezen dat David moest  
Olaf has every book read that David had to

The same constraint on ACD is attested in Upper-Austrian German too: in contrast to (1) above, (7) is judged ungrammatical:

- (7) *Upper-Austrian German*
- \*Da Jim hot jeds Buach glesn, des<sub>i</sub> de Jana miassn hot.  
the Jim has every book read that the Jana must had

I should note though that much more detailed discussion of the Upper-Austrian German data is required. In particular, some of the data presented by Zobel (2007) are not fully parallel to the Dutch data of Aelbrecht (2010). In particular, Zobel (2007) reports some cases of acceptable extraction from object position and also some cases of acceptable ACD with non-coreferential subjects. Nevertheless the subject coreference requirement may be one general factor contributing to the acceptability of ACD in German and Dutch more generally,<sup>5</sup> but the boundary between acceptable and unacceptable may vary across speakers and dialects.

This general picture is corroborated by some research I began on Standard German: a similar though less clear contrast may hold also for Standard German. In 2010, I conducted a pilot questionnaire study with four speakers from Berlin. The questionnaire used the magnitude estimation technique and contained 8 items each of three relevant conditions, as shown in (8):

- (8)
- a. *Condition 1: ACD in a headed relative with subject coreference*  
Connie hat eine Schulkameradin eingeladen, die sie durfte.  
Connie has a schoolmate-FEM invited who she was allowed  
'Connie invited a class-mate who she was allowed to.'
  - b. *Condition 2: ACD in a free relative with subject coreference*  
Toby hat schon getroffen, wen<sub>j</sub> er<sub>i</sub> musste.  
Toby has already met, who he must  
'Toby has already met who he has to.'

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<sup>5</sup>Aelbrecht (2010, p. 139) also discusses some English data supporting a subject coreference requirement for English, but much data in the literature argues against such a general claim. At present, I believe that English ACD is different from Dutch and German ACD in that only the latter are subject to a subject coreference requirement.

- c. *Condition 3: ACD in a free relative with disjoint subject reference*  
 Pascal hat schon erledigt, was Martin noch muss.  
 Pascal has already finished, what Martin still must  
 ‘Pascal has already finished what Martin still has to.’

In addition, the study contained 26 other items. Subjects were instructed to compare the comprehensibility of the sentences to the reference sentence (9), which is understandable but not fully grammatical in German:

- (9) #Jedes Kind, das schon mal geschaukelt hat, hat auf der gesessen.  
 every child that already once swung has has on the sat  
 (‘Every child that has swung at some point, has sat on it.’)

German generally allows NP-ellipsis with definite determiners (so called ‘d-pronouns’ in German grammar), and the occurrence of *der* (‘the’) in (9) requires NP-ellipsis. However, (9) is awkward since the antecedent noun *Schaukel* (‘swing’) is inaccessible because it occurs only in a verbalized derived form. Since none of the three experimental conditions in (8) is fully grammatical in Standard German, the judgement relative to another marginal sentence had a greater chance of revealing a contrast between the conditions than a comparison with a fully grammatical sentence would have had. The preliminary result from 4 subjects shows that the technique has the potential to uncover an effect of coreference, but the results are at this point not statistically significant. (10) shows comparative scores for the three conditions. These scores were derived by transforming each subject’s judgement to z-scores and then computing the mean across subjects per condition.

|      | Condition   | Mean normalized judgment |
|------|-------------|--------------------------|
| (10) | Condition 1 | 0.1245                   |
|      | Condition 2 | -0.1866                  |
|      | Condition 3 | -0.5178                  |

These preliminary results indicate that coreference might affect the judgments of Standard German speakers on ACD structures, even though ACD structures overall are not found to be very acceptable in Standard German.

In sum then, we have seen in this section that for ACD to be acceptable in Dutch and at least the Upper-Austrian dialect of German, the subjects of the matrix and embedded clause must be coreferent. In the following section, we argue that the subject coreference constraint on ACD follows from Aelbrecht’s analysis of Dutch MCE if amended with one additional, independently motivated assumption, namely the copy-identity condition of Sauerland 2004.

## 2. An account of the puzzle

Consider again the core contrast to be explained, as shown in (11). As already mentioned above, I assume that both subject and object traces occur in the elided vP, following Wurmbrand (1999).

(11) *Upper-Austrian German*

- a. Da Jim<sub>j</sub> hot jed<sub>s</sub> Buach glesn, des<sub>i</sub> a<sub>j</sub> t<sub>j</sub> ~~lesn~~ t<sub>i</sub> miassn hot.  
 the Jim has every book read that he read must had  
 ‘Jim read every book that he had to.’
- b. \*Da Jim<sub>j</sub> hot jed<sub>s</sub> Buach glesn, des<sub>i</sub> de Jana<sub>k</sub> t<sub>k</sub> ~~lesn~~ t<sub>i</sub> miassn hot.  
 the Jim has every book read that the Jana read must had  
 (‘Jim read every book that Jana had to.’)

Aelbrecht (2010, 101–104) proposes that MCE in Dutch must be licensed by Agree with a non-epistemic modal, which need not be adjacent to the ellipsis site as long as an Agree-relation is possible. She furthermore argues that ellipsis must take place as soon as the Agree-relation is established – i.e. when the licensing modal is encountered. Aelbrecht derives from this assumption that extraction from the ellipsis site is generally blocked. I adopt Aelbrecht’s assumptions for Austrian German, but with one difference regarding how extraction can take place from MCE. Namely, Aelbrecht proposes that only phrases that have vacated the ellipsis site prior to agreement can escape and that only subjects have access to this escape hatch, while objects don’t. While I adopt Aelbrecht’s general assumptions, I don’t adopt her assumption that subjects have access to an escape hatch for extraction. One motivation for this is that while Aelbrecht predicts subject extraction to always be possible and object extraction to never be possible, she already notes that ACD data like (11) indicate that object extraction from MCE must sometimes be possible. I propose a general identity condition that applies to both subjects and objects to replace Aelbrecht’s escape hatch proposal. Consider first how my proposal applies to the ACD cases like (11).

I claim that ACD can only be licensed in the configuration in (12) in Dutch and Austrian German. Unlike English,<sup>6</sup> Austrian German and Dutch don’t allow for object-subject scope, and therefore quantifier raising (QR) must be restricted to target positions lower than the overt subject. (QR is shown as rightward movement in (12), elided material is enclosed in  $\langle \dots \rangle$ .)

$$(12) \quad \text{Jim}_j \left[ \lambda_k \underbrace{t_j t_k \text{ read}}_{\text{antecedent}} \left[ \text{every book } Op_i \text{ he}_j \text{ must } \underbrace{\langle t_j t_i \text{ read} \rangle}_{\text{licensing}} \right]_k \right]$$

QR

The maximal antecedent for ellipsis is the complement of T as indicated in (12) (see also Aelbrecht for evidence that MCE ellipsis targets the complement of T). The corresponding domain in the ACD-relative clause therefore cannot include the overt subject. Since non-identity in parallelism requires an overt focused phrase, ellipsis licensing requires subject coreference in (12).

Why do the two object traces  $t_j$  and  $t_k$  satisfy parallelism? In general, it is difficult to justify that they should bear the same index (Heim 1997, Kennedy 2014). However,

<sup>6</sup>Winfried Lechner (p.c.) points out that the English data may actually be more restrictive than is commonly assumed, in a similar way to Dutch and Austrian German.





supports the view that object coreference is trivially satisfied in ACD structures, as for instance the analysis I developed in Sauerland 2004, 2007 predicts.

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Uli Sauerland  
uli@alum.mit.edu

# Permission to be ironic: The case of German *dürfen*

Milena Sisovics

MIT

## 1. Introduction

There is disagreement in the literature on scalar implicatures about whether implicatures are obligatorily computed. In this paper I introduce intuitions about irony in constructions involving *dürfen* ‘may, be allowed to’ as a new data point in this debate, and argue that the computation of scalar implicatures is obligatory (following Magri 2009). Moreover, I utilize irony to probe into the lexical semantics of German *dürfen* ‘may, be allowed to’ and suggest a novel analysis whereby *dürfen* carries a presupposition that the prejacent is desirable to the permissée. The general view of irony I adopt in this paper is an extension of Grice’s (1975) proposal about irony as an implicature from blatant falsity: by uttering a proposition that she obviously does not believe, the speaker triggers the hypothesis that what she intended to convey is some other, related proposition.

## 2. The observation

*dürfen* as investigated in this paper functions as a root possibility modal. As such *dürfen* combines with a realistic modal base  $f$  and a normative, commonly deontic (cf. (1)), less commonly goal-oriented ordering source  $g$  (see Kratzer 2012, 55ff.).

- (1) Lena hat gehört, dass man in Österreich schon mit 16 wählen darf.  
Lena has heard that one in Austria already at 16 vote *darf*  
‘Lena heard that in Austria one is eligible to vote at 16.’

I assume the lexical entry in (2) for *dürfen* (to be revised later). Roughly, a sentence *dürfen*  $\phi$  expresses that there are  $\phi$ -worlds among those circumstantially accessible worlds that are best with regard to a salient set of laws (as in (1)) or goals in the evaluation world.

- (2)  $[[dürfen]]^{w,a} = \lambda f_{\langle s, \langle st, t \rangle \rangle} \cdot \lambda g_{\langle s, \langle st, t \rangle \rangle} \cdot \lambda p_{\langle s, t \rangle} \cdot \exists w' \in \max_{g(w)}(\cap f(w)) : p(w')$ <sup>1</sup>

This paper highlights an additional use of *dürfen*, exemplified by (3) and (4), which has thus far been neglected. *dürfen* in this use is characterized by a distinctly ironic flavor.<sup>2,3</sup> The targeted reading can best be rendered using English *get to*.

- (3) CONTEXT: *The rules at Lena's new workplace require Lena to get up at five, and Lena is known to dislike getting up early.*  
 Lena darf in ihrer neuen Arbeit jeden Tag um fünf Uhr aufstehen.  
 Lena darf in her new work every day at five o'clock get-up  
 'Lena gets to get up at five every day for her new work.'
- (4) CONTEXT: *Martin visits the Russian consulate. He learns that his visa will take at least three weeks to be issued. He is frustrated about the long wait time.*  
 Martin darf noch drei Wochen auf sein Visum warten.  
 Martin darf still three weeks for his visa wait  
 'Martin gets to wait for his visa for another three weeks.'

### 3. The distribution of ironic *dürfen*

The contexts described for (3) and (4) exemplify two properties that are characteristic of contexts in which *dürfen* triggers an ironic inference: In the described contexts, the respective prejacent proposition  $\phi$ , *Lena getting up at five every day for her new work* in (3) and *Martin waiting for his visa for another three weeks* in (4), (i) is perceived as necessary as opposed to merely possible, and (ii)  $\phi$  is believed to be undesirable to the individual towards which the modal is oriented, Lena in (3) and Martin in (4).<sup>4</sup>

This is interesting, first of all, since it contrasts with contextual properties of  $\phi$  in regular, non-ironic uses of *dürfen*: note that  $\phi$  in (1), *voting at 16 in Austria*, is merely optional and rather desirable.

It seems that necessity and undesirability of  $\phi$  are, moreover, required for *dürfen* to be ironic. Consider the *dürfen* sentences in (5) and (6) with their respective complements: the prejacent in (5), *drinking wine*, constitutes an undesirable possibility for the subject, while the prejacent in (6), *Lena writing a semantics paper at university*, describes a desirable obligation. Neither sentence triggers an ironic inference.

<sup>1</sup>The selection function  $max_A$  picks out the the best worlds relative to some set of propositions  $A$ .

<sup>2</sup>I variably say that *dürfen triggers irony/an ironic inference, is ironic, receives an ironic interpretation, has an ironic use*.

<sup>3</sup>I assume that native speakers, just as having intuitions about the grammaticality and felicity of sentences, also have intuitions regarding the presence of irony.

<sup>4</sup>The individual towards which the modal is oriented often (cf. (3) and (4)), though not always coincides with the grammatical subject.

- (5) CONTEXT: A 20 year-old US speaker, who detests alcohol, reports about the legal situation in Austria, where she will spend a semester abroad.  
 ??In Österreich darf ich sogar Wein trinken.  
 in Austria *darf* I even wine drink  
 ‘In Austria I am/would even be allowed to drink wine.’
- (6) CONTEXT: *Lena wasn’t allowed to write a paper in semantics in high school though she would have liked to. Her college program requires her to write one.*  
 In der Schule durfte Lena keine Semantikarbeit schreiben. An der Uni darf sie eine schreiben.  
 ‘In school Lena was not allowed to write a semantics paper. At university she is allowed to write one.’

The observed interaction between contextual properties of the prejacent proposition and the availability of ironic *dürfen* is summarized in table (7) below.

- (7) *Ironic inference attested? (relevant examples in brackets)*

| <i>dürfen</i> $\phi$ | desirable( $\phi$ ) | undesirable( $\phi$ ) |
|----------------------|---------------------|-----------------------|
| $\neg\Box(\phi)$     | no (1)              | no (odd, (5))         |
| $\Box(\phi)$         | no (6)              | yes (3), (4)          |

#### 4. Towards an analysis

I observed that *dürfen* triggers irony in contexts in which the prejacent proposition is perceived (i) as a necessity and (ii) as undesirable to the permissée/obligée, cf. (3) and (4). How does this connect to a Gricean view whereby irony is the result of uttering something that is blatantly false? My response to this as presented in the following sections consists of two ingredients: I argue that each of properties (i) and (ii) renders a given *dürfen* sentence non-true. Moreover, I suggest that irony is sensitive to non-truth rather than falsity.

##### 4.1 Irony via falsity: the case of contextual necessity

###### 4.1.1 The argument

Lena is obliged to get up at five every day in the context described for (3). I propose that the *dürfen* sentence in (3) is thus false because the scalar implicature it triggers, *Lena can get up at five every day but does not have to*, is false in such a context.

I take the link between falsity of the scalar implicature and irony to support Magri’s (2009) view that a scalar implicature cannot be suspended if the scalar alternative it negates is relevant. Magri assumes scalar implicatures to be computed in the grammar by means of an obligatory propositional operator  $\text{EXH}_{\mathcal{R}}$  shown in (8):  $\text{EXH}_{\mathcal{R}}$  takes a proposition  $p$  and returns  $p$  conjoined with the negation of its scalar alternatives  $q$  that are excludable as well

as relevant according to  $\mathcal{R}$ . Scalar implicatures thus constitute part of the assertive content of a sentence.

$$(8) \quad \text{EXH}_{\mathcal{R}}(p) = p \ \& \ \bigwedge_{q \in \text{Excl}(p)} (\neg q \vee \neg \mathcal{R}(q))^5 \quad (\text{Magri 2009, 261})$$

In example (3), the *dürfen* sentence has a stronger scalar alternative based on the necessity modal *müssen* ‘must’, i.e., *Lena muss in ihrer neuen Arbeit jeden Tag um fünf Uhr aufstehen* ‘Lena has to get up at five every day for her new work’. Since this alternative is arguably relevant in the context described for (3) (as well as excludable), exhaustification by means of  $\text{EXH}_{\mathcal{R}}$  leads to the strong possibility meaning sketched in (9).

$$(9) \quad \begin{aligned} & \llbracket [\text{EXH}_{\mathcal{R}} [\textit{Lena darf in ihrer neuen Arbeit jeden Tag um fünf Uhr aufstehen}]] \rrbracket \\ & = 1 \text{ iff Lena is allowed to get up at five every day for her new work \& Lena does} \\ & \text{not have to get up at five every day for her new work} \end{aligned}$$

The strong possibility meaning is obviously false of the context described for (3). Crucially, one could not derive falsity for (3) under a simplistic Gricean view, where implicatures only arise if they do not create a contradiction. In the adopted system, however, scalar implicatures, once computed, cannot be suspended regardless of the outcome. This explains why (3) (as well as (4)) are ironic.

#### 4.1.2 Predictions

I argued that uses of *dürfen* that violate the Maxim of Quantity lead to irony. However, nothing in my account relies on the quantificational expression being *dürfen* as opposed to the unmarked possibility modal *können* ‘can’, or non-modal existential quantifiers. In principle, my account predicts irony to occur in any sentence with an existential quantifier in an upward-entailing environment if the sentence has a true and relevant universal alternative. Is this prediction borne out?

