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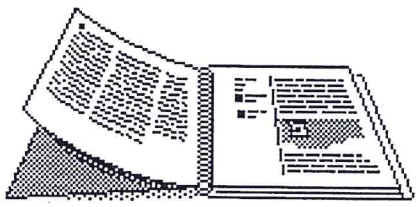

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Information Structure and the Referential Status of Linguistic Expressions

Workshop as part of the
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Preface

This volume comprises papers that were given at the workshop *Information Structure and the Referential Status of Linguistic Expressions*, which we organized during the Deutsche Gesellschaft für Sprachwissenschaft (DGfS) Conference in Leipzig in February 2001. At this workshop we discussed the connection between information structure and the referential interpretation of linguistic expressions, a topic mostly neglected in current linguistics research.

One common aim of the papers is to find out to what extent the focus-background as well as the topic-comment structuring determine the referential interpretation of simple arguments like *definite* and *indefinite NPs* on the one hand and *sentences* on the other.

The interaction of the referential interpretation of NPs with information structure is demonstrated by linguistic topics such as:

- *Word order, scrambling, scope ambiguities, contrast*

DANIEL BÜRING with *What do indefinites do that definites definitely don't?* gives evidence for the interaction of focus background structuring with the generic and existential reading of indefinite expressions. He shows that, on the one hand, generic indefinites form their own accent domain via scrambling and that, on the other, existential indefinites can only form an accent domain together with the predicate. Constraints on scrambling of indefinite NPs in German are the topic of JÜRGEN LENERZ' paper *Scrambling and reference in German*. He demonstrates that scrambling depends essentially on the choice function, which is the interpretation of the indefinite article. CARSTEN BREUL with *Focus structure and the referential status of indefinite quantificational expressions* argues that scope ambiguities cannot be traced back to different scope relations, but are determined by different focus structures.

On the basis of a broad data base, ANITA STEUBE with *Correction by contrastive focus* discusses prosodic properties of contrastive accents, the domain of contrast focus as well as its syntactic, information structural and contextual properties.

- *Determiners, specificity, anaphoricity*

DONKA FARKAS in *Specificity distinctions* shows that specificity is an epiphenomenon that breaks down into a variety of differences concerning the way variables introduced by argument NPs are given values and how these differences are marked in various languages. ELISABETH STARK demonstrates in *Indefiniteness and specificity in Old Italian texts* that specificity can be related to topological phenomena and that it has determined the grammaticalization of *unus* to an indefinite article. PAUL PORTNER in *Topicality and (Non-)Specificity in Mandarin* explains that the specificity of indefinite expressions is gradual and that the impression of unique reference arises if the indefinite can be associated with a topic singleton. CARLA UMBACH with *(De)accenting definite descriptions* makes clear that a definite NP denotes a novel discourse referent if the description of the NP contains a focused element and the definite article is necessary to express uniqueness. DINA BRUN argues in her paper *Information Structure and the Status of NP in Russian* that the indefinite or definite interpretation of Russian bare NPs depends on their information structural status in the clause. NOBERTO MORENO QUIBEN and ISABEL PEREZ JIMENEZ present in *Information structure and the referential status of Bare Plurals* that Spanish NPs without articles get a presuppositional reading if they are in the background of the sentence. MICHAEL HEGARTY, JEANETTE GUNDEL, and KAJA BORTHEN discuss with *Information structure and the accessibility of clausally*

introduced referents that the Givenness Hierarchy orders anaphorical lexical elements with respect to the salience of the antecedent and that this salience is essentially determined by information structure.

The second part of the volume focuses on the interdependence of the referential interpretation of a particular sentence type and information structure. This is demonstrated by topics like:

- *Sentence mood, sentence types distinctions, indefinite NPs*

HORST LOHNSTEIN in *Sentence Mood constitution and indefinite noun phrases* presents a compositional theory of German sentence mood and sentence type distinctions, which along with a choice function theory accounts for binding effects of indefinites in differently marked sentence types.

HANS-MARTIN GÄRTNER with *On the force of V2 declaratives* discusses embedded German V2 declaratives that share properties with both subordinate relative clauses and main clauses. He argues for a hypotactic analysis and that the scopal behaviour of the construction is derived from its "assertional proto-force", which it shares with similar "embedded root" constructions.

On the basis of the distribution of term answers in well-formed question/answer sequences INGO REICH with *Question/answer congruence and the semantics of wh-phrases* argues that wh-phrases should be analyzed as functional expressions with an indefinite core. Integrating this claim in Schwarzschild's (1999) focus theory, he outlines the focus/background structures of wh-questions.

This volume will be followed by ZASPIL volume 24, which contains the proceedings of the complementary workshop *Sentence Types and Specificity* organized at the ZAS in March 2001.The content of this volume will be attached to the table of content page iv.

Special thanks go to Mechthild Bernhard and Paul David Doherty for their helping hand in preparing the contributions for publication.

Berlin, November 2001

Klaus von Heusinger,
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On the interpretation of wh-clauses in exclamative environments*

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1. Introduction

In this paper, a class of sentences in German is discussed that are often called wh-exclamatives. Examples are in (1).

(1) a. *Heinz ist erstaunt, wen Maria eingeladen hat.*
Heinz is amazed who M. invited has
'Heinz is amazed who M. has invited.'
b. *Heinz ist erstaunt, wie gross Maria ist.*
'H. is amazed how tall M. is.'
c. *Wen der alles eingeladen hat!*
who he all invited has
'The people he has invited!'
d. *Wie gross die ist!*
how tall she is
'What is she tall!'

So called wh-exclamatives can be roughly characterized as wh-clauses that are embedded under exclamative predicates like *erstaunt sein/to be amazed at*, see (1a, b), or that are used as the basis for an exclamation, see (1c, d).[1]

One can ask if wh-exclamatives are a clause-type of their own, in particular, whether they are different from wh-clauses in question environments, that is under question predicates[2] like *to ask* or *to wonder* or used as questions. It is often assumed that wh-clauses in exclamative contexts, both embedded and unembedded, are indeed different from wh-clauses in interrogative or question environments like (2), at least regarding their semantical type, see for example Elliot (1971, 1974), Grimshaw (1979, 1981), Zaefferer (1983, 1984), Altmann (1987, 1993).

(2) a. *Heinz fragt sich, wen Maria eingeladen hat.*
H. wonders who M. invited has
'H. wonders who M. has invited.'

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* The paper is submitted to a special issue of "Theoretical Linguistics", edited by Klaus von Heusinger and Kerstin Schwabe

[1] On predicates that one would not consider to be exclamative, but which nevertheless embed wh-clauses like in (1) see below.

[2] These are intensional predicates in the sense of Groenendijk/Stokhof (1982).

b. *Heinz möchte wissen, wen Maria eingeladen hat.*
H. wants to know who M. invited has
'H. wants to know who M. has invited.'
c. *Wen hat der alles eingeladen?*
who has he all invited
'Who has he invited?'
d. *Wie gross ist die?*
'How tall is she'

I assume with Grimshaw (1979) that so called wh-exclamatives and wh-interrogatives are alike with respect to their syntactical properties. In addition, I think that they are also alike semantically. So, what I like to do here is to evaluate the following hypothesis:

(H1) So-called wh-exclamatives are of the same semantical type as wh-interrogatives.

Regarding H1 the following points should be discussed:

(i) Why can certain wh-clauses be embedded under exclamative predicates but not under question predicates, see (3)?

(3) a. *Heinz ist erstaunt, wie überaus groß Maria ist.*
'H. is amazed how very tall M. is.'
b. **Heinz möchte wissen, wie überaus groß Maria ist.*
H. wants to know how very tall M. is.

(ii) Why is it, that *ob*-clauses/*whether*-clauses are ungrammatical under exclamative predicates, but grammatical under question-predicates, see (4)?

(4) a. **Heinz ist erstaunt, ob Maria zu Hause ist.*
H. is amazed whether M. is at home
b. *Heinz möchte wissen, ob Maria zu Hause ist.*
H. wants to know whether M. at home is
'H. wants to know whether M. is at home.'

(iii) Why are certain unembedded wh-clauses grammatical as Exclamations, but not as Questions, see (5)?

(5) a. *Wie überaus groß sie ist!*
how very tall she is
b. **Wie überaus groß sie wohl ist?*
how very tall she PART is

(iv) How can one explain the relation between wh-clauses and their interrogative meaning, and their use as exclamations. That is: how can one derive the expression of an emotional attitude to a given state of affairs with regard to certain unembedded w-clauses?

I begin with describing the semantics of exclamative predicates and the way they interact with wh-complements, section 2. In section 3, I tackle the question in (i). Section 4 deals with the question why *ob*-clauses can not be embedded under exclamative predicates. In 5 it is shown how independent wh-clauses can be used as exclamations. A summary follows in 5, including some remarks on the differences between the considerations here and those in Zanuttini/Portner (2000).[3]

2. On the semantics of exclamative predicates

The aim of this section is to describe the semantics of predicates like *erstaunt sein/to be amazed at* and the way they interact with the meaning of their wh-complements, eventually giving a characterization of the class of exclamative predicates.
Consider a sentence like (6).

(6) *Heinz ist erstaunt, wen Maria geheiratet hat.*
Heinz is amazed who Maria married has
'Heinz is amazed who Maria has married.'

Basically the matrix-predicate *erstaunt sein/to be amazed at* denotes a relation between the matrix subject and at least two propositions.

The first proposition describes the true state of affairs, that is the proposition 'that Maria married Heinz', if she married Heinz. The second proposition describes in this case what the matrix-subject expected to be the true answer to the wh-clause clause, for example, the proposition 'that Maria married Karl', if it was this Heinz expected to be the case.

I call that the norm-proposition, because it generally describes the matrix subject's idea of what counts as the norm regarding the answer to the embedded wh-clause.

I assume that a wh-clause denotes basically a set of propositions in the sense of Karttunen (1977).

So the meaning of (7) applied to the world w is (8), the set of propositions of the form in (9), that are true in the world w, that is the set of propositions, so that there is a person x and Maria has invited x in w.

(7) *wen Maria eingeladen hat*
who Maria invited has
(8) $\lambda p\ [\exists x\ pers(x)(w)\ \&\ p = \lambda w'.\ eingeladen(maria)(x)(w')\ \&\ p(w)]$
(9) $\lambda w.\ eingeladen(maria)(x)(w)$

But the meaning in (8) is not strong enough, see for example Groenendijk/Stokhof 1982. Consider the example in (10)

[3] In a broader perspective the paper can be seen to contribute to the research on sentences types, in particular to the question how many there are. If the hypothesis is correct, we could end up with one less.

(10) *Heinz weiß, wen Maria eingeladen hat.*
Heinz knows who Maria invited has
'Heinz knows who Maria has invited.'

If (10) is true, we want Heinz not only to know for all the people that Maria invited, that Maria invited them. We also want Heinz to know that these are all the people that Maria invited. That is Heinz should not have a wrong belief about someone else, who was not invited.

In this sense, the meaning in (8) is too weak. It makes not sure, that Heinz knows all the people Maria invited and only those.

Heim (1994) solves this problem with the introduction of two answer-concepts that can be seen as reflecting different aspects of the meaning of a wh-complement. The basic meaning of the wh-clause is not changed. It is still a Karttunen one. Different matrix predicates can refer to different aspects of the meaning of their wh-complement.
The answer concepts are in (11) and (12).

(11) Answer1:
ans1(wh-clause, w) = $\leftrightarrow$ [[wh-clause]] (w)

The answer1 to a wh-clause in the world w is the intersection of the intension of the wh-clause applied to world w. That is the proposition that can be expressed by the conjunction of all the answers to the wh-clause that are true in the world w.

(12) Answer2:
ans2(wh-clause, w) = λw' [ans1(wh-clause, w') = ans1(wh-clause, w)]

The answer2 to a wh-clause in the world w is the set of worlds where the answer1 to the wh-clause is the same as in the world w. That is the proposition that the true answers are the true answers.

Answer2 expresses the strong exhaustive meaning we need for the relation between matrix predicates like *wissen/to know* and their wh-complement.
But where do we need the concept answer1? One case Heim mentions is given by exclamative predicates like *to be amazed at.*

The norm-proposition I mentioned above, that is the proposition the matrix subject expected in sentences like (13), is derived from the negation of the answer1.
Consider a sentence like (13).

(13) *Heinz ist erstaunt, wer gekommen ist.*
Heinz is amazed who come is
'Heinz is amazed at who came.'

If Heinz is amazed who came, he expected another answer to the wh-clause to be true that stands somehow in a relation to the true answer and he expected the true answer to be false. But the expected answer is not just the negation of answer2.

Suppose, Maria and Peter came. The negation of the proposition that Maria and Peter are the only persons that came, is the complement set of the set of worlds, where Maria and

Peter came and only these two. The complement set is here the set of worlds, where the set of people that came is different. But a world where Maria, Peter and Paul came is also different from the real world.

Suppose, Heinz had expected that Maria, Peter and Paul came. Could he really be amazed, if only Maria and Peter came. That is, could (13) be true with respect to this state of affairs? The seems to be not the case, cf. also Berman (1994).

The answer1 to the wh-clause in (13) is the set worlds where all persons came that came in the real world. The complement set is the set of worlds, where not all persons came, that came in the real world. Particularly the world, where Maria, Peter and Paul came is not in the complement set of the answer1.

So, we can think a predicate as *erstaunt sein/to be amazed at* with a wh-complement to relate the matrix subject in the following way to two propositions, one being the answer2 to the wh-clause and one being the negation of the answer1, see (14).

(14) If Heinz is amazed at who came, he knows: answer2(who came)
and he had expected: ¬ answer1 (who came).

A problem is that, if someone came, a world where none came is also in the negation of the answer1.

But I don't think that (15a) is true, if Heinz expected that none came.

(15) a. *Heinz ist erstaunt, wer gekommen ist.*
Heinz is amazed who come is
b. *Heinz ist erstaunt, daß (überhaupt) jemand gekommen ist.*
Heinz is amazed that (anyway) someone come is
'Heinz is amazed that someone came at all.'

In a case where Heinz expected none to come, (15b) seems to be appropriate.

My point here is, that the proposition that is expected must be a subset of the negation of the answer1. It must be a set of worlds, where the extension of the meaning of the wh-clause is not empty. There must be an instantiation of the wh-variable.

The same is true for the true answer to the embedded wh-clause. Exclamative predicates require the wh-variable to be instantiated. The set of relevant propositions must not be empty.

Consider (16) and (17). While (16) can be true

(16) *Heinz weiß, wen Maria eingeladen hat.*
Heinz knows who M. invited has

even if Maria didn't invite anybody and Heinz knows exactly that, (17) can not be true in the case that Maria didn't invite anybody.

(17) *Heinz ist erstaunt, wen Maria eingeladen hat.*
Heinz is amazed who Maria invited has

So, although both verbs are factive in the sense of Kiparsky/Kiparsky (1970) in that they presuppose the truth of the proposition of their *that*-complement, there are differences w.r.t. wh-complements. *To know* does not require the wh-variable to be instantiated, so the argument in (18) goes through, cf. Groenendijk/Stokhof (1982), that is from (18a) and (18b) follows (18c).

(18) a. Heinz knows who Maria has invited.
b. Maria did not invite anyone.
--> c. Heinz knows that Maria didn't invite anyone.

In the case of *to be amazed at*, a parallel argument is not correct, see (19).

(19) a. Heinz is amazed at who Maria has invited.
b. Maria did not invite anyone.
-/-> c. Heinz is amazed that Maria didn't invite anyone.

I take it that it is presupposed that the wh-variable must be instantiated. This property is constant under negation, as it should be.

(20) a. *Heinz ist erstaunt, wen Maria geheiratet hat.*
Heinz is amazed who Maria married has.
b. *Heinz ist nicht erstaunt, wen Maria geheiratet hat.*
Heinz is not amazed who Maria married has.

In both (20a) and (20b) the existence of a new husband is presupposed.
So, the here relevant properties of the class of exclamative predicates with wh-complements are the following:

(i) an exclamative predicate describes an emotional attitude to a state of affairs.
(ii) it is presupposed that the wh-variable is instantiated, i.e. it exists a positive answer.
(iii) we have an alternative proposition, the norm-proposition. The norm-proposition is derived from the answer1 to the wh-clause in a systematic way, as a subset of the complement set of the answer1. It must also be a positive answer.

I assume that at least these two propositions are ordered on a scale in a way that the expected propositon is the one that sets the norm, and the true proposition is ordered at a distance that reflects the strength of the amazement. The stronger the matrix subjects amazement, the higher up on the scale is the true proposition. This property is also linked to the exclamative predicate and is not part of the meaning of the wh-clause itself.

That there is indeed an emotional attitude as part of the meaning of exclamative predicates is shown by the following consideration: There are predicates that explicitly express the non-existence of an emotional attitude towards a certain state of affairs like *egal sein* or *nicht jucken/not care*. Those predicates cannot cooccur with exclamative predicates, relating to the same state of affairs, see (21).[4]

[4] See Fries (1988) for independent exclamatives.

(21) **Heinz ist erstaunt, wie überaus groß Maria ist, aber es ist ihm egal.*
Heinz is amazed how very tall Maria is, but he is indifferent towards this.

The properties one usually associates with wh-exclamatives, that is expression of an emotional attitude, presupposition of the propositional content, ordering of at least two relevant propositions on a scale, follows in this view solely from the properties of the matrix predicates. What the wh-clause does is that it provides via its interrogative semantics the possibility to compute the relevant alternative propositions.

With exclamative predicates embedding a wh-clause, we have a relation between the matrix subject and two different propositions: one describing the true exhaustive answer to the wh-clause, the answer2 in Heims terms, and one describing the norm-proposition.

3. Special Wh-phrases

3.1. Data

Now I turn to question (i) in the introduction: Why can certain wh-clauses be embedded under exclamative predicates but not under question predicates?
Consider the examples in (22) and (23).

(22) a. *Heinz ist erstaunt, wie überaus groß Maria ist.*
Heinz is amazed how extremely tall M. is

b. *Heinz ist verwundert, wie enorm breit der Eßtisch ist.*
Heinz is amazed how enormously broad the table is

c. *Heinz ist verblüfft, wie pfeilschnell der neue Wagen ist.*
Heinz is stunned how arrow-fast the new car is
'Heinz is stunned how very fast the new car is.'

d. *Heinz ist erstaunt, wie saukalt es heute ist.*
Heinz is amazed how pig cold it today is.
'Heinz is amazed how extremely cold it is today.'

e. *Heinz findet es erstaunlich, wie riesig Maria ist.*
Heinz finds it amazing how gigantic M. is

(23) a. **Heinz fragt sich, wie überaus groß Maria ist.*
Heinz asks himself how extremely tall M. is

b. **Heinz möchte wissen, wie enorm breit der Eßtisch ist.*
Heinz wants to know how enormously broad the table is

c. **Heinz fragt sich, wie pfeilschnell der neue Wagen ist.*
Heinz asks himself how arrow-fast the new car is

d. **Heinz möchte wissen, wie saukalt es heute ist.*
Heinz wants to know how pigcold it today is

e. **Heinz fragt sich, wie riesig Maria ist.*
Heinz asks himself how gigantic M. is

In (22) we have exclamative predicates embedding wh-clauses with a certain kind of wh-phrases. In the relevant reading, these wh-clauses are ungrammatical as complements of question predicates as in (23).[5]

It seems pretty obvious, which elements are responsible for the contrast in (22) and (23), at least regarding a. to d. In the a- and b- cases we have intensifying elements (*überaus* and *enorm*) inside the adjective phrase, adverbials to the adjectives. Without these syntactical intensifiers, embedding under question-predicates is ok, see (24).