(10) suggests that *können* allows for a similar, albeit less conventionalized ironic use in corresponding contexts.

$$(10) \quad \begin{aligned} & (\textit{Assuming the context described in (3).}) \\ & \textit{Lena kann in ihrer neuen Arbeit jeden Tag um fünf Uhr aufstehen.} \\ & \textit{‘Lena gets to get up at five every day for her new work.’} \quad (\textit{ironic}) \end{aligned}$$

<sup>5</sup>Marie-Christine Meyer (p.c.) points out that having a disjunction  $(\neg q \vee \neg \mathcal{R}(q))$  be part of the asserted content seems problematic: disjunction is normally observed to license ignorance inferences for both disjuncts. However, given that the relevance predicate  $\mathcal{R}$  is thought of as the set of propositions  $q$  forming the question under discussion, the speaker is presumably not ignorant about the relevance of a given propositions  $q$ , i.e., the truth value of  $\mathcal{R}(q)$ . Certain ways of thinking about ignorance inferences might still allow us to derive their absence in the case of  $\text{EXH}_{\mathcal{R}}$ ; for example, as they likely involve scalar reasoning, they might be contingent on *overt* scalar items such as *overt or*. (Thanks to Aron Hirsch (p.c.) for helpful discussion on this point.)

Further, the existential quantifiers *ein paar* ‘a couple’ and *manchmal* ‘sometimes’ seem to induce irony in pertinent contexts, as shown in (11) and (12). In both contexts, the respective stronger scalar alternative of the existential quantifier (*viele* ‘many’ or *alle* ‘all’ in (11), *immer* ‘always’ in (12)) also holds true.

- (11) CONTEXT: *All students failed the exam.*  
**Ein paar** Studenten haben die Prüfung verhaut.  
 a couple students have the exam failed  
 ‘A couple of students failed the exam.’ (ironic)
- (12) CONTEXT: *The listener is a notorious coffee drinker: the speaker knows that the listener never leaves the house without having at least two cups of coffee.*  
 Du trinkst in der Früh ja **manchmal** Kaffee.  
 you drink in the morning PART sometimes coffee  
 ‘In the morning you sometimes have coffee.’ (ironic)

Moreover, my account leads us to expect the existence of similar effects in the domain of universal quantifiers in downward-entailing environments. Does, e.g., *brauchen* ‘need’ give rise to irony in DE environments if its stronger, existential alternative *dürfen* or *können* is also true? The ironic flavor of (13) as a case in question suggests that it does.

- (13) CONTEXT: *Smoking is prohibited at the location of utterance.*  
 Lisa **braucht** hier nicht rauchen.  
 Lisa need here not smoke  
 ‘Lisa need not smoke in this place.’ (ironic)

How does my analysis handle the lack of irony in (6), which, on the surface, seems like another case of understating the facts? Recall the condition imposed by  $\text{EXH}_{\mathcal{R}}$  that scalar alternatives be *relevant*. I submit that the universal alternative, *Lena has to write a semantics paper*, is not relevant in context (6), hence it does not get negated. My argument is that (6) contrasts the permission to write a paper as granted by Lena’s program with a prior lack thereof. Correspondingly, I identify the question under discussion with the two-membered set  $\{Lena \text{ is allowed to write a semantics paper, } Lena \text{ is not allowed to write a semantics paper}\}$ ; the scalar alternative *Lena has to write a semantics paper* is not part of this set. Crucially, exhaustification over this two-membered set is vacuous. Thus the strengthened meaning amounts to the weak possibility meaning, viz. (14). But this meaning is consistent with *Lena writing a semantics paper* being a necessity. Therefore, no ironic inference is triggered.

- (14)  $\llbracket [\text{EXH}_{\mathcal{R}} [Lena \text{ darf eine Semantikarbeit schreiben}]] \rrbracket$   
 = 1 iff Lena is allowed to write a semantics paper.

## 4.2 Irony via presupposition failure: the case of contextual undesirability

### 4.2.1 The argument

I asked why undesirability of the prejacent is one of the characteristics of ironic *dürfen*. As part of my response, I propose that *dürfen* introduces a desirability presupposition: I take *dürfen* to presuppose that its prejacent is desirable to the individual targeted by the modal statement. This presupposition is clearly failed in (3).

$$(15) \quad \llbracket \textit{dürfen} \rrbracket^{w,a} (\text{updated}) = \lambda f_{\langle s, \langle st, t \rangle \rangle}. \lambda g_{\langle s, \langle st, t \rangle \rangle}. \lambda p_{\langle s, t \rangle}: p \text{ is desirable to } x \text{ s.t. } x \text{ is the target of the modal in } a. \exists w' \in \max_{g(w)} (\cap (f(w)) : p(w'))$$

As independent evidence for the presence of a desirability presupposition in the lexical semantics of *dürfen*, I note that there are propositions which, on their own, prompt an interpretation of being undesirable to a given individual: for example, the proposition expressed by *Lena pays a fine* will likely be interpreted as undesirable to Lena in a minimal context. However, this default interpretation seems to be affected in the scope of *dürfen*: (16), where the same proposition is embedded under *dürfen*, triggers an inference that Lena has a positive attitude towards paying a fine, which is preserved under negation.

- (16) Lena darf nicht Strafe zahlen.  
 ‘Lena is not allowed to pay a fine.’  
 $\rightsquigarrow$  *Lena has a positive attitude towards paying a fine.*

A similar inference of desirability can be observed for complement propositions that, on their own, do not favor a particular desirability attitude, cf. *Lena talking to Peter* in (17).

- (17) Lena darf (nicht) mit Peter sprechen.  
 ‘Lena is (not) allowed to talk to Peter.’  
 $\rightsquigarrow$  *Lena has a positive attitude towards talking to Peter.*

Assuming that the idea of a desirability presupposition for *dürfen* is on the right track, how does presupposition failure connect to irony? I put forward a modified version of Grice’s view and argue that irony is triggered by non-truth rather than falsity. I adopt a trivalent semantics, which comes with a third truth value # for declarative clauses that suffer presupposition failure. In such a system, where both falsity and presupposition failure entail non-truth, there are then two avenues to irony (as blatant non-truth): irony via falsity and irony via presupposition failure. Both are exploited in prototypical cases of ironic *dürfen* such as (3) and (4).



(18) Truth table in a trivalent logic<sup>6</sup>

| $S_p$ | $p$ | $S_p \Rightarrow \neg 1$ |
|-------|-----|--------------------------|
| 1     | 1   | 0                        |
| 0     | 1   | 1                        |
| #     | 0   | 1                        |

#### 4.2.2 Predictions

What are the predictions I make by extending the potential to trigger ironic inferences to all cases of presupposition failure by way of non-truth? For one thing, my analysis predicts that in DE contexts, which are contexts that Magri expects not to show hallmarks of obligatory exhaustification, *dürfen* can still be ironic provided that its desirability presupposition is failed. (19a) and (19b) suggest that this prediction is borne out: *dürfen* is in a DE environment (scope of negation in (19a), conditional antecedent in (19b)), yet triggers irony. At the same time, I do not predict irony for corresponding sentences featuring *können*, which, presumably, has no desirability presupposition. That this is on the right track can be seen in (19a) and (19b): with *können* instead of *dürfen*, only the non-ironic reading is readily available. (The provided acceptability judgments in (19) target the intended, ironic reading.)

- (19) a. Martin darf/?kann zumindest nicht jeden Tag um fünf aufstehen.  
 Martin *darf/kann* at least not every day at five get-up  
 ‘At least Martin does not get to get up at five every day.’ (NEG > can) car’
- b. Wenn Martin jeden Tag um fünf aufstehen dürfte/?könnte, würde er kündigen.  
 ‘If Martin got to get up at five every day, he would quit his job.’

### 5. Outlook

The proposed analysis could provide a clue as to why *dürfen* makes for an especially “good” case of irony, compared to *können*: *dürfen* sentences like (3) and (4) have two ways of being ironic, via falsity and presupposition failure.

Clearly, the analysis also faces certain questions, one of the most pressing ones being the fact that not all sentences with value 0 or # are ironic. What is a sufficient condition for irony? So far, we have no mechanism to restrict irony to the cases where it is attested. Moreover, while the possibility for 0 and # might be required to make a case of irony especially “good”, occurrences of ironic *dürfen* in DE environments showed us that # is sometimes sufficient to trigger irony. Thus, having both options, 0 and #, seems to be neither sufficient nor necessary for a sentence to be ironic.

Interestingly, ironic *dürfen* in non-UE environments is often (sometimes necessarily) accompanied by modal particles and adverbials, many of them presuppositional, e.g., *zu-*

<sup>6</sup>Read  $S_p$  as  $S$  presupposing  $p$ . If a sentence  $S$  presupposes  $p$ , the truth (value 1) of  $S$  entails the truth of the presupposition  $p$ ; by the contrapositive, presupposition failure and falsity both entail non-truth ( $\neg 1$ ).

*mindest* ‘at least’ in (19a) or *auch noch* ‘in addition to’. Is there a systematic reason for the presence of these elements?

We might also wonder why the phenomenon is attested in some languages but not in others. What are the conditions under which a language allows for ironic uses of permission or possibility modals? Why does English lack a comparable use of the modals *may* and *can*?

While my analysis comes with many outstanding puzzles, it also introduces the interesting possibility that there might be other types of constructions in which the availability of ironic inferences could be used to probe into the construction’s non-suspendable semantic content.

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Milena Sisovics  
milenas@mit.edu

# (Im)possible intensionality?<sup>\*,†</sup>

Dominique Sportiche

UCLA

## 1. Introduction

I will use the syntactic distribution of intensional contexts in VP to probe the structure of double object constructions and double object alternations in English and French. I conclude that such alternations are indeed underlied by double object structures, but that these are different from surface double object structures. I also conclude that French does display both underlying and surface double object structures.<sup>1</sup>

Some linguistic contexts are intensional. In such contexts, one can observe some (or all) diagnostic properties, e.g. for indefinites: (i) non specificity, (ii) failure of truth preservation under extensional substitution, or (iii) lack of existential import. The property of creating an intensional context is a lexical property, e.g. of a particular verb such as *owe* or (idiomatic) expressions such as *look for*, but not of *acquire* or *get*. Thus:

- (1) a. Marta acquired a violin *or* Marta got him a violin  $\models$  there is a violin that Marta acquired, or got him.  
b. Marta owed him a violin  $\not\models$  there is a violin that Marta owed him.

In this article, the single criterion used for intensionality will be the availability of non specific readings for simple indefinites, that is DPs of the form [indefinite article, noun]. A *non specific indefinite* will mean an indefinite which does not refer to particular objects; thus we could add about the violin in (1b) (but not in (1a)): *any will do or none in particular*.

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<sup>\*</sup>To Martin, since the green windows on.

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<sup>1</sup>Some terminology: I will discuss pairs such as *I gave John a book*, *I gave a book to John*. I will call the latter the prepositional dative construction (PDC) and the former the double object construction (DOC). I will call indirect object (IO) the DP interpreted as the goal/recipient/intended possessor, namely *John* here. I will call direct object (DO) the DP that interpreted as the theme/patient, here *a book*.

Treatments of intensionality (see Schwarz 2015 for a survey of analyses for transitive verbs) assume that:

( $\alpha$ ) The intensional context created by an element E must be an argument of E.

Call such an argument of E an intensional argument of E, or **intensional** for short. For an indefinite to be non specific, it does not suffice that it be merged in an intensional context, it must also be interpreted in this context. In other words:

- (2)  $\zeta$  can be interpreted intensionally due to P iff:
- a.  $\zeta$  is merged as an intensional or within an intensional argument of P, an intensional context creating lexical item, and
  - b.  $\zeta$  is interpreted in the scope of P.

## 2. English IOs in DOCs

### 2.1 Intensional asymmetries

Consider the DOC in (3) with both the IO and the DO indefinite:

(3) Livia owed a peasant a horse.

While the DO need not be specific, the IO has to be: a particular peasant is owed a horse by Livia.<sup>2</sup> Now it may well be accidental that the verb *owe* imparts intensionality to its DO but not to its IO. But there do not seem to be cases of intensional IOs in a DOC.<sup>3</sup> I will now assume that in principle there are no such cases and reason on this basis. This means no verb can license an intensional IO in a DOC and that this is for principled reasons, not accidental reasons. If e.g. *a peasant* is in the complement structure of *owe*, which licenses intensionality in its DO, there is no principled reason why there could not be a DOC verb *schmilch* licensing intensionality on its own IO.

Given (2), if IOs of DOCs can never be intensional, this means either that the IO in a DOC is not an argument of the verb licensing intensionality in its DO, thus failing property (2a), or that it cannot be interpreted in the scope of this verb, thus failing property (2b).

Let us first explore the possibility – **hypothesis #1** – that it cannot be an (internal) argument of a predicate whose lexical content can license intensionality.

Since VPs can contain as part of their shells a head H which makes a direct object intensional, IOs cannot be in the complement structure such a head H, and unless we attribute the lack of such intensional IOs to a (possibly universal yet) accidental gap, IOs never are

<sup>2</sup>I will return to these verbs of commitment, such as *owe*, *promise* and *bequeath*. For now, it suffices to note the clear judgment differences between IOs and DOs in simple cases as (3).

<sup>3</sup>As far as I have been able to determine, the full generality of this claim is, surprisingly, novel, as is that regarding subjects of transitive and unergative verbs below around the discussion of ( $\gamma$ ). Please let me know otherwise.

arguments of the head introducing the DO. In other words, we derive the conclusion that the underlying constituent structure of DOCs like (3) includes a constituent where the IO asymmetrically c-commands the DO as in (4):

(4) [ [ IO ] ... [<sub>XP</sub> X [ DO ] ] ]

This is an instance of what is sometimes called low applicatives, where the head X is the low applicative head (Pylkkänen 2008) and for which there is good independent evidence (see a summary in Sportiche et al. 2013).

It is worth noting that under hypothesis #1, both objects are c-commanded by the SUBJECT/external argument, if there is one, introduced by a *v* as in (5):

(5) [ SUBJECT *v* ... [ [ IO ] ... [<sub>XP</sub> X [ DO ] ] ] ]

This means that no *v* should be able to create intensional contexts (which seems true). Otherwise we would expect IOs in DOCs to sometimes be intensional.

( $\gamma$ ) Little *v* is never intensional.

I will not discuss this further here except to note that this implies that subjects of transitives verbs and unergative verbs, which are hypothesized to include a *v*, are never intensional. Subjects of unaccusatives, however, which are subjects of verbs lacking a *v*, can be:

(6) une parabole                    manque    (pour qu'on puisse            recevoir la BBC)  
a parabolic antenna is missing (for us        to be able to get            the BBC)

Here again, (6) does not refer to a particular (type of) antenna. That the preverbal subject can be intensional can be corroborated by the possibility of having the indefinite subject modified by a subjunctive relative clause, as such relatives must occur in intensional contexts:

(7) Une antenne qui    puisse    capter la BBC manque  
an antenna which could-subj get    the BBC is missing

## 2.2 Double objects alternations

Are there derivational relations between DOCs and their PDC counterparts as in (8a,b)?

- (8) a. Omnart sent a picture of her<sub>m</sub> mother to [Livia<sub>m</sub> only].  
b. Omnart sent [Livia<sub>m</sub> only] a picture of her<sub>m</sub> mother.  
c. Omnart sent a graduate (\*from its<sub>m</sub> worst school) (back) to [NYC<sub>m</sub> only].  
d. \*Omnart sent [NYC<sub>m</sub> only] a graduate (from its<sub>m</sub> worst school).

The patterns in (8) illustrate straightforward binding considerations supporting a positive answer:<sup>4</sup> (8) shows the correlation between the possibility of backwards semantic binding of a pronoun by a *to*-PP and the existence of a DOC structure. Backwards semantic binding of *her* by the (intended, see Beck & Johnson 2004) possessor [*Livia only*] (or other binders) is possible in the PDC as in (8a), as it is in the DOC in (8b). And backwards semantic binding of *it* by the locative [*NYC only*] (or other binders) is not possible in (8c)<sup>5</sup> nor is it possible in the corresponding DOC in (8d).