(24) a. *Heinz fragt sich, wie groß Maria ist.*
Heinz wonders how tall M. is
b. *Heinz möchte wissen, wie breit der Eßtisch ist.*
Heinz wants to know how broad the table is

I call *überaus* etc. syntactical intensifiers in contrast to the intensifying elements in c. and d. that come into play by way of a morphological process. Other than syntactical intensifiers, they are not so free w.r.t. the adjectives they combine with.

But they are responsible for the ungrammaticality of (23c,d). Without them the sentences are ok, see (24c, d).

(24) c. *Heinz fragt sich, wie schnell der neue Wagen ist.*
Heinz wonders how fast the new car is
d. *Heinz möchte wissen, wie kalt es heute ist.*
Heinz wants to know how cold it today is

(23e) is not so obvious w.r.t. to the analysis of the adjective phrase. *Riesig* can be an adverbial as in (25).

(25) a. *Heinz ist erstaunt, wie riesig groß der Dom ist.*
Heinz is amazed how enormously big the dome is

In this case, it is in line with the syntactical intensifiers *überaus* and *enorm*, but the adjective *groß* had somehow to be deleted in (22e and 23e), if *riesig* was always an adverbial.

On the other hand, we can think of *riesig* in (22e and 23e) indeed as an adjective. The intensifying element is somehow inherent to the adjective. *riesig* so means, what it means intuitively, namely *sehr* or *riesig groß, that is: very* or *enormously big*. The form of *riesig* without the inherent intensifying element is simply *groß*, and *groß* is of course ok in a sentence like (23e), see (26).

(26) *Heinz fragt sich, wie groß Maria ist.*
Heinz wonders how tall Maria is

Before I come to the possible readings of the sentences in (23), there is some connected data, see (27) and (28).

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[5] I shall come back to the point of identifying the different readings.

(27) a. *Heinz ist erstaunt, welchen Bombenerfolg das neue Stück hatte.*
Heinz is amazed, which bomb-success the new piece had
b. *Heinz findet es verblüffend, welche Bullenhitze im Kino herrscht.*
Heinz finds it stunning which bull-heat in the cinema reigns
c. *Heinz ist verblüfft, welchen Affenzahn Maria draufhat.*
Heinz is stunned which monkeytooth Maria on it has
d. *Heinz ist verwundert, welchen Bärenhunger Karl mitgebracht hat.*
Heinz is amazed which bear-hunger Karl with-brought has

(28) a. *Heinz fragt sich, welche Bullenhitze im Kino herrscht.
b. *Heinz möchte wissen, welchen Affenzahn Maria draufhat.
c. *Heinz wollte wissen, welchen Bombenerfolg das neue Stück hatte.
d. *Heinz will wissen, welchen Bärenhunger Karl mitgebracht hat.

(29) a. *Heinz fragt sich, welche Temperatur heute im Kino herrscht.*
Heinz wonders which temperature today in the cinema is
b. *Heinz möchte wissen, welches Tempo Maria am liebsten fährt.*
Heinz wants to know which speed Maria best of all drives

In this cases we are dealing with noun phrases that are intensified, either morphologically, like (27a,b and d) or inherently like (27c). *Bomben* is in these cases a prefix meaning something like *enormous*. *Affenzahn* means in this context *high speed*.[6]

If we can find a more neutral form for this intensified noun phrases, so to speak stripped off their intensified element, embedding under question predicates is ok, see for example (29a) for (28b) and (29b) for (28c). This is parallel to the cases with adjectives above.
The second relevant contrast concerns multiple wh-complements. Although they are grammatical under exclamative predicates,[7] see (30), there are exceptions.

(30) a. *Heinz ist erstaunt, wen Maria wo getroffen hat.*
Heinz is amazed whom Maria where met has
'Heinz is amazed whom Maria met where.'
b. *Heinz ist verblüfft, wem Maria wann geholfen hat.*
Heinz is stunned whom Maria when helped has
'Heinz is stunned whom Maria helped when.'
c. *Heinz ist erstaunt, wie groß welcher Spieler ist.*
Heinz is amazed how tall which player is
d. *Heinz ist verblüfft, wie breit welcher Fluß ist.*
Heinz is stunned how broad which river is

With the adjective phrases I talked about above, multiple wh-clauses are not grammatical, see (31).[8]

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[6] See Van Os (1989) on intendifiers.

[7] Cf. also Karttunen (1977).

[8] See also Lahiri (1991).

(31) a. **Heinz ist verblüfft, wie überaus breit welcher Fluß ist.*
Heinz is stunned how extremely broad which river is
b. **Heinz findet es erstaunlich, wie pfeilschnell welcher Wagen ist.*
Heinz is amazed how very fast which car is
c. **Heinz ist erstaunt, wie riesig welcher Spieler ist.*
Heinz is amazed how extremely tall which player is
d. **Heinz ist verwundert, wie überaus groß welches Mädchen ist.*
Heinz is amazed how very tall which girl is

I will come back to these examples in connection with the solution to the contrast in (22) and (23). But now to the different reading of sentences as in (23).

3.2. Possible Readings

The two different readings of sentences like (22) and (23) can be identified in different contexts.

Lets take for example (22c,e), repeated as (32a, b).

(32) a. *Heinz findet es erstaunlich, wie riesig Maria ist.*
Heinz finds it amazing how gigantic M. is
b. *Heinz ist verblüfft, wie pfeilschnell der neue Wagen ist.*
Heinz is stunned how arrow-fast the new car is

If we have a context as in (33a), that is: Heinz knew that Maria is gigantic, then Heinz is amazed at the degree to which Maria is gigantic.

(33) a. *Heinz wußte, daß Maria riesig ist, aber er ist erstaunt, wie riesig sie ist.*
Heinz knew that Maria is gigantic, but he is amazed at how gigantic she is.

Call this the degree-reading.

In a context like (33b) it is not the degree Heinz is amazed at, but the fact that Maria is gigantic and not only tall or very tall.

(33) b. *Heinz wußte, daß Maria groß ist, aber er ist erstaunt, wie riesig sie ist.*
Heinz knew that Maria is tall, but he is amazed how gigantic she is.

It is not the degree to which Maria is gigantic that is amazing. It is taken for granted that someone that is gigantic is so to a certain degree. Call this the non-degree-reading.

It is the non-degree reading that is not available in a wh-clause embedded under a question predicate, see (34).

(34) a. *Heinz wußte, daß Maria riesig ist, nun wollte er wissen, wie riesig sie ist.*
Heinz knew that Maria is gigantic, but now he wanted to know how gigantic she is.

b. *#Heinz wußte, daß Maria groß ist, nun wollte er wissen, wie riesig sie ist.*
Heinz knew that Maria is tall, but now he wanted to know how gigantic she is.

With an adjective like *pfeilschnell* the degree-reading seems to be not available at all. So, sentences with *wie pfeilschnell* should be bad under question predicates. This is indeed the case, see (35).

(35) **Heinz weiß, daß der Wagen pfeilschnell ist, nun will er wissen, wie pfeilschnell er ist.*
Heinz knows that the car is very fast, now, he wants to know, how very fast it is.

With exclamative predicates the only available reading for clauses with *wie pfeilschnell* is the non-degree-reading, see (36a).

(36) a. *Heinz weiß, daß der Wagen schnell ist, aber er ist erstaunt, wie pfeilschnell er ist.*
Heinz knows that the car is fast, but he is amazed how very fast it is
b. **Heinz weiß, daß der Wagen pfeilschnell ist, aber er ist erstaunt, wie pfeilschnell er ist.*
Heinz knows that the car is very fast, but he is amazed how very fast it is

The intensifying elements, whether syntactical, morphological or inherent, refer to extreme areas on a scale related to the meaning of the adjective they belong to. These extreme areas can be very small. In the extreme case, these areas are so small, that a subdivision in different degrees is no longer possible, see also Rehbock (1997). This seems to be the case with *pfeilschnell/as quick as lightning*.

Another hint in the same direction is, that adjectives like *pfeilschnell* have no comparative form, so (37) is ungrammatical.

(37) **Der gelbe Wagen ist pfeilschneller als der grüne.*
The yellow car is more fast as lightning as the green one

Nonetheless, I am not sure if one should place these adjectives in the same class as non-gradable adjectives like *true* or *married*, that are not possible at all in *wie/how*-phrases introducing a wh-clause.

The two different readings, the degree-reading and the non-degree-reading, have also effects on what I called above the norm-proposition. In the case of (38) with the predicate *erstaunt sein* it is the proposition describing Heinz' expectations.

(38) a. Heinz ist erstaunt, wie riesig Maria ist.
Heinz is amazed how gigantic M. is
b. degree-reading:
Heinz expected Maria to be gigantic to another degree.

c. non-degree-reading:
Heinz expected Maria to be just tall or even of normal height, but not gigantic.

The interesting point w.r.t. the non-degree reading is, that Heinz didn't expect Maria to be *riesig/gigantic* at all.

The problem is now, how to derive the norm-proposition to the non-degree-reading if the norm proposition is actually another answer to the question how gigantic Maria is, that is an answer to the question to what degree Maria is gigantic.

3.3. Paraphrases to the non-degree reading/ Appositions

How can we paraphrase the non-degree-reading? I want to go back to some examples of Grimshaw (1979) that she used to show a difference between wh-clauses under exclamative predicates and under question predicates.

Question predicates allow only disjunctive appositions like *Tom or Harry* in (39a).

(39) a. John wondered who, Tom or Harry, had gone to the movies.
b. *John wondered who, (namely) Tom and Harry, had gone to the movies.

This kind of apposition to a wh-phrase has a certain effect: It is presupposed that the content of the apposition is the true instantiation of the wh-variable, that is: Tom or Harry had gone to the movies. If we assume an exclusive *or*, this means for (39a) that either Tom or Harry had gone to the movies.

The difference to a conjunctive apposition like in (39b) is, that we still have a choice between Tom and Harry. Intuitively, it still makes sense, to ask about which one of the two constitutes the true instantiation of the wh-variable.

A conjunctive apposition on the other hand, or one with just one element, also presupposes that its content is the true instantiation of the wh-variable. But in theses cases there is no choice, and it doesn't seem to make sense to ask about it, see the German examples in (40).

(40) a. **Heinz möchte wissen, wen Maria eingeladen hat, Karl und Gustav.*
Heinz wants to know who, Karl and Gustav, Maria has invited.
b. **Heinz möchte wissen, wen Maria eingeladen hat, (nämlich) Karl.*
Heinz wants to know who Maria has invited, (namely) Karl.

Under exclamative predicates, a conjunctive apposition or a one-element apposition is ok, see (41).

(41) a. *Heinz ist erstaunt, wen Maria eingeladen hat, nämlich Karl und Gustav.*
Heinz is amazed who Maria invited has, namely Karl and Gustav
b. *Heinz ist erstaunt, wen Maria eingeladen hat, nämlich Karl.*
Heinz is amazed who Maria invited has, namely Karl

W.r.t. the wh-phrases with intensifying elements, I assume now that the intensifying elements are basically like the appositions in (41).

So we can paraphrase the non-degree-reading of the sentences in (42) as in (43).

(42) a. *Heinz ist verblüfft, wie pfeilschnell der neue Wagen ist.*
Heinz is stunned how arrow-fast the new car is

b. *Heinz findet es erstaunlich, wie riesig Maria ist.*
Heinz finds it amazing how gigantic M. is

(43) a. *Heinz ist verblüfft, wie schnell (, nämlich pfeilschnell,) der neue Wagen ist (, nämlich pfeilschnell).*
Heinz is stunned how fast (, namely fast as lightning,) the new car is (, namely fast as lightning).

b. *Heinz findet es erstaunlich, wie groß (, nämlich riesig,) Maria ist (, nämlich riesig).*
Heinz finds it amazing how tall (, namely enormously,) M. is (, namely enormously).

The effect of the apposition is the same as in the examples (39) - (41). It is presupposed that the element named in the apposition is the true instantiation of the wh-variable.

So, for example, in (43b) the question in the embedded wh-clause is actually not about how gigantic Maria is, but how tall she is, with the presupposition that she is enormously tall.

If the question in (43b) is, how tall Maria is, it is also possible to compute the right norm-proposition, the proposition, that was expected. We are not interested in different degrees to which Maria is tall, that is the expected proposition has nothing to with a certain degree, to which Maria is gigantic.

We are interested in the answers to the neutral question, how tall she is. And an answer here could well be that she is of normal height, or even small. By treating the intensifying element as an apposition with the mentioned properties, it is possible to derive the correct norm-proposition.

The presupposition of the intensifying elements can also be related to the speaker. This is shown by examples like (44).

(44) a. *Heinz weiß nicht, wie überaus groß/riesig Maria ist (*, und ich auch nicht).*
Heinz knows not, how enormously tall/gigantic Maria is (* and I too not)

b. *Heinz hat vergessen, welche Affenhitze im Kino herrschte (*, und ich auch).*
Heinz has forgotten which monkey-heat in the cinema reigned (* and I too)

c. *Heinz weiß nicht, wie groß Maria ist (, und ich auch nicht).*
Heinz knows not how tall Maria is (, and I too not).

d. *Heinz hat vergessen, welche Temperatur im Kino war (, und ich auch).*
Heinz has forgotten which temperature in the cinema reigned (* and I too)

In the cases where it is clear that the speaker doesn't know the answer to the embedded wh-clauses, the whole sentence becomes ungrammatical. That is, in the cases with intensifying

elements. The neutral adjective or nominal forms as in (44c and d) are ok. That means, the speaker has to know the instantiation of the wh-variable.

The assumption, that the instantiation of the wh-variable named in the apposition is presupposed as the true answer to the wh-clause leads to a meaning of the wh-clause with just one possible answer: the one given in the wh-clause.

Exactly this is the reason why the non-degree reading is not possible in question environments like (23) above. It simply makes no sense to ask for something the answer to which is given in the question.

This is formulated in the restriction in (45).

(45) Wh-clauses that presuppose their only true answer are not allowed in question environments.

That does for example not exclude wh-clauses, that presuppose more than one true answer like (31a).

The contrast in (31) above, that the wh-phrases with intensifying elements are not grammatical in multiple wh-clauses can be explained, if we assume, that there must be more than one instantiation for each wh-variable in a multiple wh-clause, see for example Wachowicz (1974). The interpretation of the intensifying element as an apposition with the above named properties, excludes that there is more than one instantiation. So, a multiple wh-clause is not possible.

To sum up:

(i) W.r.t. the non-degree-reading, the intensifying elements are analyzed as a sort of apposition, triggering a certain (speaker-related) presupposition, that in turn leads to an interpretation with just one true answer, that is named in the apposition.

(ii) the norm-proposition is derived from the meaning of the wh-clause without the intensifying element.

(iii) the contrast in (22) and (23) is derived from the properties in (i) and the restriction in (45).

This answers basically question (i) of the introduction.

4. *Ob*-clauses

In this section I discuss the question (ii) from the introduction, why *ob*-clauses are ungrammatical as complements of exclamative predicates, see (46).

(46) a. **Heinz ist erstaunt, ob es regnet.*
Heinz is amazed whether it is raining

If *ob*-clauses and wh-interrogatives have the same semantical type that is the basis for selectional properties of a matrix predicate, one must discuss why certain predicates select only for a subclass. This selectional peculiarities w.r.t. the class of interrogatives are in no way restricted to exclamative predicates.

There are different classes of predicates that take only wh-interrogatives, or subclasses of wh-interrogatives, or only *ob*-clauses, or only subclasses of *ob*-clauses.

The communication verbs *zugeben, gestehen, bekennen/admit* take a wh-complement but are quite bad with *ob*-clauses, see (47).[9]

(47) a. *Heinz hat zugestanden/zugegeben/bekannt, mit wem er die Nacht verbracht hat.*
Heinz has admitted with whom he the night spent has
'Heinz has admitted whom he spent the night with.'

b. *??Heinz hat zugestanden/zugegeben/bekannt, ob er die Nacht mit Maria verbracht hat.*
Heinz has admitted whether he the night with Maria spent has
'Heinz has admitted whether he spent the night with Maria.'

This is also the case with verbs like *schildern* oder *beschreiben/describe*, see (48).

(48) a *Heinz schilderte/beschrieb mir, wo Peter wohnt.*
Heinz described me where Peter lives

b. **Heinz schilderte/beschrieb mir, ob Peter in Hamburg wohnt.*
Heinz described me whether Peter in Hamburg lives

Schwarz (1993) identifies a class a verbs he calls 'Verben der sequentiellen Abarbeitung' like *runterrattern* or *aufzählen/to list* that only take a subclass of wh-clauses as complements, see (49), and for which he formulates a condition that excludes the ungrammatical ones.

(49) a. **Maribel rattert herunter, welches Buch Carmen gelesen hat.*
(=Schwarz 1993: (7a))
Maribel lists which book Carmen has read.

b. *Maribel rattert herunter, welche Bücher/was Carmen gelesen hat.*
Maribel lists what/which books Carmen has read.

Huddleston (1994) shows for predicates like *bezweifeln/doubt, zweifelhaft sein/be doubtful, fraglich sein/be questionable* that they are sensitive w.r.t. to the type of *ob*-clause they take as a complement. They are ungrammatical with alternative *ob*-clauses, see (50).

(50) a. *Ich bezweifle, ob Maria zu Hause ist.*
I doubt whether Maria is at home.

b. **Ich bezweifle, ob Maria zu Hause ist oder in der Kirche.*
I doubt whether Maria is at home or in the church.

What this diverse data suggests is that we must try from case to case to find out the reasons for the semantical incompatibility between a class of predicates and a certain type of clause

[9] Cf. Dipper (1997: fn. 45).

in complement position. I will do that here for the class of exclamative predicates and *ob*-clauses.

Actually, it is not so self-evident, why a predicate like *to be amazed* should not go together with an *ob*-clause. If we consider for example a sentence with *know* like (51),

(51) Heinz knows whether it is raining.

so is the intuition that Heinz knows that it is raining, if it is raining, and that Heinz knows that it is not raining, if it is not raining. Why can't we interpret a sentence like (52) in the same way?

(52) *Heinz is amazed (at) whether it is raining.

That is: if it is raining, Heinz is amazed that it is raining, and if it is not raining, Heinz is amazed that it is not raining. As for the norm-proposition, Heinz could in each case easily have expected the opposite.