Since semantic binding of a pronoun by DP-*only* requires c-command, this correlation can be derived from the assumption that at some derivational point of (8a), the IO c-commands the DO, as in (8b), while the location DP never does. In other words, (8a) is derived from a structure like (8b). It is worth noting that this conclusion holds regardless of whether hypothesis #1 is correct or not.

These considerations provide support for Hallman (2015)'s conclusions according to which some DP PP structures are transformationally derived from double object structures, by a passivization like process. Hallman shows that the PDCs are so derived essentially when the PP is understood as a possessor rather than as a locative.

Now, note that this reasoning applies to the following PDC/DOC pair with *owe*: the pronoun *his* can be bound by *every peasant*.

- (9) a. Omnart owed seeds for his<sub>m</sub> fields to every peasant<sub>m</sub>.  
 b. Omnart owed every peasant<sub>m</sub> seeds for his<sub>m</sub> fields.

Given hypothesis #1, (10a) ought to be derived from (10b).<sup>6</sup>

- (10) a. Omnart owed a horse to a peasant.  
 b. Omnart owed a peasant a horse.

Minimally we would need to assume the following derivational steps, where X, Y and Z are heads, in which *a horse* ends up c-commanding *a peasant* because of (9b) (step (ii) intentionally missing – see below (14)):

- (11) i. [C [a peasant] ... [ X [a horse ] ] ] →  
 iii. [ to [C [a peasant] ... [ X [a horse ] ] ] →  
 iv. [ Y [ to [C [a peasant] ... [ X [a horse ] ] ] ] →  
 v. [ [a horse]<sub>k</sub> [ Y [ to [C [a peasant] ... [ X t<sub>k</sub> ] ] ] ] →  
 vi. Z [ [a horse]<sub>k</sub> [ Y [ to [C [a peasant] ... [ X t<sub>k</sub> ] ] ] ]

<sup>4</sup>Different binding facts first noted in Burzio (1986, p. 199-203) are discussed in Pesetsky (1995, p. 221-223) with partially similar conclusions.

<sup>5</sup>There is of course no bar against a locative outscoping a theme. If it did, the deviance would arise from a WCO effect.

<sup>6</sup>This derivation does not trigger Condition C effects, cf. the well formed *Omnart owed a picture of Livia to her* from a structure including [*her [a picture of Livia]*]. This can be understood if the theme raises past the possessor by A-movement – a form of passive, indeed as Hallman (op.cit.) proposes – which can bleed Condition C. In principle, guaranteeing total reconstruction of the DO under the IO should trigger a condition C effect but clear relevant examples are difficult to construct.

Interestingly, DOC differ from their PDC counterparts regarding intensionality. Thus, while the indefinite *a peasant* must be specific in (10b), it does not have to be in (10a):<sup>7</sup> (10a) unlike (10b) can describe a situation in which Omnart was committed to give some horse (did not matter which), to some peasant (did not matter which).

At what step of (11) is the intensionality inducing *owe* merged? It cannot be as X in (11i), as this would disallow *a peasant* being intensional in (10a).

But under hypothesis #1, *owe* cannot be merged outside of the constituent C either, as this would make *a peasant* always intensional.

We end up with a contradiction: (10a) cannot be derived from (10b).

To avoid this contradiction, note that the binding facts in (9) do not require that (9a) be literally derived from (9b), but rather that (9a) be derived from a structure S like (9b), in which the IO c-commands the DO. As both objects can be intensional in (10a), both objects must be able to be in the scope of *owe*. We can handle this by giving up **hypothesis #1** in favor of **hypothesis #2**: everything is exactly as described in (11) (given Hallman's conclusions and the binding arguments above) except that the structure in step (i) of (11) is *not* the *surface* DOC but rather some *underlying* DOC like structure.

So what is the surface structure S of the DOC? The IO of *owe is* merged in an intensional context created by *owe*. Given (2), whatever S is, it should not have the IO in the scope of *owe*, that is property (2b) should fail.

It is sometimes assumed that there is no transformational derivation between DOCs and their PDC counterparts. Under such an assumption, a verb, e.g. *owe*, would enter into two distinct subcategorization frames. But this is not good enough here. We would need to postulate two distinct verbs *owe*: one lexically intensional on its second argument only (DOC), and one lexically intensional on both (PDC). Clearly this is highly undesirable. I conclude that structure S should be derived from step (i) of (11) – the constituent C, an *underlying* DOC structure thus common to both constructions – in such a way that the IO does not have the option to be in the scope of *owe*. Since the DO must be, we are led to assume that structure S must meet the following two properties:

- (12) a. (The intensionality creating part of) *owe* is indeed merged above the constituent C containing both objects.  
 b. The IO must move higher than *owe* and cannot reconstruct.<sup>8</sup>

Both can be achieved if the IO must move to a scope position. So S is derived from (i) as follows (X the same head as in (11) or (14), W not the same as Y):

<sup>7</sup>Not all speakers find (10a) or (9a) natural, although even for them the judgment differences remain. Other verbs that can be used are e.g. *bequeath*, *promise*, *grant*.

<sup>8</sup>Alternatively, the IO is first merged in the highest position in (13) and controls a PRO in the place of  $t_k$ : a control analysis of DOC. Space prevents me from discussing this further here but there are grounds for concluding that both may be available. In my French, the sentence *Omnart promised a violin to a peasant* is ambiguous: the promise can be to give a violin to a peasant, or it can be a promise to a peasant to give him a violin. The latter, but not the former, suggests the presence of two  $\theta$ -roles, hence of a control analysis.

- (13)
- i. [C [a peasant] [ X [a horse ] ] ] →
  - ii. [ owe [C [a peasant] [ X [a horse ] ] ] ] →
  - iii. [ W ... [ owe [C [a peasant] [ X [a horse ] ] ] ] ] →
  - iv. [ [a peasant]<sub>k</sub> [ W ... [ owe [C [t<sub>k</sub>] [ X [a horse ] ] ] ] ] ]

W is a head whose specifier is a scope position, thus marking the scope of the IO (so the indefinite IO must be specific). The movement of *a peasant* in step (iv) above may be covert or overt (the latter requiring the verb to overtly move higher). Regardless, *owe* ends up higher than *a peasant* phonologically, not changing scope relations if it moves.<sup>9</sup> To merge *owe* always in the same syntactic context, we can revise the derivation of the PDC case (11) roughly as follows, adding the missing step (ii) (which is step (ii) of (13) above):

- (14)
- i. [C [a peasant] [ X [a horse ] ] ] →
  - ii. [ owe [C [a peasant] [ X [a horse ] ] ] ] →
  - iii. [ to [ owe [C [a peasant] [ X [a horse ] ] ] ] ] →
  - iv. [ Y [ to [ owe [C [a peasant] [ X [a horse ] ] ] ] ] ] →
  - v. [ [a horse]<sub>k</sub> [ Y [ to [ owe [C [a peasant] [ X t<sub>k</sub> ] ] ] ] ] ] →
  - vi. owe<sub>m</sub> [ [a horse]<sub>k</sub> [ Y [ to [ owe<sub>m</sub> [C [a peasant] [ X t<sub>k</sub> ] ] ] ] ] ]

In this derivation, the movement of *a horse* or of *a peasant* are crucially not to scope positions and can thus reconstruct under (the merge position of) *owe* (and *owe* ends up higher phonologically than usual, not changing scope relations, notwithstanding claims that head movement can affect scope).

### 2.3 Frozen scope

Consider now:

- (15)
- a. Marta owed a peasant a horse.
  - b. Marta owed a peasant every horse.

That *a horse* can be intensional in (15a) undermines Bruening's (2001) treatment of the *frozen scope* effect in DOCs. This effect is illustrated by the fact that in (15b), the reading *every > a* is unavailable. Indeed Bruening's explanation assumes that in such a construction, both objects undergo QR, preserving (for independent reasons) their relative c-command (hence scope) relations, which freezes relative scope. Thus (15b) is unambiguous: *a peasant* must outscope *every horse*.

This account requires that QR be obligatory (or that QR-ed elements cannot reconstruct).<sup>10</sup> But if reconstruction were impossible, the *de dicto* reading of *a horse* would not

<sup>9</sup>Note that, crucially, this reasoning does not apply to indefinite transitive SUBJECTS: they can be interpreted as non specific when indefinite when in the scope of e.g. an adverb as (if) *a friend is always visiting...* allows *always > a friend*. Conclusion ( $\gamma$ ) is thus not affected.

<sup>10</sup>An alternative treatment without QR at all is untenable, as QR must be available, e.g. to deal with Antecedent Contained Ellipsis, or relative scope of objects and subjects.



be allowed in (15a), contrary to fact.<sup>11</sup> So indefinites can fail to QR (or can totally reconstruct) in the scope of an intensional verb. Furthermore, universally quantified objects can outscope c-commanding indefinites: this is what happens when an object outscoops a subject as in *a peasant owns every castle*. So nothing prevents QR-ing *every horse* in (15b) while (totally reconstructing or) failing to QR *a peasant*: this should yield the impossible scope *every > a*.

To handle frozen scope, an additional ingredient is needed. Given the discussion above, this ingredient is the independent fact that the IO cannot be intensional. If the reasoning above is correct, frozen scope (say, Bruening's account)<sup>12</sup> must build on the fact that the IO **must** move to (or be first merged in – see footnote 8) a scope position higher than the verb.<sup>13,14</sup>

### 3. French double objects

French allows the prepositional DP PP alternates of double objects constructions but differs from English in disallowing visible double object constructions.

- (16) a. Omnart devait un cheval à un paysan.  
Omnart owed a horse to a peasant.
- b. \*Omnart devait un paysan un cheval.  
Omnart owed a peasant a horse.
- c. Omnart lui devait un cheval.  
Omnart to-him owed a horse.

Interestingly however, the binding facts reported in (8)a,c hold of French too (the equivalents of (8)b,d are ill formed):

- (17) a. Omnart devait des grains pour ses<sub>m</sub> champs à chaque paysan<sub>m</sub>.  
Omnart owed seeds for his<sub>m</sub> fields to every peasant<sub>m</sub>.
- b. \*Omnart a (r)envoyé un diplômé de sa<sub>m</sub> pire école à [NYC<sub>m</sub>  
Omnart sent (back) a graduate from its<sub>m</sub> worst school to [NYC<sub>m</sub>  
seulement].  
only]

<sup>11</sup>The scope of the DP is meant here. The NP restriction of the DO or IO may be read *de re* or *de dicto*.

<sup>12</sup>In such an account it suffices that the 2nd object not be able to QR past the IO.

<sup>13</sup>The reason for this could be the one given in footnote 8: the DOC is a control structure and the IO gets two theta roles.

<sup>14</sup>Given the view of QR as a type of Scrambling (Johnson & Tomioka 1998), this requirement basically is (overt or covert) movement to the middle field past the VP internal subject. The fact that IOs must scramble would not be surprising: as is known from e.g. German or Dutch (or Hindi), (non focused) specific DPs must scramble. The same mandatory Scrambling seems at play in verb particle constructions viz *Livia picked \* up them / ✓ them up*, which would support the existence of overt Scrambling in English, consistent with e.g. Johnson 1991.

These binding facts show that the derivation of (8)a given in (14) holds in French too. French thus does have an underlying double object structure: the derivation of (16)a proceeds as in (14), with a constituent C as in (13) or (14).

French does not allow the surface form of DOCs, at least with a plain DP IO. But is there an equivalent of overt double object structures? Sportiche (1996) conjectured that Cliticization and Scrambling are two facets of the same phenomenon, affecting specific DPs. This predicts that if the Dative is cliticized, this Dative object has scrambled and characteristic double object properties should resurface. This prediction is correct, as can be shown by the fact that scope freezing obtains in cases in which a dative complement cooccurs with a Clitic, as e.g. Clitic Left Dislocation (see Angelopoulos & Sportiche 2016 for a more complete discussion):

- (18) a. On a recommandé chaque élève<sub>m</sub>/[Jean<sub>m</sub> seulement] au proviseur de  
 We recommended each pupil<sub>m</sub>/[Jean<sub>m</sub> only] to the principal of  
 son<sub>m</sub> lycée.  
 his<sub>m</sub> high school.
- b. \*Au proviseur de son<sub>m</sub> lycée, on lui<sub>m</sub> a recommandé chaque  
 To the principal of his<sub>m</sub> high school, we to-him<sub>m</sub> recommended each  
 élève<sub>m</sub>/[Jean<sub>m</sub> seulement].  
 pupil<sub>m</sub>/[Jean<sub>m</sub> only].

In other words (16c) is not the counterpart of (16a) but of (16b). Other diagnostic properties of DOCs are observed too when the dative object is cliticized, e.g. non intensionality of clitic doubled dative objects (cf. Angelopoulos & Sportiche 2016) and logocentricity of the Dative clitics (Charnavel & Mateu 2015). The same seems to hold of Spanish dative clitic doubling (Woods 2012).

#### 4. Impossible intensionality?

The title contains a question mark for two reasons. First, we generalized that some cases do not exist, a risky generalization, and we also assumed that this non existence was not accidental but principled. Either assumption could turn out false. But second, we assumed that what was involved, particularly with IOs in DOC constructions, was non intensionality. We only checked specificity, however, and not all diagnostics for intensional contexts. The behavior of commitment verbs such as *bequeath*, *promise*, which are future oriented, raises questions. Indeed, consider (19a-c):

- (19) a. Marta promised a peasant a violin.  
 b. Livia promised a peasant who will plant red currants a bountiful harvest.  
 c. Marta promised the winner of the 2020 Ybbs bike race a violin

Speakers report (19a) as requiring the IO (but not the DO) to be specific, (19b) as perhaps natural if it is about a particular peasant who it is thought will plant red currants and (19c)

as fine even if the 2020 Ybbs race never takes place, and there is no winner: perhaps surprisingly, there is no existential import for this definite phrase. Does this indicate appeal to possible worlds, hence intensionality? If we are right, the specificity requirement on the IO requires that it (overtly or covertly) scrambles: as a result, it can't be in the scope of the verb and thus can't be intensional (because of the verb). Instead we are led to assume that the appearance of intensionality is due (i) to the future orientation of such verbs and (ii) the internal structure of the DP which contains a reference to the future.<sup>15</sup>

## 5. Conclusion

Looking at the distribution of non specific indefinites in VPs, I have concluded that their distribution entails the following:<sup>16</sup>

- (20)
- i. The higher head *v* of VP shells introducing external arguments (or transitive and unergative verbs) is never intensional.
  - ii. IOs of English DOC constructions must be specific and scramble to above the (lexical, potentially intensionality inducing part of the) verb. This crucial property underlies in part the frozen scope effect of such constructions.
  - iii. Agreeing with Hallman (2015), DPCs are derived from an underlying deep double object structure. This is also true of French.
  - iv. This deep double object structure also underlies the surface English DOCs and French DPC constructions where the Dative is clitic doubled.

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<sup>15</sup>Special thanks to Florian Schwartz – who may not agree – for his input on this section.

<sup>16</sup>As Chris Collins remarks, looking at negative verbs such as *deny*, *refuse*, *eliminate*, *preclude*, etc. and the distribution of NPIs licensed by them could possibly lead to similar conclusions, or at any rate to an understanding of the internal structure of their VP shells – e.g. the exact distribution of negation within them.

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Dominique Sportiche  
dominique.sportiche@ucla.edu

## Qualified parenthetical adjuncts

Tim Stowell

UCLA

### 1. Integrated and parenthetical adjuncts

In this article I will argue for an ellipsis derivation for parenthetical adjuncts. Adjuncts include adverbs, prepositional phrases, and infinitival clauses, among other types of constituents. All adjuncts can be parenthetical, but they need not be. In (1) to (3), the adjuncts in the (a) examples are integrated into their host clauses, whereas the same adjuncts in the (b) examples are parenthetical.