I think the relevant factor here is an element that exclamative predicates share with a broader class of predicates which are included in the class a emotive predicates Kiparsky/Kiparsky (1970: 363) characterize as "in general all predicates which express a subjective value of a proposition rather than knowledge about it or its truth value".

The important element is that we are dealing with an evaluation of a proposition. For an evaluation it seems to be basic to have the possibility of a relation to a relevant object of comparison.[10] This object of comparison is w.r.t. exclamative predicates and the true answer the norm-proposition. It is the answer to the wh-clause that describes the matrix subject's idea of the norm. So, what an exclamative predicate requires of its complement is that there are two possible answers. And, as we have seen in section 2, not only two possible answers, but two positive, possible answers. The last point seems to be directly relevant for the problem with *ob*-clauses. In this case, we have in principle only one possible positive answer, so that we can formulate the following restriction on the relation between exclamative predicates and their wh-complements.

(53) A relation between an individual and a wh-complement, that is given by an exclamative predicate, is well defined only, if there are two possible positive answers to the wh-clause.[11]

With the restriction in (), we exclude *ob*-clauses as complements of exclamative predicates and have an intuitively reasonable answer to the question (ii) in the introduction.

[10] Cf. Fries (1994) for the description of emotions as evaluations of state of affairs or objects relative to the physical an psychological needs of the person that expresses them.

[11] In d'Avis (2001:101) I have given a somewhat different restriction with a more technical counterpart. This is related to a modification of the Karttunen-semantics of *ob*-clauses I am discussing there.

5. Unembedded Wh-(exclamatives)

The fourth question in the introduction was how we can relate unembedded wh-clauses with their interrogative meaning to their use as exclamations. Examples are given in (54). (Capitals stand for emphasis.)

(54) a. *Wen DIE geheiratet hat!*
whom she married has
b. *Wen DIE alles eingeladen hat!*
whom she all invited has
c. *Wen hat DIE alles eingeladen!*
whom has she all invited
d. *Wem DER alles geholfen hat!*
whom he all helped has
e. *Wie RIESIG die ist!*
how gigantic she is
f. *Wie RIESIG ist die!*
how gigantic is she

An exclamative utterance of the sentences in (54) expresses an emotional attitude of the speaker towards a certain state of affairs, that is not in accordance with his or her expectations. An exclamation on the basis of a wh-clause presupposes the propositional content of the wh-clause to be true.

An interesting point w.r.t. German is that the position of the finite verb does not differentiate between the uses as exclamations or questions. Both V2-clauses, see (54c, f) and verb-final clauses can be used as exclamations.

I assume that exclamation is an element related to the use of language, see also Fries (1988) and Rosengren (1992, 1994, 1997). So, how can one imagine the relation between the interrogative meaning of a wh-clause and its use as an exclamation?

Constitutive for an Exclamation is an emotional attitude of the speaker to a state of affairs, that is presupposed to be true, and a difference between this state of affairs and the speakers idea of the norm.

The point that the expression of an emotional attitude is part of an exclamative illocution can be made clear with examples like (55) where the speaker at the same time tries to express that he is indifferent towards the relevant state of affairs.

(55) a. *Wie SCHÖN Maria ist! #Aber das ist mir egal.*
How beautiful Maria is! #But I don't mind.

The presupposed state of affairs is described by the answer 2 to the wh-clause, that is the true answer.

A Hearer expects the speaker to know the answer. Consider the exclamation in (56).

(56) S1: *Wen DIE geheiratet hat!*
whom Maria married has

If die has married Heinz, then S1 should know, that she has married Heinz. This is at least what S2 thinks, if he replies (57).

(57) S2: *Wen HAT Maria denn geheiratet?*
Whom did Maria PART marry

If S1 does not know the true answer to the question in (57), the utterance of (56) as an exclamation is defective.

But the information that Maria married Heinz is not overtly part of the utterance. If the speaker knows the true answer, but holds it back, the relevance of the utterance must lie in something else. With respect to exclamations this could be interpreted in the following way: the relevant aspect is the expression of the speakers emotional attitude to the state of affairs that is described by the true answer.

The connection to the proposition that describes the speakers norm is as in the embedded case: the proposition is a subset of the negation of the answer1. For instance w.r.t. (56): S1 could consider it to be normal, that Maria married someone else.

But how do we know that the utterance is to be interpreted as an exclamation and not as a question?

The relevant factor is the obligatory exclamative accent, compare Rosengren (1994, 1997).

The exclamative accent is easy to tell apart from contrast accents or other focussing accents, see Altmann (1993). Its particular properties are greater maxima w.r.t. the basic frequency, greater length and possibly a higher intensity, cf. Oppenrieder (1987), (1989), Batliner (1988).[12] The function of the exclamative accent is to show, that we are dealing with an expression of an emotional attitude. I assume, that emotions expressed by exclamations go together with an evaluation of the relevant state of affairs, see Fries (1994). An evaluation is possible, if there is an object of comparison. The relevant state of affairs is described by the true answer to the wh-clause. The object of comparison is the norm-proposition, derived from the negation of the answer1. Exclamative illocutions and exclamative predicates (with wh-clause) share some basic properties:

- the propositional content of the wh-clause is presupposed,
- an emotional attitude towards a state of affairs is expressed,
- two certain propositions are needed, that are compared with each other
- the first proposition is the true answer to the wh-clause
- the second, the norm-proposition, is derived form the complement set of the answer1.

To exclude wh-clauses with intensifying elements like (58) from being used as a question, is actually not so hard now. These wh-clauses have the same properties as the embedded ones in that they presuppose their only true answer.

(58) *Wie ÜBERAUS GROSS die ist!*
how enormously tall she is

[12] For the connection between exclamative accent and emphatical accent w.r.t. declarative clauses see Wingert (1996), for discussion of the intonation inside the wh-phrase see Bötz (1995).

And so they are subject to the restriction in (45), they are not allowed in question environments.

I have derived the exclamative illocution on the basis of a wh-clause through certain properties of emotions as part of the language system. These properties: existence of a certain state of affairs, evaluation part, derivation of an object of comparison are given by the function of the obligatory exclamative accent as the reflection of the emotional involvement of the speaker. The interrogative meaning of the wh-clause provides the set of propositions that are needed to compute the relevant norm-proposition.

6. Summary

The answers to question (i) and (iii) in the introduction are basically the same. Certain wh-clauses are excluded from question contexts because of the properties of the intensifying elements inside the clause-initial wh-phrase. W.r.t. question (ii), *ob*-clauses are excluded as complements of exclamative predicates, because they do not provide two possible positive answers. The answer to question (iv) uses the obligatoriness of the exclamative accent and some considerations on the properties of emotions expressed by linguistic utterances. Concerning these questions, I think the hypothesis in (H1) can be maintained.

Before I finish, I have a few remarks on a paper by Raffaella Zanuttini and Paul Portner which Paul sent me after the DGfS-meeting in Leipzig.[13] I think that our considerations go in the same direction, though they differ in detail and w.r.t. the evaluation of the syntactical properties of wh-clauses in exclamative environments. As far as the German examples are concerned, there is in principle no syntactical difference between wh-clauses in exclamative environments and in question environments. The concept of widening that is introduced by Zanuttini/Portner (2000) captures the difference between the norm-proposition and the true answer to the wh-clause described here. In opposite to Zanuttini and Portner, I do not assume that there is a factive component as part of the relevant wh-clause. Factivity comes into play either by way of the interaction between the meaning of the wh-clause or as the outcome of the effect the exclamative accent has w.r.t. unembedded wh-clauses used as exclamations. The difference could become clear in examples with the matrix predicate *wissen/know*. *Wissen* takes *ob*-complements, see (59a) and also apparent exclamative complements, see (59b).

(59) a. *Heinz weiß, ob es regnet.*
Heinz knows that it is raining.
b. *Heinz weiß, wie überaus groß Maria ist.*
Heinz knows how very tall Maria is.

In addition *wissen* takes wh-complements that could be interrogative or exclamative.

(60) *Heinz weiß, wen Maria eingeladen hat.*
Heinz knows, whom Maria has invited.

[13] Zanuttini/Portner (2000).

The embedded clause is possible with exclamative and question predicates. As far as I can see, an approach that distinguishes between exclamative and interrogative wh-complements would predict a systematical ambiguity in cases like (60). At least w.r.t. the German data, I can not see that an ambiguity arises. Nevertheless, taking into consideration that Zanuttini and Portner also deal with other languages, for instance Italian and Paduan, I think it could be worth a try to put the results of the two approaches together, to get a more general picture.

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Focus structure and the referential status of indefinite quantificational expressions*

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1. Introduction

Many authors who subscribe to some version of generative syntax account for the two readings of such sentences as (1a) and (1b) in terms of LF-ambiguity. There is assumed to be covert quantifier raising (QR), which results in two distinct possibilities for the indefinite quantificational expressions involved to take scope over each other (2a, b) (see e.g. Chierchia & McConnell-Ginet 2000 [1990]: ch. 3, 9, Fanselow & Felix 1993 [1987]: 192f., Haegeman & Guéron 1999: 541, Heim & Kratzer 1998: ch. 7, 8, Kamp & Reyle 1993: 279f., 288f.):[1]

(1) a. Some publisher offended every linguist
b. Everyone saw someone

(2) a. $\forall x \exists y [K(x, y)]$
b. $\exists y \forall x [K(x, y)]$ [2]

In this paper, an alternative account is proposed which dispenses with the idea that there are different scope relations involved in the readings of such sentences as in (1) and, consequently, with QR as the syntactic operation to be assumed for generating the respective LFs. I argue that it is rather focus structure in connection with type semantic issues pertaining to the indefinite quantificational expressions involved which result in the different readings associated with such sentences as in (1). The approach is motivated by an observation which leads to the conclusion that (1a) is ambiguous while (1b) is vague.[3] This observation is based on an application of Lakoff's (1970) classic *so-*

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1 See also May 1990 [1977], where the QR account of (supposed) LF-ambiguities of the kind illustrated by (1) was introduced and studied in detail for the first time in generative grammar.

2 Authors differ with respect to logical notations when representing different scope relations. The notation I use in (2) is adopted from Chierchia & McConnell-Ginet (2000 [1990]). Haegeman & Guéron (1999: 541), for instance, use the more explicit notation below in representing the two readings of (2b) (similarly Kamp & Reyle 1993: 279f., 288f.).

a. $Ax (x = H) \rightarrow Ey (y = H) \& (S\ x\ y)$
b. $Ey (y = H) \& Ax (x = H) \rightarrow (S\ x\ y)$

3 That is, neither both are ambiguous, as the above mentioned authors seem to assume, nor both vague, as argued by Kempson & Cormack (1981).

test, which I briefly recapitulate and whose applicability in the relevant cases is discussed in the next section.

2. Ambiguity vs. vagueness: A problem for the standard account of 'quantifier scope relations'

Consider first how Keenan (1978: 172) explains the difference between vague and ambiguous sentences.

> There are many easily-agreed-upon instances of ambiguous sentences, such as the *flying planes can be dangerous* ones. There are equally many clear cases of vagueness. Thus *the man on the table is hurt* is vague, not ambiguous, according as the man is Albanian or not. Note of course that the situations in which the man is, or is not, Albanian are quite distinct. But we feel that neither of these situations is talked about in the original sentence.
>
> We shall propose then the following sufficient condition for a sentence to be judged vague, rather than ambiguous, in certain respects: A sentence S is *vague* according as it describes distinct situations *a* and *b* if, on a natural occasion of its use, the speaker of the sentence does not have to know (or believe he knows, a distinction we will not continue to make) whether in fact *a* or *b* is the case. Thus we may naturally assert that the man on the table is hurt without having to know whether the man is Albanian or not, so the sentence is correctly judged to be vague in this respect.
>
> On the other hand, in a normal assertion of *the chickens are ready to eat* the speaker is expected to know whether the chickens are ready to be eaten or rather are ready to dine. So this sentence does not satisfy our criterion of vagueness, and is more plausibly judged ambiguous. [...] All we are saying then is that if a speaker can remain indifferent between alternatives *a* and *b* and still meaningfully assert some sentence then the sentence is vague not ambiguous according as *a* or *b* obtains.

Thus, a speaker may make a true utterance by saying *The man on the table is hurt* in a number of possible worlds comprising the set of worlds in which the man on the table is Albanian and the set of worlds in which he is not Albanian. And a speaker may make a true utterance in saying *The chickens are ready to eat* in a number of possible worlds comprising the set of worlds in which the chickens are ready to be eaten and the set of worlds in which the chickens are ready to dine. In deciding whether the respective utterance is vague or ambiguous we probe into our – linguistic knowledge informed – intuition as to whether the speaker ought to or need not be able to remove the indeterminacy concerning these different sets of possible worlds in which the utterance is true.

Lakoff's (1970) *so*-test is designed so as to sharpen our judgement of whether a speaker can remain indifferent (as Keenan says) with respect to differences between states of affairs which in isolation can all be referred to truthfully by using a given sentence-string.[4] Lakoff considers clearly ambiguous sentences such as (3a) in comparison to clearly vague sentences such as (3b).

(3) a. Selma likes visiting relatives
b. Harry kicked Sam

[4] "A sentence is an output of grammar, a triple complex of syntactic, semantic and phonological information. A sentence-string is an uninterpreted surface sentential sequence." (Kempson & Cormack 1981: 302, n. 1.)

The ambiguity of (3a) is obvious. (3b) is vague in that Harry could have kicked Sam with his left or his right foot, for example. Lakoff observes that adding *and so does/did X* to (3a, b), as in (4a, b), results in a significant difference as to possible readings.

(4) a. Selma likes visiting relatives and so does Sam
b. Harry kicked Sam and so did Pete

(4b) can be used to refer truthfully to the state of affairs where Harry kicked Sam with his left foot and Pete kicked Sam with his right foot. In contrast, (4a) cannot be used to refer truthfully to a state of affairs where Selma likes going to visit relatives and Sam hates going to visit relatives but likes relatives who are visiting. That is, it is possible to associate one of the *vaguely* different alternatives of interpretation with the first clause of (4b) and the other with the conjoined *so*-clause, but it is *not* possible to associate one of the *ambiguously* different alternatives of interpretation with the first clause of (4a) and the other with the conjoined *so*-clause. These are linguistic effects resulting from our knowledge of the lexical-syntactic structure of the sentences involved and the way they are semantically computed (which I assume is compositional).

This observation can be applied as a test for distinguishing ambiguous and vague sentences also in cases where, supposedly, different quantifier scope relations are involved. (Well-known objections to the applicability of the test in the relevant cases will be discussed shortly.) Consider a model in which there are three Roman and three Greek letters and three numbers. (5a) appropriately and truthfully describes the situation depicted by (5b).

(5) a. Every Roman letter is mapped to some number, and so is every Greek letter

b.


Thus, the clause *Every Roman letter is mapped to some number*, which is parallel to (1b) in the relevant respects, turns out to be vague rather than ambiguous.[5] Vague readings are not to be distinguished by different LF-representations. Thus we have lost a motivation for assuming that sentences like (1b) are ambiguous between two truth-conditionally distinct interpretations due to reversed quantifier scope relations represented along the lines of the logical formulae in (2). Consequently, we have also lost a motivation for postulating QR, for it is the function of QR to attain different quantifier scope relations. In contrast to (5a), however, (6a) cannot be used to refer to (6b). So there seems to be genuine ambiguity involved in sentences such as (1a), to which *Some Roman letter is mapped to every number* is parallel in the crucial respects.

(6) a. Some Roman letter is mapped to every number, and so is some Greek letter

b.


[5] In a note, Hornstein (1995: 237f., n. 12) comes to the same conclusion with respect to the example *Every man kissed a woman*. In contrast to the approach taken in the present paper, Hornstein, although he aims at doing away with QR as well, still assumes that there are quantifier scope relations at issue in such sentences as in (1).

It has been argued that the *so*-test cannot be applied in cases where one of the different readings entails the other, i.e. where the different readings stand in the relation of what Zwicky & Sadock (1975) call "privative opposition".[6] This is because "the existence of the more general understanding [i.e. the entailed one] guarantees that we will get all possible understandings" with the result that "we will always conclude that we are dealing with a lack of specification [i.e. 'vagueness']". (Ib.: 23.) Although true, this is no argument against what has been said above about ambiguity and vagueness with respect to sentences like (1a), (1b), *Every Roman letter is mapped to some number* and *Some Roman letter is mapped to every number*. For the claim that one reading of such sentences entails the other follows on the assumption that these readings correspond to the predicate calculus formulae of (2), for which it holds indeed that the $\exists\forall$-formula logically entails the $\forall\exists$-formula. However, it is my claim that the differences in reading between the respective sentences do not correspond to these formulae. Hence, there is no reason to assume *a priori* that in the semantics which *is* appropriate there holds an entailment relation between the respective readings as well. Moreover, if there was an entailment relation between the readings of the respective sentences, then we would expect to get vagueness as the result of the application of the *so*-test not only with sentences like (1b), i.e. those which exhibit the *every-some* order, but also with those like (1a), i.e. those which exhibit the *some-every* order. The fact that this is not the case, as shown by (6), proves that the *so*-test is indeed applicable in the cases in question.

I would like to present one more argument for the claim that sentences like (1a) are ambiguous while those like (1b) are vague. Imagine a situation in which various people tell you truthfully what is going on between a group of three girls, Mary Miller, Mary Hunt, and Mary Spencer, and a group of three boys, Peter Smith, Peter Jones, Peter Hill. A first communicator tells you that Peter Smith kissed Mary, another that Peter Jones kissed Mary, and a third that Peter Hill kissed Mary, without your having any idea about which Mary each communicator has in mind. Your utterance of (7) is appropriate and true with respect to the given domain of discourse, and nobody has the communicative right to expect from you that you are able to precisify what you mean by *some girl* (i.e. either 'some specific/singular girl' or 'some girl or other but not some specific/singular girl').[7]

(7) Every boy kissed some girl

You cannot be said to equivocate in uttering (7), and you are fully justified in refusing to precisify along the lines just mentioned, for otherwise you would run the risk of saying something false.[8] You are as justified in uttering (7) as the speaker from Keenan's passage above is justified in uttering *The man on the table is hurt* without knowing whether the man is Albanian or not.

Compare this situation with one in which a communicator tells you truthfully that Peter kissed Mary Miller, another that Peter kissed Mary Hunt, a third that Peter kissed Mary Spencer, without your having any idea about which Peter each communicator has in mind. Suppose now you uttered (8) with respect to the given domain of discourse.

(8) Some boy kissed every girl

---

[6] See also Kempson & Cormack 1981, for instance. Actually, this argument extends to the whole family of tests for ambiguity to which the *so*-test belongs (called "identity tests" by Zwicky & Sadock).

[7] On the notion of precisification and its relation to the vagueness/ambiguity distinction see Pinkal 1995 [1985], 1991.

[8] Cf. Pinkal's (1995 [1985]: 100) criterion that "[p]ure vagueness is present when an indefinite expression does not allow natural precisifications."