- (1) a. Max drank two bottles of gin last night on an empty stomach.  
b. Max drank two bottles of gin last night, *on an empty stomach*.
- (2) a. The rebels have been defeated decisively.  
b. The rebels have been defeated, *decisively*.
- (3) a. Napoleon attacked the city to prove his invincibility.  
b. Napoleon attacked the city, *to prove his invincibility*.

Each of the integrated adjuncts in the (a) examples is phonologically incorporated into the main intonational phrase of its declarative host sentence, and these integrated adjuncts may bear the primary nuclear stress of that sentence, as indicated by the accent marks in (1) to (3). In contrast, each of the parenthetical adjuncts in the (b) examples is separated from the rest of its host sentence by a pause. The primary nuclear stress of the host sentence falls elsewhere within its verb phrase. The parenthetical adverb forms an independent intonational phrase, containing its own nuclear stress (not marked in the examples above). In this respect, it behaves like an independent sentence.

Although the phonological (prosodic) contrast between integrated and parenthetical adjuncts is clear, the semantic distinction between them is not. Bonami et al. (2004, 146) describe parenthetical semantics for adverbs as follows: “the semantic contribution of the adverb is not integrated into the proposition the sentence asserts; rather, it has the status of a comment on that assertion.” They go on to argue that there is no principled relation between parenthetical semantics and what is usually called parenthetical intonation, at

least for adverbs. They point out that some adverbs, like *unfortunately*, are intrinsically parenthetical semantically, whereas other adverbs, like *probably*, are intrinsically integrated; in both cases, the semantics is unaffected by whether or not the adverbs have a ‘parenthetical’ prosody. (In Section 2, I will discuss some exceptions to the claim that adverbs like *probably* are always integrated.)

Returning to the ‘parenthetical’ adjuncts in the (b) sentences of (1) to (3), their semantic status is far from obvious. On the one hand, they have the flavor of afterthoughts, or follow-ups to the main clause. On the other hand, this doesn’t seem to have any effect on the truth conditions of the sentences in which they occur.

The crux of the matter hinges on whether the (b) sentences convey a single assertion, like the (a) sentences, or whether they convey two independent assertions, one provided by the host sentence (excluding the parenthetical adjunct), and the other provided by the adjunct. If there is just one assertion in the (b) sentences, perhaps there is no need for a fundamental distinction between the parenthetical and integrated adjuncts in terms of their syntactic status. One might assume, for example, that parenthetical adjuncts are simply normal adjuncts that have undergone movement to a peripheral syntactic position; the distinctive prosodic contour of the parenthetical could be a side effect of this displacement.

But if the (b) sentences convey two assertions, one of which is contributed by the adjunct, the relation between the host sentence and the parenthetical adjunct should be paratactic, analogous to the relation between the sentence pairs in (4), where each declarative sentence contributes its own assertion.

- (4) a. Max drank two bottles of gin last night; this was on an empty stomach.  
 b. The rebels have been defeated; their defeat was decisive.  
 c. Napoleon attacked the city; he did it to prove his invincibility.

In each example in (4a-c), the first sentence asserts that a particular event occurred, while the second sentence asserts an additional claim about that event. The information conveyed by these two-sentence pairs could have been conveyed by a single, more complex sentence like the (a) sentences in (1) to (3), but the speaker/writer chose to convey the information in two smaller packages.

If parenthetical adjuncts make independent assertions, it is plausible to assume that they function more or less like the second sentences in (4a-c). This would immediately explain why they contribute an independent assertion, and it would also explain why their internal prosodic contour resembles that of an independent declarative sentence.

But how can these adjuncts be functioning like independent declarative sentences? The simplest answer is surely that they *are* independent declarative sentences, or at least the remnants of sentences that have undergone ellipsis. This would allow us to maintain the simplifying assumption that every asserted proposition is conveyed by an independent declarative sentence. I propose that the (b) examples of (1) to (3) would each originate as two conjoined sentences bearing a paratactic relation to each other, more or less as in (4). The adjunct is extracted from the TP of the second sentence, moving to a position in that sentence’s left periphery, presumably to the Specifier of FocusP. The remnant of the TP is then elided under identity with the first sentence (the “host” clause).

This proposed derivation is based on Merchant's (2001, 2005) analysis of sluicing constructions and sentence fragments. Similar analyses have been proposed for contrastive left dislocation by Ott (2014), for right dislocation by Ott & de Vries (2016), and for appositive nominals by Ott (2016). One might object that the elided TP contains the trace of the extracted adjunct, which is not present in the antecedent host clause, but precisely the same problem arises in ellipsis-based accounts of sluicing, fragments, and dislocation involving adjunct extraction; Merchant's (2001) solution is to posit a null indefinite adjunct in the antecedent clause that undergoes QR.

I will suggest below that critical evidence bearing on the correct approach to these parenthetical adjuncts is provided by parenthetical adjuncts exhibiting greater internal complexity than those discussed so far. These turn out to strongly favor the view that parenthetical adjuncts contribute independent assertions, and that they are the remnants of ellipsis. But first, I want to discuss higher adverbs, which play a role in these more complex structures.

## 2. Evaluative and qualifying adverbs

Other classes of adjuncts behave rather differently from those in (1) to (3). In particular, all of the higher adverbs, including evaluative adverbs, evidential adverbs, epistemic adverbs, modal adverbs, and adverbs of habituality and quantification, tend to occur closer to the beginning of the sentence. With the exception of the evaluative adverbs, these higher adverb classes tend to amend the assertion of the host clause, or scale back the speaker's commitment to its truth. I refer to these collectively as *qualifying adverbs*.

Higher adverbs, including evaluative and qualifying adverbs, typically occur either sentence-initially, or after the subject or an auxiliary verb, as in (5).

- |     |    |                                                        |              |
|-----|----|--------------------------------------------------------|--------------|
| (5) | a. | Probably Napoleon attacked the city.                   | (modal)      |
|     | b. | The rebels have reportedly been defeated.              | (evidential) |
|     | c. | Max unfortunately drank two bottles of gin last night. | (evaluative) |

In the spirit of Cinque (1999), I will assume that the adverbs in (5) all originate in a high position at the left edge of the clause, and that the subject, and also certain auxiliary verbs, may move to positions above them, deriving the orders in (5b,c).

But higher adverbs can also occur in sentence-final position, as illustrated in (6).

- |     |    |                                                         |
|-----|----|---------------------------------------------------------|
| (6) | a. | Napoleon attacked the city, probably.                   |
|     | b. | The rebels have been defeated, reportedly.              |
|     | c. | Max drank two bottles of gin last night, unfortunately. |

The orthographic convention for these sentence-final adverbs resembles that of the parenthetical adjuncts in the (b) sentences of (1) to (3): they are preceded by a comma. But the orthography suggests a false equivalence; these sentence-final adverbs are normally pronounced differently from any of the adjuncts in (1) to (3).

Unlike the parenthetical adjuncts in the (b) examples of (1) to (3), these adverbs don't have to be separated from the rest of the sentence by a pause; and if there is no pause, they do not form an independent intonational phrase. But this does not mean they are

integrated in precisely the same way that the adjuncts in (1) to (3) can be. In particular, sentence-final higher adverbs can never bear the primary nuclear stress of the host sentence; that is, these sentences cannot be pronounced exactly like (1a), (2a), or (3a):

- (7) a. \*Napoleon attacked the city próbably.  
 b. \*The rebels have been defeated repórtedly.  
 c. \*Max drank two bottles of gin last night unfórtunately.

We can explain the exclusion of (7a-c) simply by assuming that, because of the normal order of merge, only relatively low adverbs can be integrated into a VP-internal position that is eligible to bear nuclear stress.

Let's return to the examples in (6). The sentence-final higher adverbs can be preceded by a pause, but need not be. If there is no pause, the adverbs must be pronounced with a distinctive low-pitch flat contour, as noted by Jackendoff (1972). They cannot bear nuclear stress of any kind. Thus, their prosody is different from both the integrated and the parenthetical adverbs in (1) to (3), and presumably their structure and derivation is too. I propose that the higher adverbs in (6), like those in (5), originate above (to the left of) the main TP of their host sentences. The TP can move to a position above these adverbs, deriving (6); I refer to this as *Higher Adverb Inversion*. These adverbs are not parenthetical. Indeed, Bonomi et al. (2014) describe them as intrinsically integrated, in the sense that they "make a contribution to the asserted proposition" of the host clause, regardless of whether they are phonologically integrated or not.

On the other hand, if the sentence-final higher adverb *is* preceded by a (parenthetical-type) pause, it seems to bear contrastive stress, rather than nuclear stress.

- (8) a. Napoleon attacked the city. ... próbably.  
 b. The rebels have been deféated. ... repórtedly.  
 c. Max drank two bottles of gín last night. ... unfórtunately.

These are presumably derived from two-sentence sequences resembling (9a-c), where the higher adverbs also bear contrastive stress (at least in (9a,b)).

- (9) a. Napoleon attacked the city. ... (Well,) próbably he attacked the city.  
 b. The rebels have been deféated. ... (At least,) repórtedly they have been defeated.  
 c. Max drank two bottles of gín last night. ... Unfórtunately, Max drank two bottles of gin last night.

Since these higher adverbs originate above TP, the sentences in (8) have a simpler derivation than the (b) sentences in (1) to (3); the adverbs do not have to be extracted from the TP of the parenthetical clause before it is elided. The qualifying adverbs in (8a,b), like their full clause counterparts in (9a,b), function conversationally as revisions or corrections of the assertion in the host sentence, partially scaling back the speaker's commitment to the truth of that assertion. In contrast, the evaluative adverb in (8c) is merely additive in terms of its dynamic semantic contribution. I suggest that this difference is responsible for awkwardness of the full clausal continuation in (9c).



Summing up, evaluative and qualifying adverbs originate in a high structural position above TP, as in (5a). The subject DP may raise above them, as in (5c), and certain auxiliary verbs can as well, as in (5b). Alternatively, order of the adverb relative to the entire clause can be reshaped by higher adverb inversion, where the TP raises above the adverb, as in (6a-c). Finally, these adverbs can originate above TP within a true parenthetical clause that contributes an independent assertion that either revises or adds to the assertion of the host clause; in this case, the adverb typically bears contrastive stress, and the TP can be elided, as in (8a-c).

### 3. Qualified parenthetical adjuncts

Building on a long analytical tradition going back to Jackendoff (1972), Cinque (1999) famously argued for the existence of a universal hierarchy of around forty functional categories, associated with various semantic classes of adverbs, as well as modal and aspectual categories. In distinguishing various semantic classes of adverbs and assigning them to different syntactic positions, Cinque drew more fine-grained distinctions among semantic classes of adverbs, and established ordering restrictions on them, relative to each other. He did this by combining two assumptions. First, the functional categories are arranged in a universal structural hierarchy. This hierarchy is spelled out structurally along the central spine of the clause. Second, adverbs occupy specifier positions of the functional category associated with their semantic class. Since the hierarchy is fixed, the linear order of sequences of adverbs is also fixed. Unless other movements distort this structure, adverbs whose functional categories are near the top of the hierarchy will be merged late, and will be pronounced before adverbs whose functional categories are lower in the hierarchy. Although many aspects of Cinque's theory have been challenged, there is substantial agreement on many of the theory's empirical claims concerning the preferred hierarchical ordering relations among the various semantic classes of adverbs and related adjuncts.

In terms of Cinque's theory, the evaluative and qualifying higher adverbs discussed in Section 2 all belong to functional categories that are located near the top of the hierarchy. In contrast, the adjuncts in (1) to (3) are all either manner adverbs or other types of sub-constituents of the verb phrase; they are comparatively low on Cinque's hierarchy. This explains why evaluative and qualifying adverbs normally precede the lower adjuncts when they both occur in the same sentence:

- (10) a. Max unfortunately drank two bottles of gin last night on an empty stomach.  
 b. The rebels have reportedly been defeated decisively.  
 c. Probably Napoleon attacked the city to prove his invincibility.

Nevertheless, the higher adverbs can also occur in sentence-final position, as a reflex of higher adverb inversion, as in (11).

- (11) a. Max drank two bottles of gin last night on an empty stomach, unfortunately.  
 b. The rebels have been defeated decisively, reportedly.  
 c. Napoleon attacked the city to prove his invincibility, probably.

Strikingly, these evaluative and qualifying adverbs can also occur within parenthetical adjuncts, preceding the lower parenthetical adjunct:

- (12) a. Max drank two bottles of gin last night, unfortunately on an empty stomach,  
 b. The rebels have been defeated, reportedly decisively.  
 c. Napoleon attacked the city, probably to prove his invincibility.

The occurrence of higher evaluative and qualifying adverbs within these parenthetical adjuncts clarifies the semantic intuition that the adjuncts contribute independent assertions. The higher adverbs in (12a-c) take scope over the parenthetical clause, but not the host clause. This is most easily explained by assuming that the parenthetical adjunct originates as a full clause, with the higher adverbs originating above the TP of that clause, exactly analogous to the position of the higher adverb in (5a). For example, (12c) would originate as something like (13a). The lower adverb is extracted to a position above TP but below the higher adverb, as in (13b), followed by ellipsis in (13c).

- (13) a. Napoleon attacked the city. [Probably [he attacked it to prove his  
 invincibility] ]  
 b. ... [probably [ [to prove his invincibility] [he attacked it t] ] ]  
 c. ... [probably [ [to prove his invincibility] <he attacked it-> ] ]

Moreover, higher adverb inversion can apply within the parenthetical adjunct, reversing the order of the higher adverb and the lower adjunct:

- (14) a. Max drank two bottles of gin last night—on an empty stomach, unfortu-  
 nately.  
 b. The rebels have been defeated—decisively, reportedly.  
 c. Napoleon attacked the city—to prove his invincibility, probably.

In (14), the sentence-final evaluative and qualifying adverbs can scope just over the parenthetical adjunct, as in (12), indicating that the higher adverb inversion must be internal to the parenthetical. The clause-final higher adjuncts within these parentheticals have the same low-pitch prosodic contour that is found with higher adverb inversion in a main clause. As in (13), the lower adjunct must be extracted from the TP prior to ellipsis. This leaves open various other questions about the interaction of higher adverb inversion with adjunct extraction and TP ellipsis, including their relative order of application.

#### 4. More complex cases

It turns out that the qualified parenthetical adjuncts in (12) and (14) represent just the tip of the iceberg. Though space considerations preclude a full discussion here, the following examples provide evidence of even richer clausal structure within the parenthetical adjunct, above the domain to which TP ellipsis applies.

In particular, a sequence of two or even three evaluative and/or qualifying adverbs within the parenthetical are possible, with one triggering inversion, and the others not:

- (15) a. Max drank two bottles of gin last night—reportedly on an empty stomach, unfortunately.  
 b. reportedly on an empty stomach, ~~<he did it>~~ unfortunately.
- (16) a. The rebels have been defeated—I think probably decisively.  
 b. I think probably decisively ~~<they have been defeated>~~.
- (17) a. Napoleon attacked the city—though reportedly possibly with insufficient firepower, I believe.  
 b. though reportedly possibly with insufficient firepower ~~<he attacked it>~~ I believe.

It is hard to see how all these adverbs and adjuncts could be accommodated within these parenthetical adjuncts without a clausal source structure.

## 5. Conclusion

To sum up: I have argued for the existence of several types of sentence-final adjuncts. Parenthetical adjuncts are normally derived from a clausal source by ellipsis, whereas non-parenthetical higher adverbs in sentence-final position arrive there as a result of an inversion process. I have drawn attention to internally complex parenthetical adjuncts containing qualifying and evaluative adverbs, which provide supporting evidence for a clausal structure within the parenthetical. This in turn motivates an ellipsis account of their reduced structure.

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Tim Stowell  
 stowell@humnet.ucla.edu



## **Naming and identity under coordination \***

**Edwin Williams**

Princeton University

If two persons share a last name, their first names may be coordinated under it:

- (1) Robert and Ethel Kennedy arrived late.  
[Robert married Ethel]

They need not be still married, or ever married at all,

- (2) a. Bianca and Mick Jagger entered the rehab clinic at the same time.  
[Bianca Macias married and then divorced Mick Jagger but kept the name]  
b. John and Robert Kennedy entered government at the same time.  
[John and Robert were brothers]

or even siblings:

- (3) Robert and William Kennedy entered the courtroom late.  
[William is a nephew of Robert]

Nor must they form a pair insofar as the action of the sentence goes:

- (4) Robert and Ethel Kennedy died in different years.