Of course, this utterance is also a true one. However, now I am justified in reproaching you with equivocation, i.e. with not being able to precisify what you mean by *some boy* although a felicitous utterance of (8) presupposes that you should be.[9] You are in a communicatively infelicitous position parallel to that of a person who utters *The chickens are ready to eat* without knowing whether the chickens are ready to be eaten or whether the chickens are ready to dine (although to a much more subtle degree). In this case, you have no communicative right to remain indifferent as to the piece of knowledge whether some specific/singular boy or some boy or other but not some specific/singular boy kissed every girl. This difference between (7) and (8) supports the claim that the former is vague while the latter is ambiguous.

These intuitions might be felt to be delicate and subtle. Yet they are supported by much more robust intuitions about the 'behavior' of (7) and (8) under negation.

(9) a. It is not true that every boy kissed some girl
b. It is not true that some boy kissed every girl

With respect to the first state of affairs, (9a) is clearly false irrespective of whether there was one specific Mary or some Mary or other who was kissed by every Peter. In contrast, we do not know which truth value to assign to (9b) with respect to the second state of affairs. In (9a), we are confronted with the negation of one sentence which (i.e. the negation) is false. In (9b), we are confronted with the negation of an ambiguous sentence-string which corresponds to one sentence which is false (some Peter or other kissed every Mary) and to a second sentence about which we do not have enough information to say if it is false or true (some specific Peter kissed every Mary).[10]

If we continue to think in terms of quantifier scope relations about the ambiguity involved here, then the problem is how to generate different scope relations for sentences like (1a) and block them for sentences like (1b). This may be done along the lines suggested by Hornstein (1995, 1999; see also fn. 5). As an alternative, I propose an account in terms of focus structure in connection with type semantic considerations which is not based on scope relations.

3. Focus structure and its syntactic representation

Let us assume that every representation of a root clause has either the general structure in (10a) or the one in (10b).

(10) a. $[_{FocP}\ \alpha\ [_{IP}\ \beta\ ]]$ b. $[_{IP}\ \alpha\ ]$

with one of the three representations in (11) as possible realisations:[11]

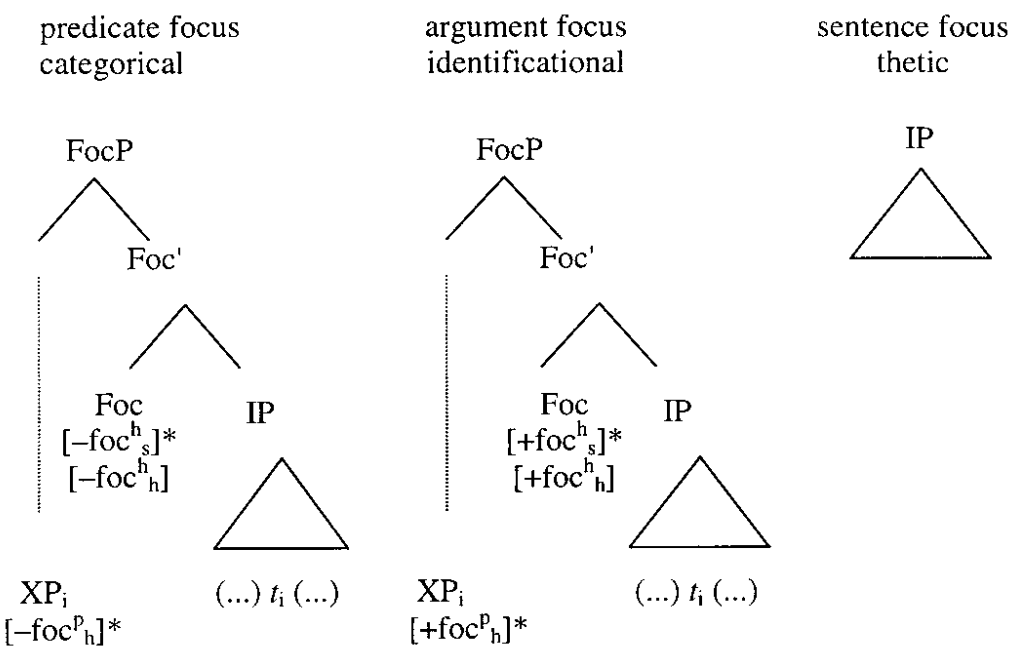
---

[9] Cf. Pinkal (1995 [1985]: 81): "Expressions that are ambiguous in the narrow sense require precisification."

[10] I implicitly relegate the issue of vagueness and ambiguity to the lexical characteristics of *some* in this argumentation, which recalls that of Fodor & Sag (1982). Indeed, as will become clear below, my account of the ambiguity of sentences like (8) in terms of focus structure is closely linked to one in terms of the lexical ambiguity of *some*. The point of my approach is that this lexical ambiguity is exploited differently in sentences like (8) as compared to those like (7).

[11] In my presentation of the paper at DGfS 2001, I assumed that in thetic sentences there is a FocP as well and that the whole IP moves to spec-Foc. For syntactic reasons which are of no interest in the present context, I have abandoned this assumption. Nothing of significance for the semantic questions addressed here follows from this modification.

(11)



The concepts of predicate focus, argument focus and sentence focus structures are taken from Lambrecht (1994). In his theory, focus structure is defined in relation to a specific kind of presupposition, the so-called relevance presupposition, of which there are three types, each being associated with one of the three focus structure types.

The relevance presupposition associated with predicate focus structure determines the relevance of the respective utterance as providing relevant predicative information about a discourse entity under discussion, that is, about a topic. (12) provides a discourse fragment which illustrates a predicate focus utterance in A's reply, with *my car* or the pronoun *it* being the topic expression. (Small capitalisation here and in the examples below signifies a nuclear pitch accent on the respective word; a falling pitch accent would be appropriate.)

(12) predicate focus structure
Q: What happened to your car?
A: My car/It broke DOWN. (from Lambrecht 1994: 223)

A sentence with predicate focus structure corresponds to a categorical sentence from the well-known thetic/categorical distinction (see e.g. Sasse 1987, Drubig 1992, Lambrecht 1994: pass.).

The relevance presupposition associated with argument focus structure determines the relevance of the respective utterance as providing the missing information in a relevant, variable containing, that is, open proposition. (13) provides an illustrating discourse fragment. *X broke down* is the relevant open proposition, and the phrase *my car* in A's reply, which is both an information-structural argument[12] and identificational focus expression, provides an identificational constant for the variable *x*.[13]

[12] It should be noted that the "word 'argument' in 'argument focus' is used here as a cover term for any non-predicating expression in a proposition, i.e. it includes terms expressing place, time, and manner. It is neutral with respect to the issue of the valence of predicates ('subcategorization') and the argument-adjunct distinction." (Lambrecht 1994: 224.)

[13] For É. Kiss (1998), who distinguishes informational from identificational foci, the latter must be exhaustive. This is not necessarily the case for Lambrecht (1994: 122f.). I follow Lambrecht without further discussion.

(13) argument focus structure
Q: I heard your motorcycle broke down?
A: My CAR broke down. (from Lambrecht 1994: 223)

A sentence with argument focus structure is also called identificational by Lambrecht (1994).

The relevance presupposition associated with sentence focus structure is zero. This does of course not mean that the utterance is irrelevant nor that it is not associated with any presuppositions. It means that there is neither a topic nor an open proposition in relation to which the respective utterance is relevant. An illustration is given in (14).

(14) sentence focus structure
Q: What happened?
A: My CAR broke down. (from Lambrecht 1994: 223)

I conceive of a relevance presupposition as an assumption held by the speaker which belongs to the context of an utterance and which, just like any other presupposition, is essential for an assertive utterance to be or not to be truth-evaluable.[14] Associating an inappropriate type of relevance presupposition with such an utterance results in its failure to be truth-evaluable.

I will use the categorical/identificational/thetic terminology in the following, replacing Lambrecht's (1994) predicate focus structure with categorical focus structure, argument focus structure with identificational focus structure, and sentence focus structure with thetic focus structure. On the one hand, this is because the thetic/categorical terminology and distinction is older and more widely known. On the other hand, I have made the experience that especially the terms 'predicate focus' and 'argument focus' tend to produce confusion. However, I adhere to Lambrecht's threefold distinction of focus structure types both with respect to his characterization of them in terms of different kinds of relevance presupposition and with respect to the idea that these three types – categorical, identificational, thetic – are the possible structural realization in an information-structural dimension called focus structure.[15]

I am assuming that focus structure is incorporated in syntax such that every root clause, and thus its derivation, manifests one of the three focus structure types. Root clauses (or sentences) in the traditional sense, which are focus structurally unspecified, have no theoretical status, that is, they do not exist in the theory proposed here.

The essential characteristic of the derivation of focus-structured root clauses – or, simply, root clauses – is the absence or presence of topic and focus features and consequently the absence or presence of phrase movement to the specifier position of a head Foc of a functional projection FocP (spec-Foc). In categorical and identificational sentences, there is movement to spec-Foc. The phrase which moves to spec-Foc carries a head feature [$\pm foc^{p}_{h}$] which is checked against the corresponding specifier feature [$\pm foc^{h}_{s}$] in the Foc-head such that both of them are erased (erasure being symbolized by the star (*) in the tree structures of (11)). The head feature [$\pm foc^{h}_{h}$] of the Foc-head is not erased. It is interpretable, that is, it has a semantic function and thus contributes to

[14] On the role of presuppositions and context in general with respect to truth evaluability, see e.g. Chierchia & McConnell-Ginet 2000 [1990]: ch. 6; as to the conception of 'context' as a set of assumptions, see Sperber & Wilson 1995 [1986].