Moreover, the claim to the name need not be the same:

- (5) Patrick and Rose Kennedy entered the court at the same time.  
[Patrick is a Kennedy by blood, Rose by marriage]

So far, there appears to be rather broad license to coordinate first names under a last name. However, the following restriction appears to be inviolable:

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\*MP and I spent an hour or so one evening laughing about cases like those in (7).

(6) The last name must be “the same name”.

(6) is best demonstrated by cases that violate it:

- (7)
- a. \*George and Ted Kennedy left the party at the same time.
  - b. \*Larry and Ellen Page entered the ballroom at the same time.
  - c. \*Edwin and Bernard Williams entered the lecture hall at the same time.
  - d. \*Rosa and Van Dyke Parks entered the bus at the same time.
  - e. \*Mamie and Charles van Doren entered the TV studio at the same time.
- [In all these cases, as far as I know, the shared name is coincidental]

So we need to investigate a little what it means to have “the same last name”, a kind of identity condition on this kind of coordination. What is the condition exactly, and why does the condition hold?

Obviously, blood relation is not required—recall (1). But neither shared blood nor marriage is required, as the case of adoption shows:

- (8)
- a. Jessie and Charles Henry Jackson entered the church at the same time.
  - b. Truman and Joseph Capote entered the studio at the same time.

Of course we know that Charles Henry Jackson married Jessie’s mother, and that Joseph Capote married Truman’s mother, so there is a marriage+blood link underlying the adoption of the family name, but intuition says that neither marriage nor blood link is necessary, and the following supports that:

- (9) Ray and Alfred Liotta entered the courtroom at the same time.  
[Alfred and his wife adopted Ray, who was not related to either of them]

Adoption by itself is sufficient.

So far, for a first name to be coordinated with another under a common last name, it must be linked to that other name by marriage or blood or adoption. Or, in fact, any chaining together of these—consider for example, Ray Liotta’s (hypothetical) son’s wife, let’s call her Carrie Liotta, who is related to Alfred by a chain of marriage, blood and adoption links, but appears to have the same claim to the name as Alfred, who is linked to the name by blood alone, and so the following is licensed:

- (10) Alfred and Carrie Liotta entered the ballroom at the same time.

The case of Richard Burton is of special interest—Philip Burton, Richard Jenkins’ teacher, was too young to legally adopt Jenkins, but Jenkins changed his name to Burton to honor his teacher’s role in his life. I think that is strong enough to support the following:

- (11) Richard and Philip Burton entered the bar at the same time.

So, none of blood marriage or adoption is necessary, as Jenkins-Burton renaming is

sufficient, and as before, these links can be chained together; still, as the examples in (7) show, the linkages must go to \*the same name\*. What exactly does that mean?

To address the question, let us consider the case of Ellen Page and Larry Page. Two famous people, who, for all we know, might be related, but no one seems to think so, or at least I never heard of it. Maybe they share a great-grandfather. Is that enough? No—in the case where their mothers share an ancestor not named Page, and each mother married a Page from different Page families, there is not enough to warrant “Ellen and Larry Page”. In other words, they may be closely related, and they may both be named Page, but they cannot be Ellen and Larry Page.

Next, suppose that Ellen and Larry share a great-grandfather named Page. Is that enough? No again. It is not enough that they share great-grandfather Page; their names must both link to him. Suppose that their mothers share grandfather Page as blood ancestor, but are named Smith and Jones until they marry unrelated Page men. Then “Ellen and Larry Page” does not work.

There is a further limitation, very hard to assess. Suppose Ellen and Larry each could in principle trace their own name Page to the shared great-grandfather named Page. If I am the only person who knows about this, even Ellen and Larry do not, then I cannot felicitously refer to “Ellen and Larry Page”. It seems that knowledge of the sameness of the name must be presupposable or at least easily accommodatable, as in “Oh, of course he is a Kennedy, I just never thought about it”, said of someone actually named Kennedy. Is Chris Kennedy a Kennedy? No, not coordinatable with Teddy, not as far as we know. The linkages have to be demonstrable, they cannot simply be presumed on the basis of a common name, but see footnote 2.

So, “X and Y LastName” is licensed only if X and Y can link their last names to a common “ancestor” bearing that LastName, and that linkage is widely known.

Now consider the hypothetical marriage of Ellen Page to Larry Page. Is the marriage enough to warrant “Ellen and Larry Page”? No, not if Ellen elects to keep her maiden name. So, putting this point together with the previous two, Ellen and Larry can be closely related with a common ancestor named Page, married to each other, and both be named Page, but that is not enough to license “Ellen and Larry Page”, if the two sources of “Page” cannot be joined together with a chain of marriage, blood, adoption or Jenkins-Burton renaming. Similar remarks apply to the case where Ellen does take Larry’s last name at marriage, then divorces him and reverts to her maiden name.

Of course a false linkage will be imputed in such a peculiar situation. If I am the only one that knows that Ellen kept her maiden name (that she checked that box on the marriage license) it will be commonly assumed that they share a last name, and “Ellen and Larry Page” would be an appropriate, if technically incorrect, usage. My intuition is that as it becomes more widely known that Ellen kept her maiden name, “Ellen and Larry Page” becomes less acceptable.

It is time to reflect on why the very particular condition on identity that we have uncovered holds for coordinating first names under a last name. I think the most promising path begins with observing the strong resemblance between the condition we have arrived at here and the “causal” theory of names as exposed in Kripke’s (1972) *Naming and Necessity*. What we are naming here is not an individual but a family, where a family can be extended by blood, marriage, adoption, and other means, but maybe Kripke’s considerations apply to family names as well.

Two families can have the same name without being the same family, or part of the same family. So, Ellen Page and Larry Page do not belong to the same family, as far as we know. That is, we cannot trace back to a historical ancestor (in the extended sense that includes marriages and adoptions) from which their family names both derive. It seems to me that much of what Kripke says about the names of individuals can be applied directly to family names as names of families.

For example, one can construct Gödel/Schmidt cases for family names (crucially, as names of families—Kripke of course himself constructed Gödel/Schmidt cases, but where “Gödel” and “Schmidt” were used as names of individuals, not as names of families). If it were discovered, for example, that the Babenbergs were not in fact the rulers of the Imperial Musgravate of Austria, but rather the Strobbs were, the family name “Babenberg” would not thereby come to refer to the Strobbs. A family name has a causal history, and individuals have a causal relation to that family name in that they are a part of that family.

If that is so, then to explain the restriction on coordinating first names under last names we must go further than to say that the last name is simply the second part of a two-part name; we must endow the last name with sufficient content that it is itself the name of something, namely a family—and not just part of a name of an individual—and the identity condition is then a condition on identity of families.

This is brought home by the fact that there is no such thing as coordinating last names under a first name:

(12) \*Edwin Williams and Hubble entered the observatory at the same time.<sup>1</sup>

At first blush this seems obvious, since first names don't have the kinds of sources (blood, marriage, adoption, etc.) that last names have, but it is not clear why (12) is not similar to the Burton-Jenkins case, if, for example, I had been named in honor of Edwin Hubble (I was not). But such honorific naming does not create or extend a family, because Edwin is not a family name, and so there is no family to extend. Since Edwin is not a family name, but an individual name, “sameness of individual” governs the possibility of coordination here, and of course that fails, because I am not the individual Edwin Hubble, and there is no way to extend that individual to include me. Although sometimes first names run in families (I am “III” after all) they are not family names, in the sense of names of families.

So the restriction illustrated by (7) is really a “cognitive” or “social” restriction, and turns on the question of how families are individuated.

How *are* families individuated? It is not easy to say, and I suspect that there is no coherent idea to be discovered here. Suppose, for example, that we accept the finding that the name “Page” had a unique origin in (I am making this up) the village of Lower Tunbridge Falls, UK, in the 12<sup>th</sup> century, and this can be demonstrated to anyone's

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<sup>1</sup>There is a variant of this which works,

(i) Edwins Williams and Hubble

but (i) is not really about names; witness “star-gazers Williams and Hubble”.



satisfaction. Are Ellen and Larry thereby made into the same family, thus licensing coordination? I don't think so.<sup>2</sup> The notion of family is not that broad, not as broad as, “x and y are in the same family if their family names can be linked in principle by blood, marriage, etc.”. In the other direction, family names are too narrow in that they do not bound families—I am related, by marriages of my siblings, to Merritts, Fishers, Riebens, Prices, Lipscombs, and Chadwicks, so these, at least the ones that are descended from or married to my sisters, are a part of my family. Of course I have no family name in common with them, so there is no possibility of coordinating with any of them.

The term “Williams”, even as a particular family name, does not refer to any real entity. It is too narrow as a family name in that it does not include many very close relatives who do not bear it and never have; but it does include very many distant Williams blood-marriage-adoption relatives that I have never met or even know of, but who happen to have the right linkage to the source of the name. Of course, one can use the term “Williams family” to refer narrowly to Ma and Pa Williams and their immediate descendants and adoptees (a “nuclear Williams family”) and it is commonly used this way; but that is too narrow to support the range of coordinations that we have looked at here (cf. (3) and (5)). Linguistically, Williams is a family name, but there is no such thing as a Williams family.

This is not to say that there is no such thing as families; “my family”, for example is a perfectly coherent notion: me plus anyone I can link to by blood, marriage and adoption, irrespective of their last name, with the strength of the linkages having to meet some threshold—this is a relational notion of family, and there is nothing wrong with it. It remains though there is no coherently definable real-world thing which a family name names, despite the fact that “family name” seems to be a linguistic concept needed to explain (7).

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Edwin Williams  
edwin@princeton.edu

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<sup>2</sup>Jim Higginbotham on the other hand once told me that he was related to anyone named Higginbotham.



# Response markers as a window into linguistic modularity

Martina Wiltschko

University of British Columbia

## 1. Introduction

One of Martin's interests in linguistics lies in the way different domains of language interact with each other and with other domains. In this squib I explore such issues of modularity on the basis of response markers.

Specifically, the goal of this squib is twofold. First, I wish to introduce the complexity of response markers into the empirical domain for formal linguistics. Response markers are part of core syntax but they interact with our system of emotions as well as with what Martin used to refer to as domain D(iscourse) (cf. Vergnaud & Zubizarreta 1992, Wiltschko 1995)

The second goal is to sketch a way to model this modular interaction of different language-internal and external domains. In particular, I propose that the interaction between syntax and domain D can be captured with an updated version of Ross' 1970 performative hypothesis. According to the performative hypothesis, the propositional structure of a sentence is embedded in some form of speech act structure. Specifically, I follow Wiltschko 2016 in assuming that response markers are associated with GroundP, a layer of representation dedicated to encoding whether or not a contextually salient discourse component is in the speaker's Ground. On this view the interaction between syntax and domain D is mediated via the functional architecture which in turn mediates between form and meaning.

The second aspect of modularity has to do with the system of emotions. I will show that some components of emotions are directly and systematically encoded via the prosodic properties of the response markers. Thus, unlike other universal functions of natural language, which are mediated via syntax (in the form of the functional architecture), the emotive function allows for a direct mapping between form and meaning. This predicts that the emotive function is not restricted to a particular position in the functional architecture of the universal spine. Rather, emotive content arises through the manipulation of prosody of the units of language (UoLs) that associate with the spine. Hence it can affect all layers in the functional architecture.

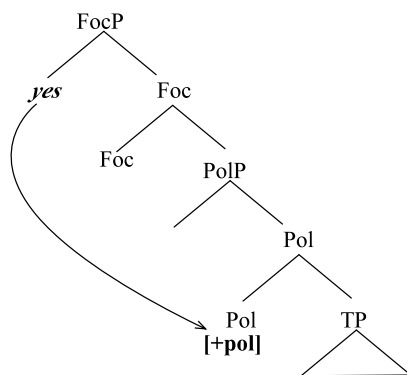
I develop the argument as follows. In section 2 I introduce some background for the assumption that response markers have to be considered part of core grammar and hence

warrant a syntactic analysis. However, their pragmatic properties indicate that they interact with a domain of language which goes beyond the traditional unit of syntactic and semantic analysis, namely domain D. In this squib, I assume that Domain D is a level of representation that can be modelled as a hierarchically organized layer of structure above the propositional structure. This is what some scholars refer to as speech act structure (Speas & Tenny 2003) and which I identify in section 3 as the *grounding* structure (Wiltschko & Heim 2016; Heim et al. 2016). In addition to interacting with Domain D, response markers also interact with the expressive domain, i.e., the system of emotions (section 4). Specifically, response markers mark a positive or negative attitude towards a proposition or some other component of Domain D; they may also mark the intensity of this attitude as well as how (un)expected these components are for the speaker. These variables correlate strikingly with the primitives of the emotion system identified in Ortony et al. 1988 (cf. also Corver 2013). In section 5, I conclude.

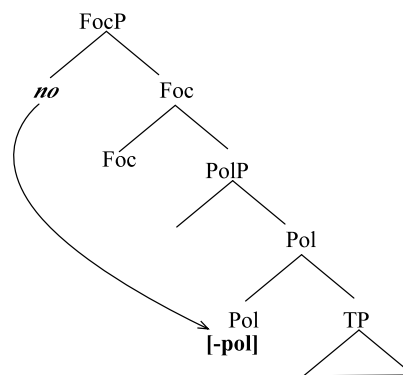
## 2. The syntax of response markers

In recent years, response markers such as *yes* and *no* have come to be part of the empirical domain for formal semanticists and syntacticians (Farkas & Bruce 2010, Kramer & Rawlins 2009, Krifka 2013, Holmberg 2016 a.o.). While the points of reference as well as the details of the analyses differ, they all have in common that they take response markers to be part of the domain of inquiry of syntax and semantics. Since the unit of analysis of formal syntax and semantics is the sentence and its propositional content the inclusion of response markers in the empirical domain of investigation implies that they are viewed as being part of the propositional sentence structure (p-structure). That this is indeed so can be gleaned from Holmberg's (2016) analysis illustrated in (1). *Yes* and *no* associate with the specifier of focus phrase (FocP) in the left periphery of p-structure. They value an unvalued polarity feature associated with the complement of the focus head, namely a polarity phrase (PolP).

### (1) a. Syntax of *yes*



### b. Syntax of *no*



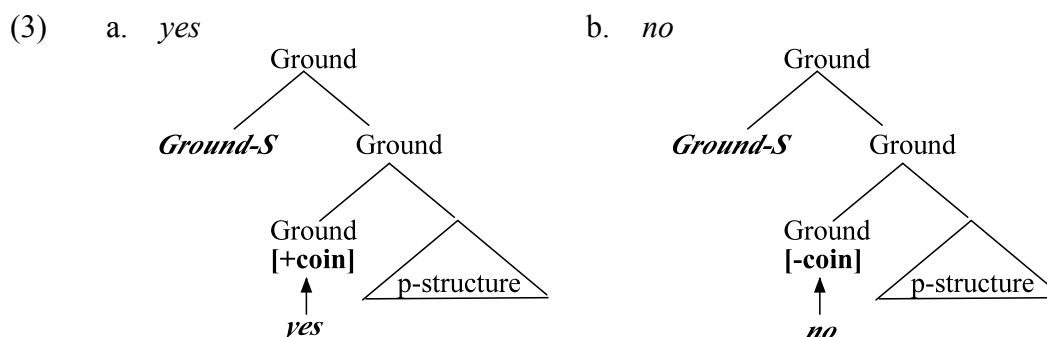
Since response markers can be used on their own or preceding the proposition under discussion, Holmberg 2016 assumes that the complement of PolP may undergo ellipsis and hence can but need not be spelled out, as in (2).

- (2) Q: Did you feed the dog?  
 Ai: Yes. (I fed the dog.)                      Aii: No. (I didn't feed the dog.)

The assumption that response markers value an unvalued feature places it squarely within the analytic domain of those linguistic subfields that take p-structure to be the central unit of analysis, namely syntax and semantics.<sup>1</sup>

### 3. Response markers beyond answering

Response markers can be used to respond to a variety of utterances and situations, including but not limited to polar questions. As shown in Wiltschko 2016, other triggers for response markers include commands, wh-questions, exclamations, as well as salient non-verbal situations. I will assume, without further discussion, that all of these triggers are *components of Domain D*. To accommodate this use of response markers, Wiltschko (2016) hypothesizes that response markers associate with a functional category located above p-structure, namely GroundP (Heim et al. 2016). Following Wiltschko 2014, I assume that all functional heads are associated with an unvalued coincidence feature [*ucoin*] (see Ritter & Wiltschko 2014). Assuming that GroundP is a functional projection, it follows that its head (Ground), too comes with an unvalued coincidence feature. I propose that the function of response markers is to value [*ucoin*]: *yes* values [*ucoin*] as [+*coin*]. As a result the utterance encodes that the previous utterance (encoded as the elided p-structure embedded under Ground) coincides with the set of discourse components that are part of the *speaker's ground* (Ground-S) at the time of the conversation. In contrast, *no* values [*ucoin*] as [-*coin*] thereby encoding that the embedded p-structure does not coincide with Ground-S (see Wiltschko 2016 for details).



According to this analysis, response markers are used to affirm or deny the presence of a salient component of domain D in the speaker's ground. If the previous utterance is a polar question, then the response markers assert that the propositional content of the polar question is or is not in the speaker's ground. If the previous utterance is an assertion, then the response marker asserts that the propositional content of the assertion is or is not in the speaker's ground (hence indicating agreement or disagreement with the interlocutor).

<sup>1</sup>For the purpose of this paper, I take for granted that a syntactic analysis of response markers is desirable (see Holmberg 2016 for extensive discussion). For reasons of space I cannot provide more detailed argumentation for this assumption.

For example, if the previous utterance is a *wh*-question as in (4) *yes* indicates that this question is in the speaker's ground; and if the previous utterance is a command, as in (5) *no* indicates that the action requested by the interlocutor is not in the speaker's to do list.

(4) A: What's he talking about?  
B: **Yes**, I know. That is the question.

(5) A: Get me a beer, please.  
B: **No**, you have to drive!

The analysis schematized in (3) raises a question not addressed in Wiltschko 2016: how does the response marker value the coincidence feature in the head of GroundP? In other words, what precisely is the contribution of the response marker?

I propose that it is the substantive content of the lexical form itself that serves to value [*u*coin] without the presence of a dedicated formal feature. Following Ritter & Wiltschko (2014, 1335), I assume that substantive content is content that can only be interpreted with reference to the extra-linguistic context. So what is the substantive content of *yes* and *no*? *Yes* conveys a positive attitude towards a particular discourse component (hence it will value [*u*coin] as [+coin]) whereas *no* conveys a negative attitude (hence it will value [*u*coin] as [-coin]).

Evidence that the core meaning of *yes* and *no* is to convey positive or negative attitude (rather than encoding positive vs. negative polarity at the propositional level) comes from two facts. First both can be used as verbs. In English, this is a matter of creative language use (6)<sup>2</sup> while in German these verbs are part of the conventionalized vocabulary (7).

(6) a. Getting to **yes!**<sup>3</sup>  
b. Don't "**NO**" me before you "**KNOW**" me

|                                                                        |                                                                                                                      |
|------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|
| (7) a. das Leben be-ja- hen<br>the life be-yes-inf<br>'to affirm life' | b. die Existenz Gott-es ver- <b>nein</b> -en<br>the existence god-poss ver-no- inf<br>'to deny the existence of God' |
|------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|

<sup>2</sup>The example in (6a) is a book title of a book on negotiation skills; the example in (6b) is a heading in a blogpost (<https://www.linkedin.com/pulse/dont-me-before-you-know-other-self-affirmations-from-agency-simpson> retrieved on December 13th 2016).

<sup>3</sup>An anonymous reviewer objects that *yes* in (6) is not a verb but a noun as the phrase "Reaching the event of [the other person] saying 'yes'". However, assuming that lexical categories are diagnosed (and some would say derived) by syntactic context, we have to conclude that *yes* is a verb as the syntactic context (following the infinitival marker *to*) is restricted to verbs. If the intended interpretation was indeed as suggested by the reviewer we would expect that this syntactic construction can generally be used to encode "getting [the other person] to [say] X", with an elided subject [the other person] and an elided verb [say]. This is not the case as indicated by the fact that "*\*getting to a nice word*" is ungrammatical. If the proposed analysis of *getting to yes* were on the right track we should be able to use this phrase to say "getting the other person to say a word"

In this use, *yes* and *no* clearly do not encode propositional polarity, but instead a positive or negative attitude towards something extra-linguistic. This suggests that this attitudinal meaning is the substantive content of response markers.

A second piece of evidence comes from the fact that response markers can be used to respond to content that is not (obviously) propositional. To see this, consider the example in (8).

- (8) Dorothy: [We've got] to do this shopping Peter.  
 Peter: Yeah, no it's alright nanna, we've got 5 minutes.  
 Burrige & Florey 2002, 164, (12)

What is striking here is that two response markers of opposite polarity co-occur. This means that at least one of them has to respond to something else besides propositional content. According to Burrige & Florey (2002, 164), in this instance, Peter uses *yeah-no* to “acknowledge his grandmother’s concern while also softening his disagreement”. This establishes that response markers are not always used to express polarity at the propositional level.

Assuming that it is indeed the substantive content of the response marker that serves to value the coincidence feature associated with Ground, we predict that response markers are inserted early. This further predicts that changing the form of the particle may also change its interpretation without the mediation of syntax. This prediction is indeed borne out as I will now show.

#### 4. The emotive response paradigm

There are many ways to say *yes* and *no*. Both response markers may vary along a number of dimensions as shown in (9): i) vowel quality (9b), ii) final epenthetic /p/ (9c), iii) final lengthening (9d), iv) (recursive) reduplication (9e), and v) *oh*-prefixation (9f).

- (9)
- |    |                            |                      |
|----|----------------------------|----------------------|
| a. | <i>yes</i>                 | <i>no</i>            |
| b. | <i>yeah</i>                | <i>nah</i>           |
| c. | <i>yup/yep</i>             | <i>nope</i>          |
| d. | <i>yesssss</i>             | <i>nooooooooo</i>    |
| e. | <i>yeah yeah (yeah...)</i> | <i>no no (no...)</i> |
| f. | <i>oh yes</i>              | <i>oh no</i>         |

The fact that both *yes* and *no* can be modified in the same way suggests that we are dealing with a systematic pattern, a paradigm of sorts.

The difference in form corresponds to a difference in context of use of the response markers in ways that suggest interaction between the linguistic system and the system of emotions. For reasons of space, I cannot provide a detailed description of all of the contexts of use. Hence I limit the discussion to a few contexts and the generalizations that emerge.

Consider first the difference between vowel weakening (*yeah/nah*) and final lengthening (*yesssss/nooooooooo*). The two forms are in complementary distribution in contexts that contrast the speaker’s evaluation of what is being affirmed. Final lengthening is used to

express a high degree of affirmation or denial of a salient discourse component. A high degree of affirmation (*yesssss*) is appropriate, when it is highly desirable for S that p be true. A high degree of denial (*nooooo*) is appropriate when it is highly undesirable for S that p be true. In contrast, a low degree of affirmation or denial (*yeah, nah*) is appropriate when S is emotionally neutral towards the relevant discourse component. The contrast based on intensity of emotion is illustrated below for affirmation: *yesssss* is felicitous in contexts of high emotional engagement (10) while *yeah* is felicitous in contexts of no emotional engagement (11).

- (10) B has recently lost his job and is worried about paying the rent. He is hoping to win the lottery.
- a. Context I: The winning numbers are announced while B is at work. His housemate A realizes that B won. So A calls B to let him know:  
 A: You won the lottery!  
 B: i. *Yessss*.  
    ii. *#Yeah*.<sup>4</sup>
- b. Context II: The winning numbers are announced while A is at work. A wants to know whether B won so A calls B to find out.  
 A: Did you win the lottery?  
 B: i. *Yessss*.  
    ii. *#Yeah*.
- (11) In the morning, A usually waits to get up till the newspaper gets delivered.
- a. Context I: A hears the newspaper drop through the front hall. (B really doesn't care).  
 A: The newspaper got delivered.  
 B: i. *Yeah*.  
    ii. *#Yesssss*.
- b. Context II: B is up before A and so A asks B.  
 A: Did the newspaper get delivered yet?  
 B: i. *Yeah*.  
    ii. *#Yesssss*.

The modification of response markers allows the speaker to convey her emotional stance towards the discourse component under discussion. One of the dimensions along which response markers differ concerns the *intensity* of the appraisal. Intensity of appraisal is among the three primitives that define the system of emotions: i) appraisal (= assignment of positive or negative value), ii) intensity, and iii) (un)expectedness (Ortony et al. 1988, Corver 2013). In what follows, I show that unexpectedness also plays a role.

In (11a) *yeah* conveys that things are as expected. Expectations are trivially satisfied if the interlocutor's assertion corresponds to what the responder already knows. Hence,

<sup>4</sup>The judgement here reflects the use of *yeah* with neutral falling intonation. Once the intonation becomes expressive (indicated by means of pitch, length, and loudness) *yeah* can be well-formed in this context.



the use of *yeah* is compatible with a context of use where the asserted proposition (*that the newspaper got delivered*) is already in B's ground. Conversely, if B doesn't already know that p, the use of *yeah* is not felicitous as shown in (12Ai). Instead, in this context, B would be able to use *oh*-prefixed *yes* accompanied with rising intonation (12Aii); *oh* is used to convey a change in the speaker's knowledge in response to some prior action (Bolden 2006 a.o.). Moreover, final lengthening is predictably well-formed because it conveys high degree of affirmation (B is happy that the newspaper got delivered).

- (12) Newspaper deliveries have been on hold for 2 months because of a strike. B has given up to think that the strike will be over soon. One morning A gets up and finds the newspaper so he informs B:  
 A: The newspaper got delivered.  
 B: i. #Yeah.  
     ii. Oh yes?  
     iii. Yessssss.

Finally, the response marker with final epenthetic /p/ (*yep/yup*) is used to convey a high degree of intensity (the speaker cares about the appraised discourse component) and at the same time it conveys a high degree of expectedness (e.g., the speaker already knows p). This is illustrated in (13) where A can conclude from B's response that B already knew that he won the lottery.

- (13) B has recently lost his job and is worried about paying the rent. He ends up winning the lottery. The winning numbers are announced while B is at work. His housemate A realizes that B won. So A calls B to let him know. But unbeknownst to A, B was able to listen to the winning numbers at work.  
 A: You won the lottery!  
 B: Yep.  
 A: Oh, you already heard?

In sum, the paradigm of response markers introduced in 0 differs along the very dimensions that define the system of emotions. At their core is the coding of positive or negative appraisal: trivially positive response markers encode a positive appraisal, while negative response markers encode a negative appraisal. Furthermore, intensity and expectedness are encoded by means of modulating vowel quality and length as well as *oh*-prefixation. The system underlying the emotive response marker paradigm is summarized in (14).

(14) *The emotive response paradigm*

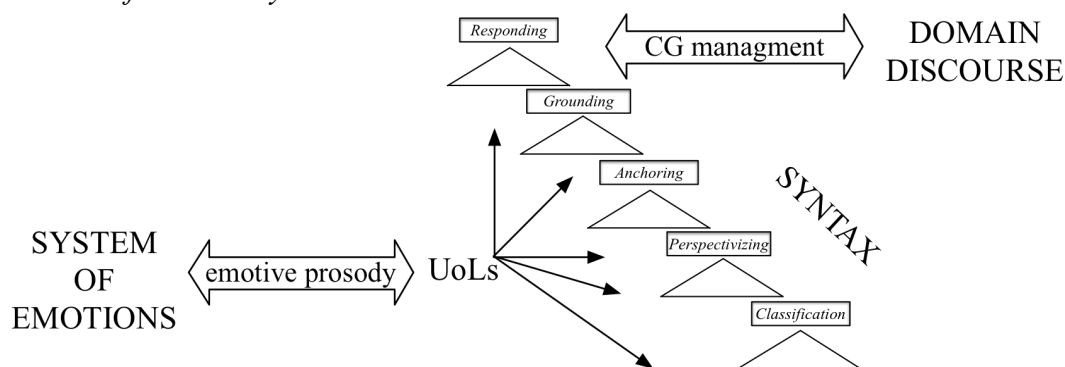
|              | <i>yeah</i> | <i>nah</i> | <i>yep</i> | <i>nope</i> | <i>yesssss</i> | <i>nooooo</i> | <i>oh yes</i> | <i>oh no</i> |
|--------------|-------------|------------|------------|-------------|----------------|---------------|---------------|--------------|
| appraisal    | +           | -          | +          | -           | +              | -             | +             | -            |
| intensity    | low         |            | high       |             | high           |               | low           |              |
| expectedness | high        |            | high       |             | low            |               | low           |              |

## 5. Response markers as a window into linguistic modularity

The behavior of response markers points towards the conclusion that syntax is highly modular, interacting not only with the articulatory-perceptual and the conceptual-intentional system, but also with the dialogical system of interaction (domain D) (Ginzburg 2012) and the system of emotions (Corver 2013). The exploration of response markers provides us with a unique window into the way these systems interact with each other.

I have argued that the interaction with domain D is mediated by the syntactic spine, while the interaction with the system of emotions is via the units of language directly. This is summarized in figure (15).

### (15) Sources of modularity



It remains to be seen whether there are also cases where the interaction with the system of emotions is mediated via the syntactic spine and conversely whether UoLs may directly interact with Domain D without the mediation of the syntactic spine. I will leave these questions for future research.

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Martina Wiltschko  
Martina.Wiltschko@ubc.ca



## ***Contentives: a lexical supercategory above nouns and verbs***\*

Hedde Zeijlstra

University of Göttingen

### **1. The question**

It is a well-known fact that languages differ cross-linguistically with respect to what grammatical categories, or parts of speech, they exhibit. For instance, some languages exhibit (in)definite articles, whereas other languages lack them, and similarly, some languages lack adpositions, whereas other languages do not. This gives rise to the question as to what constrains the range of variation with respect to what grammatical categories languages may employ, and, more specifically, whether there are grammatical categories that can be attested in every language.

Traditionally it has been assumed that languages minimally distinguish nouns and verbs (cf. Baker 2003, 2008, Borer 2003, Croft 2003, 2005, 2009, Greenberg 1963, Halle & Marantz 1993, Pinker & Bloom 1990, Whaley 1997, a.o.). For some of these scholars, this universal noun-verb distinction is directly given by UG. However, a number of languages cast doubt on this assumption, as, at least overtly, such languages do not show any morpho-syntactic noun-verb distinction.

For instance, in a language like Samoan, all content words can systematically be used both verbally and nominally. For example, Samoan *alu* in (1) may either mean ‘to go’ or ‘(the) going’, depending on the grammatical context: combined with a tense marker it obtains a verbal reading ‘to go’; combined with an article, it yields a nominal reading ‘(the) going’ (cf. Mosel & Hovdhaugen 1992; Don & Van Lier 2013), as is illustrated below.

- (1) a. E        alu    le    pasi    I        Apia.        Samoan  
         PRES   go    the   bus    to        Apia        (Don & Van Lier 2013)  
         ‘The bus goes to Apia.’

---

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- b. Le alu o le pasi I Apia  
 the go of the bus to Apia  
 ‘the going of the bus to Apia’

Similar claims have been made for Mundari (Hengeveld and Rijkhoff 2005), Kharia (Peterson 2006) and Riau Indonesian (Gil 2013a,b). In Mundari and Kharia, just as in Samoan, content verbs may be used both nominally and verbally. For instance, in Mundari nominally used *buru* means ‘mountain’ and verbally used *buru* means ‘to heap up’ (2); in Kharia nominally used *lebu* means ‘man’ and verbally used *lebu* ‘to become a man’ (3).

- (2) a. Buru=ko bai-ke-d-a Mundari  
 Mountain=3PL.S make-COMPL-TR-IND (Evans & Osada 2005)  
 ‘They made the mountain.’
- b. Saan=ko buru-ke-d-a  
 Firewood=3PL.S mountain-COMPL-TR-IND  
 ‘The heaped up the firewood.’
- (3) a. Lebu del=ki Kharia  
 Man came.MV.PST (Peterson 2006)  
 ‘The man came.’
- b. Baghwan lebu=ki  
 God man.MV.PST  
 ‘God became a man.’

And for Riau Indonesian, Gil (2013a,b) has claimed that the syntactic distribution of any thing-denoting or action-denoting word is the same. E.g., both *abang* (‘(elder) brother’) and *kencing* (‘to pee’) can be modified by a demonstrative (as shown in (4) below), and may also appear in existential constructions, form the complements of adpositions, or combine with topic markers.

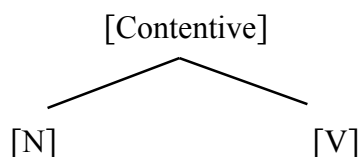
- (4) a. Abang in-i Riau Indonesian  
 Elder.brother DEM-PROX (Gil 2013b)  
 ‘that brother/man’
- b. Ter-kencing in-i  
 Non\_AG.pee DEM-PROX  
 ‘to pee’

The question is thus whether the examples in Mundari, Kharia, Samoan and Riau Indonesian (and any other language that exhibits the same pattern) form counterexamples to the claimed universal noun-verb distinction, or whether these languages nevertheless underlyingly exhibit distinct nouns and verbs.

## 2. Contentives

As syntactic categories are reflections of categorial features, the question phrased above amounts to wondering whether nominal and verbal features ([N] and [V]) are sisters in a feature hierarchy. Is there a superfeature, that one can dub [Contentive], that immediately dominates [N] and [V], or are [N] and [V] the top nodes of a featural hierarchy of their own? The two options are illustrated in (5).

(5) *Option I:*



*Option II:*



Hengeveld (1992, 2005) and Hengeveld & Rijkhof (2005) have argued that languages that lack a morpho-syntactic noun-verb distinction exhibit a supercategory dubbed *contentives*. In terms of featural hierarchies they (implicitly) hypothesize Option I in (5). The same conclusion has been reached by Mosel & Hovdhaugen (1992), who have also argued that languages such as Samoan lack distinct nouns and verbs and exhibit a single lexical supercategory instead.

By contrast, Croft (2005), among others, has argued that in this type of languages such nouns and verbs are actually homophonous: in (1) there are two instances of *alu*, a noun *alu* ‘(the) going’ and a verb *alu* ‘to go’. The central argument for postulating a noun-verb distinction in languages where there are no visible morpho-syntactic differences between nouns and verbs, and thus for denying the existence of contentives, is that the meanings of the verbal and nominal usages of such alleged contentives do not follow compositionally. For instance, Samoan *tusi* means ‘to write’, ‘letter’ and ‘book’. Similarly, Samoan *fana* means ‘to shoot’ and ‘gun’, *gaoi* ‘to steal’ and ‘thief’, and *eklaesia* ‘to go to church’ and ‘church member’. It would be very hard to come up with a fully compositional analysis purely on the basis of the linguistic environment that can derive these meanings (and these meanings only) from a single semantic core. Evans & Osafa (2005) for this and other reasons assume that languages that seem to exhibit contentives (Mundari is their example) actually involve zero-derivation and do not exhibit a lexical supercategory ‘contentives’.

In order to address these problems, Hengeveld & Rijkhoff (2005) have argued that in such flexible languages interpretation does not have to proceed in a strictly compositional fashion. For them, the underlying semantics is vague, so that both readings can come about, even though it is not predictable which meanings must be yielded. Contentives only have some flexible core, and the more specific meaning has to come about contextually.

The existence of contentives thus seems to rely on the assumption that languages may allow non-compositional interpretations. However, this restricted view on compositionality is at complete odds with its original motivation in Frege 1892 and Janssen 1986. Giving up compositionality immediately introduces the virtually unsolvable question as to why sentences in all other languages must be subject to

compositional interpretation. However, if indeed for contentives semantic compositionality is required, the question still arises as to whether the absence of fully predictable meanings is really an argument against the existence of contentives.

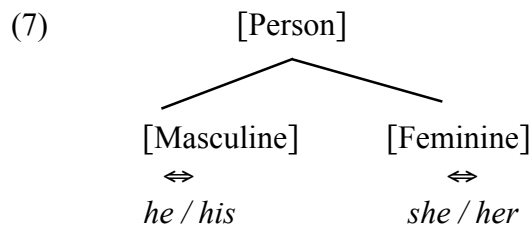
### 3. Proposal

In this paper, I pursue a novel, asymmetric approach. So far it has always been assumed that if a language exhibits two major lexical categories, they must always be nouns and verbs. Thus, if Samoan has two different lexical items *tusi* ('to write' and 'writing/letter/book'), one must be a noun *tusi* (meaning 'writing/letter/book') and the other a verb *tusi* (meaning 'to write'). No one, as of yet, has defended the view that some languages may have asymmetric categorical relations: languages having contentives and nouns, but lacking verbs, or languages having contentives and verbs, but lacking nouns. But nothing principled excludes such languages. If such contentives exist, they still must be taken to be some kind of supercategory above nouns and verbs as in Option I in (5).

As is known from the literature on morphological and semantic markedness, such asymmetries exist and can be diagnosed. Sauerland (2008), among others, has shown that semantic feature markedness is reflected by entailment relations (see also Heim 2008, Zeijlstra 2015). To see this, in a language like English, where feminine and masculine gender are not marked with respect to each other, both masculine and feminine pronouns have a gender-specific reference:

- (6) a. Everybody who lost his credit card must report it  
→ masculine referential inference
- b. Everybody who lost her credit card must report it  
→ feminine referential inference

In English, [masculine] and [feminine] must be daughters of some [person] feature; [masculine] and [feminine] do not entail each other:



In a language like Dutch things are, however, different.

- (8) a. Iedereen die zijn creditcard verloren is, moet dat melden  
'Everybody who lost his credit card must report it.'  
→ no gender-specific referential inference



- b. Iedereen die haar creditcard verloren is, moet dat melden  
 ‘Everybody who lost her credit card must report it.’  
 → feminine referential inference

Here the masculine and feminine sentences stand in an asymmetrical entailment relation. Following Zeijlstra (2015), Dutch lacks a feature [Masculine] and what looks like masculine morphology is actually the realization of a gender-unspecific [person] feature. This feature has only one daughter: [Feminine].

- (9) [Person]  $\Leftrightarrow$  *hij* (‘he’) / *zijn* (‘his’)  
 |  
 [Feminine]  $\Leftrightarrow$  *zij* (‘she’) / *haar* (‘her’)

Similar featural (a)symmetries have been proposed for 1<sup>st</sup>-2<sup>nd</sup> person distinctions, singular-plural distinctions, past-present tense distinctions, mass-count distinctions, comparative-superlative distinctions, etc. Languages appear to differ with respect to whether a particular categorial opposition underlies a featural sisterhood or mother-daughter relation (see Zeijlstra 2015 for more discussion and examples).

Feature hierarchies, like the ones above have not only been proposed for semantic features but also for morpho-syntactic features. For instance, person/number/gender features on verbs, which are semantically inactive, also stand in the same kinds of feature hierarchies as semantic features. Morpho-syntactic sub- and super-features are also hierarchically ordered. Consequently, in every language that distinguishes two opposite lexical categories, the question arises as to whether these categories are the realizations of the features of two sister nodes ([N] and [V]) or whether, they realize the mother node (the superfeature [Contentive]) and one daughter node [N]/[V], as in (10a) or (10b)):

- (10) a. [Contentive]                      b. [Contentive]  
           |                                              |  
           [N]                                              [V]

In the first case, option I in (5), nouns and verbs are marked with respect to each other; in the second case, (10a) or (10b), the noun or verb would be marked with respect to the contentive that can be used both verbally and nominally.

#### 4. Asymmetric meaning relations

Now, if a language does not exploit nouns and verbs, but, say, nouns and contentives, markedness effects as discussed above predict asymmetric meaning relations between the two. A contentive, being underspecified for being a noun or being a verb, should be able to appear both in nominal and in verbal morpho-syntactic contexts. By contrast, a noun,

by definition, may only appear in nominal morpho-syntactic contexts. Consequently, if the noun and the contentive have different meanings, we expect that in such a case, the meaning that is associated with the contentive should be available both in nominal and in verbal morpho-syntactic contexts (as the contentive can be used in both types of contexts), but that the meaning that is associated with the noun is available in nominal morpho-syntactic contexts only. *Mutatis mutandis*, the same applies if a language exploits only contentives and verbs.

This prediction is indeed borne out. Closer observation of the data presented in Mosel & Hovdhaugen 1992 and Don & Van Lier 2013 reveals that Samoan *tusi*, as well as a number of other examples, behave exactly like that. *Tusi* has a much richer nominal usage, varying from ‘(the) writing’ to ‘letter/book’, than a verbal usage: *tusi* in a verbal context can mean ‘to write’, but never ‘to be a letter/book’. This shows that there is a noun *tusi* meaning ‘letter/book’, and a contentive *tusi* that means ‘to write’ (in verbal contexts) and ‘the writing’ (in nominal contexts). The noun *tusi* (meaning ‘letter/book’) can only be used in morphologically nominal contexts; it can never appear in contexts that are morphologically verbal. By contrast, the contentive *tusi* (meaning ‘write/writing’) has no categorical restrictions and can therefore be used both in morphologically nominal and morphologically verbal contexts. The same pattern can be attested with, for instance, contentive *fana*, which means ‘to shoot’ and ‘(the) shooting’, and nominal *fana*, which means ‘the gun’. The reverse pattern has not been attested in Samoan: cases where the verbal usage would be semantically richer than the nominal usage.

These facts also extend to other languages. In Kharia, the word *bui* means ‘to keep’ or ‘(the) keeping’ (cf. Peterson 2006) and can be used both verbally and nominally with this meaning. But, overtly derived *bu-nu-i*, meaning ‘pig’, is only attested in nominal contexts. No examples of *bu-nu-i* meaning ‘to be a pig’ are attested (cf. Don & Van Lier 2013).

Hence, even though Samoan and Kharia seem to exhibit two different lexical categories (which solves the compositionality problem that would otherwise arise), it falsifies the claim that every language has nouns and verbs and confirms the claim that languages may exhibit contentives.

One caveat must be made, though. Under this perspective, categorial features like [N], [V] and [Cont] do not bring in any meaning contribution themselves. What features like [N] and [V] do is only restrict the grammatical distribution of their carriers (to nominal and verbal grammatical contexts respectively). The noun *tusi* in Samoan is a different word than the homophonous contentive *tusi*. If both *tusi*’s shared the same categorial feature [Cont], their grammatical distributions would be alike, and each word *tusi*, with its own meaning, could be used in each grammatical context. Then *tusi* would be predicted to be able to be used as ‘(the) letter’ and ‘(the) writing’ in nominal contexts, and ‘to be a letter’ and ‘to write’ in verbal contexts, contrary to fact.

In this sense, the meaning oppositions between the two *tusi*’s and, for instance, Dutch masculine and feminine pronouns, are different. In Dutch, a masculine pronoun that is unbound or does not appear in ignorance contexts, still receives a masculine interpretation, due to pragmatic blocking (arguably, Maximize Presupposition, cf. Heim 2008, Sauerland 2008 and references therein). But for examples like *tusi* this is not the case; the contentive *tusi* (meaning ‘write/writing’) does not further narrow down its meaning because of competition with the noun *tusi* (meaning ‘letter/book’). The reason is

simply that features like [V], [N] and [Cont] do not stand in an entailment or other semantic relation; these features only determine morphosyntactic distributions

## 5. Conclusions

The meaning observations for Samoan elements that may appear in both verbal and nominal morphosyntactic contexts show an asymmetry that is best explained by assuming homophony between a noun with one particular meaning and a contentive with another, crucially unpredictable, meaning. This, in turn, provides evidence for a lexical supercategory, contentives, above nouns and verbs, and thus for a superfeature [Contentive], that in a feature hierarchy immediately dominates [N] and [V].

At the same time, many questions emerge. Below I spell out some of those, but the list is of course far from exhaustive.

First, if [Contentive] is indeed a superfeature above [V] and [N], then this feature should also be part of the grammar of languages that clearly exhibit nouns and verbs. This would be evidenced by grammatical phenomena that are sensitive to the presence of a feature [Contentive]. One such phenomenon could be PP-modifiability. It is well known that PPs may modify nouns, verbs and predicatively used adjectives, but not DPs or attributively used adjectives:

- (11) a. wine from Austria  
 b. living in Austria  
 c. The world is afraid of Austria.  
 d. \*Martin from Austria (not intended as a single name)  
 e. \*the afraid of Austria country

If one were to define the types of elements that PPs may be the direct complement of modify (or that PPs may right adjoin to), one could argue that these are all elements that carry [Contentive], namely nouns, verbs and predicates (cf. Escribano 2004, Zeijlstra 2016).

A second, perhaps more pressing question, concerns the notion of morphological roots. Roots are generally assumed to be acategorial, as they are lexically underspecified for being nominal or verbal. But one could hypothesize that what acategorial roots are, is actually what contentives are: elements that belong to a lexical category without further specification. Hence, one may wonder whether roots are really category-less, or whether they are rather elements with a higher categorial feature [Contentive]. A root without any categorial feature, that becomes nominal or verbal due the morphology it attaches with, can be also thought of as a contentive that is further specified/valued by either verbal or nominal (sub)features.

Assuming that roots are actually contentives, would solve one problem for current morpho-syntactic theory, namely the fact that acategorial roots may merge with formal features (and therefore instantiate merger between elements that share no formal property). Allowing the syntactic operation Merge to apply to two elements that carry one or more formal features and to two elements of which only one carries a formal feature and the other does not (as would be the case when roots undergo merger), essentially

boils down to defining two different operations Merge: one for merger with roots, and one for merger with non-roots. Replacing roots by contentives would restrict syntactic Merge to elements that carry formal features, and thus only require one operation Merge.

In this small paper I do not pretend to have answers to such questions. However, if the reasoning behind the argument that there is indeed a supercategory contentive above nouns and verbs is correct, a novel opening towards addressing these questions can be pursued.

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Hedde Zeijlstra  
hzeijls@uni-goettingen.de



# “*Eh* ist *eh* anders” – *eh* and *sowieso* in Federal German and Austrian German\*

Sarah Zobel

University of Tübingen

## 1. Introduction

In the literature on German discourse particles, the particle *eh* is usually said to be either synonymous or functionally equivalent to the particle *sowieso* (see Weydt 1983, Thurmair 1989, Eggs 2003, Fisseni 2009, Bruijnen & Sudhoff 2013). Hence, the effect of uttering (1) with either *eh* or *sowieso* is claimed to be the same, and *eh* and *sowieso* are claimed to be fully interchangeable.

- (1) Partikel sind **eh** / **sowieso** interessant.  
particles are EH / SOWIESO interesting  
'Particles are interesting' + particle contribution

The aim of this paper is to provide evidence that the picture that is painted in the literature on *eh* and *sowieso* is biased towards the varieties of German that are spoken in the Federal Republic of Germany (“Federal German”). In the varieties of German that are spoken in Austria (“Austrian German”), the particles *eh* and *sowieso* have distinct contributions, which is noticeable especially in polar interrogatives.<sup>1</sup> I discuss intuitive judgements on Austrian German *eh* and present the results of a corpus study that supports the claim that Federal German *eh* and Austrian German *eh* have distinct contributions.

Hence, the dialectal variation found for *eh* differs from the more common case where a particle is only available in certain varieties (e.g., *leicht*, which is only found in Austrian German; Csipak & Zobel 2014). The main consequence that needs to be drawn from this is that in particle research, dialectal variation with respect to the contribution of a given particle should always be controlled for systematically.

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<sup>1</sup>Weydt (1983) already notices this difference but does not say any more on the subject.

## 2. Two versions of *eh*

Weydt (1983) and Thurmair (1989), among others, observe that in German, *eh* and *sowieso* are fully interchangeable, a claim that, as a native speaker of Austrian German, I always found surprising. For me, *eh* and *sowieso* clearly have distinct discourse functions. I aim to show that the reported interchangeability only applies in varieties of Federal German. I use  $eh_D$  for Federal German *eh/sowieso* and  $eh_A$  for Austrian German *eh*; *sowieso* in Austrian German is the same as  $eh_D$ . Also note that  $eh_D$  and  $eh_A$  are always stressed.

### 2.1 Federal German $eh_D$

Following Weydt (1983) a.o., I propose that  $eh_D$ , applied to a proposition  $p$ , contributes:

- (2)  $\exists r'[r'(t_0)(w_0) = 1 \ \& \ \forall t'[r'(t')(w_0) \rightsquigarrow p(t')(w_0)] \ \& \ r' \neq r \ \& \ \forall t'[r(t')(w_0) \rightsquigarrow p(t')(w_0)]]$   
 IN PROSE: There is a preexisting state of affairs  $r'$  which usually brings about  $p$  ( $\rightsquigarrow$ ) that differs from a salient (potentially future) state of affairs  $r$  that also usually brings about  $p$ .

In declarative sentences, where  $eh_D$  occurs most frequently, it contributes the content in (2) at the not-at-issue level (see e.g., Potts 2011). In (3), for instance, B asserts that Maria will bring Peter along (=  $p$ ). In addition, the use of  $eh_D$  conveys that  $p$  is brought about by an actual state of affairs  $r'$  and not by a potential future reminder to do so by A and B (=  $r$ ).

- (3) A: Should we remind Maria to bring Peter along? (provides the salient  $r$ )  
 B: Nein, sie bringt den **eh** mit.  
 no she brings him  $EH_D$  with  
 'No, she will  $EH_D$  bring him.'

The use of  $eh_D$  in interrogative sentences is constrained to polar interrogatives.<sup>2</sup> While the frequency of use of  $eh_D$  in declarative sentences depends on the regional variant,<sup>3</sup> the rarity of  $eh_D$  in polar interrogatives could result from the following—to my knowledge novel—observation: in polar interrogatives, the contribution of  $eh_D$  is what is at-issue, all other content is treated as backgrounded. To see this, consider (4) with the assumption that the coffee dispenser is the only option to get coffee.

- (4) A: Do you want coffee? (= indirect offer to get coffee)  
 B: Kommst du **eh** am Kaffeeautomaten vorbei?  
 pass you  $EH_D$  at-the coffee-dispenser by  
 'Will you  $EH_D$  pass by the coffee dispenser?' (Bruijnen & Sudhoff 2013, 84)

<sup>2</sup>Thurmair (1989, 136) argues that  $eh_D$  only occurs in polar interrogatives following negation (*nicht*). Fisseni (2009) and Bruijnen & Sudhoff (2013), however, show that  $eh_D$  can also precede and occur independently of negation.

<sup>3</sup>The varieties of Federal German differ with respect to whether *eh* or *sowieso* is preferred. My informants in Tübingen (South-West Germany) state a clear preference for *eh*, while those in Göttingen (Central Germany) prefer *sowieso*.



With her question, B treats A’s passing by the coffee dispenser ( $=p$ ) as established (given A’s offer). What B asks is whether  $p$  will be brought about by a preexisting state of affairs  $r'$  or by her positive answer to A’s question/offer ( $=r$ ). This is what A reacts to in (5a).

- (5) a. A: No, only if you want coffee.  
 b. A: #No, I’m not passing by the coffee machine.

A’s answer in (5b) is infelicitous since it is in conflict with  $p$  being established. It becomes felicitous if we omit  $eh_D$  from B’s question in (4) and assume that the coffee dispenser is not the only option. In that case, B asks whether  $p$  (i.e.,  $p$  is not established). A’s subsequent answer (5b) then implicates that he will get the coffee from somewhere else.

## 2.2 Austrian German $eh_A$

Austrian German  $eh_A$ , applied to a proposition  $p$ , contributes the content in (6). The holder of the attitudes that are part of the speaker’s belief ( $Bel_{cS}$ ) vary depending on sentence type.

- (6)  $Bel_{cS}(p \cap Bel_{cA/cS} \neq \emptyset \ \& \ \neg p \cap Bel_{cA/cS} \neq \emptyset \ \& \ Bul_{cA/cS} \subset p)$   
 IN PROSE: The speaker ( $cS$ ) believes that the addressee’s ( $cA$ )/her belief worlds are compatible with both  $p$  and  $\neg p$  and that the addressee/she wants  $p$  to hold.

The particle  $eh_A$  occurs freely in declaratives and polar interrogatives. Unlike  $eh_D$ , though,  $eh_A$  contributes (6) at the not-at-issue level in declaratives as well as in polar interrogatives. This, I argue, makes  $eh_A$  in polar interrogatives less constrained than  $eh_D$ : all of the examples given for  $eh_D$  are also potential examples illustrating  $eh_A$ ; not all examples of  $eh_A$  are potential examples illustrating  $eh_D$ , though.

Uttering the declarative in (7), B asserts that Maria will bring Peter along ( $=p$ ). By using  $eh_A$ , B conveys that she believes that A ( $=cA$ ) is not in a position to exclude  $\neg p$  (why else would A ask?) but wants to exclude it—i.e., in a declarative, the attitude holder of the inner, variable attitudes in (6) is  $cA$  (see Csipak & Zobel 2014 for a similar proposal).

- (7) A: Should we remind Maria to bring Peter along?  
 B: Nein, sie bringt den **eh** mit.  
 ‘No, she will  $eh_A$  bring him.’

Turning to polar interrogatives, let us assume that B only drinks coffee from the coffee dispenser and would decline A’s offer if A were to get coffee from a different place. Now, B’s question in (8) asks whether A will pass by the coffee machine ( $=p$ ). The use of  $eh_A$  conveys that B ( $=cS$ ) is not in a position to exclude  $\neg p$  (why else would B ask?) but wants  $p$  to hold—i.e., in a polar interrogative, the inner attitudes in (6) are speaker-relative.

- (8) A: Do you want coffee?

- B: Kommst du **eh** beim Kaffeeautomaten vorbei?  
 ‘Will you  $EH_A$  pass by the coffee machine?’

Note that since  $eh_A$  contributes not-at-issue content, A could felicitously use (5b) to answer B in (8). Moreover, since  $eh_A$  and *sowieso* make different contributions, they can be combined straightforwardly in Austrian German, as in (9) (using the context for (4)):

- (9) B: Kommst du **eh sowieso** beim Kaffeeautomaten vorbei?  
 ‘Will you  $EH_A$  SOWIESO pass by the coffee dispenser?’

In (9), B takes A’s passing by the coffee dispenser ( $=p$ ) as established (given A’s offer). Using *sowieso*, which contributes at-issue content like  $eh_D$ , B asks whether  $p$  will be brought about by a preexisting state of affairs  $r'$  and not by B’s positive answer ( $=r$ ). The use of  $eh_A$  takes the underlined sentence radical  $p'$  of the question as its argument and conveys—at the not-at-issue level—that B is not in a position to exclude  $\neg p'$  but wants  $p'$  to hold.

### 3. Supporting evidence: a corpus study

#### 3.1 The motivating idea

The corpus study presented in this section compares the number of occurrences of *eh* for three German speaking areas that represent three different varieties of German: Lower Saxony, the Nuremberg area (Franconia and Bavaria), and Eastern Austria (Lower Austria and Burgenland). The first two areas belong to the Federal Republic of Germany. The occurrences of Lower Saxony and Eastern Austria clearly exemplify  $eh_D$  and  $eh_A$ , respectively. For the variety spoken in the Nuremberg area, it is *a priori* plausible to assume that *eh* could be either  $eh_D$  or  $eh_A$  since this variety is similar to the varieties spoken in Austria.

Given the discussion on  $eh_D$  and  $eh_A$  in the previous section, I had the following expectations for the outcome of the study.

- The number of occurrences of *eh* in polar questions should be comparatively lower for the Federal German areas than for the Austrian area.
- Hence, the number of overall occurrences of *eh* for the two Federal German areas should be lower than the number of occurrences for the Austrian area.

The data that was analyzed for the three German speaking areas was taken from three sub-corpora of the TAGGED-T2 archive of the German Reference Corpus (DeReKo) that can be accessed via COSMAS II.<sup>4</sup> These are collections of journalistic texts from regional newspapers that were published between 2010 and 2014. I assume that the majority of the occurrences of *eh* in these papers were produced by speakers from these three regions.<sup>5</sup>

<sup>4</sup><https://cosmas2.ids-mannheim.de/cosmas2-web/>

<sup>5</sup>I am aware that this is a problematic assumption. Hence, the results of this study should definitely be taken with caution.

- **Lower Saxony:** Braunschweiger Zeitung (BZ), Hannoversche Allgemeine (HA)
- **Nuremberg area:** Nürnberger Nachrichten (NN), Nürnberger Zeitung (NZ)
- **Eastern Austria:** Niederösterreichische Nachrichten (NoeN), Burgenländische Volkszeitung (BVZ)

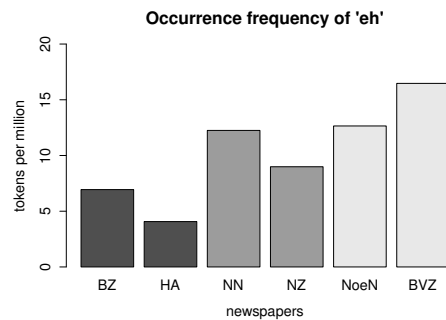
### 3.2 The general results

I queried the three sub-corpora independently for all occurrences of *eh* with the exception of *eh* in the fixed phrase *eh und je*.<sup>6</sup> The results are presented in (10) and (11).

(10) *Absolute number of hits in general and per newspaper*

|                              | Lower Saxony                                                          | Nuremberg area                                                          | Eastern Austria                                                              |
|------------------------------|-----------------------------------------------------------------------|-------------------------------------------------------------------------|------------------------------------------------------------------------------|
| <b>Number of hits</b>        | 636 hits                                                              | 1030 hits                                                               | 1786 hits                                                                    |
| <b>Results per newspaper</b> | BZ, 598 hits<br>(6.94 tokens/mio)<br>HA, 38 hits<br>(4.07 tokens/mio) | NN, 628 hits<br>(12.25 tokens/mio)<br>NZ, 402 hits<br>(8.99 tokens/mio) | NoeN, 1449 hits<br>(12.65 tokens/mio)<br>BVZ, 337 hits<br>(16.47 tokens/mio) |

(11) *Comparison of the number of tokens of 'eh' for the three areas (tokens per million)*



If we compare the number of tokens per million for Lower Saxony (dark gray, BZ and HA) and for Eastern Austria (light gray, NoeN and BVZ), we see a clear difference in the frequencies of use for *eh*. The results for the Nuremberg area (medium gray, NN and NZ) are right in between the results for Lower Saxony and Eastern Austria. Hence, *eh* is more frequently used the more to the South-East an area is.

While these results are in accordance with *eh<sub>D</sub>* and *eh<sub>A</sub>* being distinct and with the expectations discussed in the previous subsection, they do not give conclusive evidence for a difference between *eh<sub>D</sub>* and *eh<sub>A</sub>*. The particle *eh* originated in the south-eastern German speaking regions and only later spread to other German speaking areas (see, e.g., Weydt 1983, 178f). Hence, the data can also be explained by assuming that in Lower Saxony, the newer expression *eh* does not occur as often since it is dispreferred with respect to the older expression *sowieso*. The more you go to the South-East, the more preferred and frequent

<sup>6</sup>The COSMAS II query: *eh NICHT (eh 'und' je)*.

*eh* becomes. That is, in the Nuremberg area, *eh* is less dispreferred/more preferred than in Lower Saxony, and in Eastern Austria, *eh* is even more preferred than in the Nuremberg area. This explanation does not depend on a difference between *eh<sub>D</sub>* and *eh<sub>A</sub>*.

To see whether the corpus data supports the claim that there is a difference between *eh<sub>D</sub>* and *eh<sub>A</sub>*, we, therefore, need a more fine grained analysis that takes a look at how readily *eh* occurs in declaratives and polar interrogatives for the three areas. Especially the behavior of *eh* in polar interrogatives should differ for areas with *eh<sub>D</sub>* and areas with *eh<sub>A</sub>*.

### 3.3 Investigating the sentence types

To investigate the distribution of *eh* in declaratives and polar interrogatives, I took random samples of 250 items for each of the three areas and annotated them for SENTENCE TYPE (declarative vs. polar interrogative). I did not distinguish matrix and embedded sentences.

(12) *Absolute/relative frequencies for the occurrence of ‘eh’ relative to sentence type*

|                        | <b>declarative</b> | <b>polar interrogative</b> |
|------------------------|--------------------|----------------------------|
| <b>Lower Saxony</b>    | 249 (0.996)        | 1 (0.004)                  |
| <b>Nuremberg area</b>  | 249 (0.996)        | 1 (0.004)                  |
| <b>Eastern Austria</b> | 234 (0.936)        | 16 (0.064)                 |

The samples from Lower Saxony and the Nuremberg area both contained only one example for *eh* in a polar interrogative. This contrasts with the 16 examples found for Eastern Austria. If we look at the two examples of *eh* from Lower Saxony and the Nuremberg area, we find that the first, (13), exemplifies a use of *eh* under negation, as described by Thurmaier (1989), and that the second, (14), is in fact a direct quote of an Austrian author.

(13) Wird er es nicht **eh** “versaufen”?  
 will he it not EH drink.away  
 ‘Won’t he EH waste it on drink?’ (Lower Saxony)

(14) [**Context:** “Before the ‘Theo-Book’, the extended version of my book from 1997, was published, I asked Theo (who is now 16 years old). . .”] (Nuremberg area)  
 ob ihm das **eh** recht ist oder ob er irgendein Problem damit hat.  
 whether him that EH okay is or whether he any problem with-it has  
 ‘whether he is EH okay with that or whether he has a problem with it.’

The occurrence of *eh* in (13) is replaceable by *sowieso*. This is not the case for *eh* in (14), which the native speakers of Federal German variants who I consulted also judge as odd.

The 16 interrogative clauses containing *eh* that were found for Eastern Austria attest that *eh* can be used in positive and negative polar interrogatives, as in (15) and (16).

(15) Bin ich hier **eh** in Waidhofen an der Ybbs?  
 am I here EH in Waidhofen an der Ybbs

‘Am I EH Waidhofen an der Ybbs?’ (NoeN)

- (16) Bist jetzt **eh** ned deppat worden?  
 are now EH not crazy become  
 ‘Did you EH not go crazy now?’ (NoeN)

As with (14), the occurrences of *eh* in (15)/(16) cannot be replaced by *sowieso* and my consultants for Federal German variants also judge these uses of *eh* as odd.

These results fit with the first expectation given in the previous subsection. In connection with the reported native speaker intuitions, they suggest that there is indeed a difference between *eh<sub>D</sub>* and *eh<sub>A</sub>*, and that *eh* from the Nuremberg area and *eh* from Lower Saxony are both *eh<sub>D</sub>* regardless of the relative geographical distance/closeness to Austria.

#### 4. Conclusion

To substantiate my claim in the introduction that Federal German *eh<sub>D</sub>* and Austrian German *eh<sub>A</sub>* differ in their contribution, I first presented an analysis of the two particles in declaratives and polar interrogatives based on native speaker intuitions. This analysis identified a difference in content for *eh<sub>D</sub>* and *eh<sub>A</sub>*, as well as a difference in the behavior and, hence, frequency of *eh<sub>D</sub>* vs. *eh<sub>A</sub>* in polar interrogatives. As a second step, this difference in frequency was checked by means of a corpus study. I determined the overall occurrence frequency and the occurrence frequency of *eh* in polar interrogatives for two areas in Germany and one area in Austria. As expected, *eh* occurred more frequently overall and more frequently specifically in polar questions in texts from Austria.

In sum, this case study showed that dialectal variation at the level of semantic content must not be discounted in particle research and, hence, needs to be controlled for.

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Sarah Zobel

sarah.zobel@ds.uni-tuebingen.de