[15] The other information-structural dimension has to do with the speaker's assumptions about the degrees of identifiability and activeness ('given/new') of discourse entities in the hearer's mind and the way these assumptions are lexical-syntactically reflected in sentences.

the interpretation of the clause.[16] If [–foc]-features are involved, we are confronted with categorical focus structure, and the phrase which moves to spec-Foc is a topic expression. If [+foc]-features are involved, we are confronted with identificational focus structure, and the phrase which moves to spec-Foc is an identificational focus expression. In a thetic sentence there are no [±foc]-features, no FocP and thus no movement to spec-Foc.

For the limited purposes in this paper, I restrict myself to considerations of cases where nominal expressions move to spec-Foc. I call these nominal expressions 'DP', making no distinction between quantified and non-quantified nominal expression.

4. The semantic function of the [±foc]-features

In truth-functional semantics inspired by Montague (see Thomason (ed.) 1974, see also Heim & Kratzer 1998), transitive verbs like *offend* and *see* as in (15) = (1) are commonly said to be of semantic type <e,<e,t>>.

(15) a. Some publisher offended every linguist
b. Everyone saw someone

If we take a flexible type *in situ* approach for the complement and the subject DPs with which such verbs combine semantically, we see that in principle these may be of three types:

(16) a. e as object and subject
b. <<e,<e,t>>,<e,t>> as object
c. <<e,t>,t> as subject

The types given in (16b, c) correspond to the generalized quantifier interpretation of a subject or object DP, that is, an interpretation as a set of sets. While DPs like *everyone* or *every publisher* arguably have only the generalized quantifier interpretation,[17] there are other DPs, including proper names, which are principally interpretable either as individuals, i.e. type e expressions, or as generalized quantifiers.[18]

Referential expressions can be identified with type e expressions. It is well known that indefinite quantificational DPs like *someone* or *some publisher* as in (15) above can be either referential or non-referential. That is, such DPs are principally type ambiguous between the three types mentioned in (16). This holds also for other kinds of indefinite quantificational DPs, such as *a man* or *one man*, but rarely, if ever, for DPs like *everyone* or *every publisher* (see fn. 17). Let us simplify matters and assume that for the

[16] As to the checking mechanism see e.g. Radford 1997: ch. 5, towards which my sketch of [±foc]-feature checking is roughly oriented. Technically different and for syntax at large probably more appropriate accounts are available and still others imaginable. There should be no problem for anyone of them to accommodate movement of a phrase to the specifier position of some functional phrase with different semantic processing of that phrase depending on differences in the features responsible for the movement.

[17] According to Partee (1987: 132), there are no e-type readings only for such DPs as are "most clearly 'quantificational': *no man, no men, at most one man, few men, not every man, most men* [but see also Partee's note 21 on *most*-DPs]. *Every man* could get an *e*-type reading [...] in case there is only one man; but linguistically it never seems to act as a singular 'referential' term".

[18] As to the interpretation of proper names as generalized quantifiers, see e.g. Chierchia & McConnell-Ginet 2000 [1990]: 512f.

latter the referential type e is principally ruled out. These, then, are lexical facts, ultimately determined by the lexical entries for the items *some(one)*, *every(one)*.

Let us assume that the [±foc]-features in the Foc-head determine the semantic types of the phrases in spec-Foc in the following way:

(17) a. $[-foc^{h}_{h}]$ selects type e for a DP in spec-Foc.
b. $[+foc^{h}_{h}]$ selects type <<e,t>,t> for a DP in spec-Foc.

That DPs in spec-Foc of a [–foc]-head are of type e is supported by authors who claim that topic expressions are referential.[19]

If we apply the type selection mechanism in (17) to the examples in (15), we see that (15a) is threefold ambiguous, as shown in (18).

(18) a. categorical:
$[_{FocP}$ [Some publisher]$_{e}$ Foc$_{[-foc]}$ $[_{IP}$ *t* offended [every linguist]$_{<<e,<e,t>>,<e,t>>}$]]
b. identificational:
$[_{FocP}$ [Some publisher]$_{<<e,t>,t>}$ Foc$_{[+foc]}$ $[_{IP}$ *t* offended [every linguist]$_{<<e,<e,t>>,<e,t>>}$]]
c. thetic:
$[_{IP}$ [Some publisher]$_{e\sim<<e,t>,t>}$ offended [every linguist]$_{<<e,<e,t>>,<e,t>>}$]

The subject *some publisher* may be in spec-Foc of a [–foc]-head (categorical), or in spec-Foc of a [+foc]-head (identificational); or there are no [±foc]-features and no FocP at all, and the type selection mechanism of (17) does not apply (thetic). In all three cases, the object *every linguist* is of type <<e,<e,t>>,<e,t>>, as type e is ruled out lexically. As regards the subject *some publisher*, it is of type e in the categorical case, of type <<e,t>,t> in the identificational case, and in the thetic case, it is indeterminate between types e and <<e,t>,t>, since its type has not been selected. (I represent indeterminateness or vagueness between types and interpretations by the tilde.) The interpretations of (18a-c) in λ-notation are given in (19a-c).

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[19] See e.g. Strawson 1971 [1964]: 97, Reinhart 1981: 65ff., Prince 1981: 251ff., 1984: 217f., Sasse 1987: 555, É. Kiss 1995: 7, Erteschik-Shir 1997: pass. As pointed out by J. Jacobs (in DGfS 2001 conference discussion), this raises the problem that an *every*-DP cannot be topic expression. How, then, can cases like the following be explained, where *everybody* in A's utterance seems to be a topic expression?

a. Q: Where did everybody go?
A: Everybody went home.

The only reason why we may think that *everybody* in (aA) is a topic expression is that it appears in the context question, i.e. its denotation is given or 'active' in Lambrecht's (1994) sense. However, givenness/activeness of an expression's denotation/referent is no sufficient condition for its being a topic expression (see e.g. ib.: pass.). I would argue that (aA) is a thetic sentence and that, consequently, *everybody* is neither topic nor identificational focus expression. Note that a more natural utterance than (aA) in the context of (aQ) is (bi) below, which is derived from the identificational focus structure (bii) by a discourse or processing effort minimization rule which deletes everything but the identificational focus expression (cf. Sperber & Wilson 1995 [1986]: 211).

b. i. Home.
ii. HOME, they went.

The slight unnaturalness of (aA) is due to the fact that a *wh*-question suggests an identificational sentence as answer, not a thetic one. But only a small amount of pragmatic inferencing is needed to achieve the required contextual effect (in the sense of Sperber & Wilson 1995 [1986]) by uttering a thetic sentence instead of an identificational one in cases like this.

(19) a. $[\![(18a)]\!] = [\lambda x : x \in D_e . x$ offended every linguist] (some publisher)
b. $[\![(18b)]\!] = [\lambda x : x \in D_{<e,t>} .$ some publisher x] (offended every linguist)
c. $[\![(18c)]\!] = [\![(18a)]\!] \sim [\![(18b)]\!]$

In contrast to (15a), (15b) appears to be only twofold ambiguous, since the selection of type e for *everyone* in spec-Foc by a [–foc]-head and thus categorical focus structure is ruled out. As shown in (20), (15b) may have either thetic focus structure, or identificational focus structure with *everyone* in spec-$Foc_{[+foc]}$, where the semantic type of the subject *everyone* is <<e,t>,t> and the object *someone* is indeterminate between types e and <<e,<e,t>>,<e,t>>.

(20) a. identificational focus structure:
$[_{FocP}$ [Everyone]$_{<<e,t>,t>}$ $Foc_{[+foc]}$ $[_{IP}$ *t* saw [someone]$_{e \sim <<e,<e,t>>,<e,t>>}$]]
b. thetic focus structure:
$[_{IP}$ [Everyone]$_{<<e,t>,t>}$ saw [someone]$_{e \sim <<e,<e,t>>,<e,t>>}$]

Actually, (20a) and (20b) turn out to have identical, if vague, interpretations. The vagueness is due to the type indeterminacy of *someone*, which produces vagueness in the reading of the VP *saw someone* (see (21a)) and consequently in that of the whole clause (see (21b)).

(21) a. $[\![$saw someone$]\!]$ =
$[\lambda x : x \in D_e .$ saw x] (someone) ~ $[\lambda x : x \in D_{<e,<e,t>>} .$ x someone] (saw)
b. $[\![(20a)]\!] = [\![(20b)]\!] = [\lambda x : x \in D_{<e,t>} .$ everyone x] (saw someone)

The LF-difference between (20a) and (20b) is semantically conflated to (21b), which itself is vague in the way indicated.

5. Taking stock: Focus structure instead of quantifier scope

It is my claim that what has traditionally been analysed as an ambiguity in terms of the scopal relations between existential and universal quantifiers in sentences such as in (1) = (15) is more appropriately captured by the focus structure differences just discussed.

(15) a. Some publisher offended every linguist
b. Everyone saw someone

The truth-conditionally different interpretations of a sentence like (15a), which many authors have analyzed in terms of $\exists\forall$ vs. $\forall\exists$ quantifier scope relations, reflect the ambiguity between the categorical reading on the one hand and the identificational and thetic readings on the other hand. The intuition that there is a reading of (15a) in which the speaker has some specific publisher in mind of whom he predicates that he offended every linguist, without actually specifying the identity of this publisher (see Kamp & Reyle 1993: 289f.), is represented as the categorical reading, where a [–foc]-head selects the referential type e denotation for the indefinite quantificational DP in spec-Foc. In contrast to (15a), (15b) does not have a categorical reading. This corresponds to the fact that (15b) is ultimately not ambiguous at all, as we have seen. I would maintain that what linguists have in mind who consider sentences like (15b) to be ambiguous in terms of quantifier scope relations is rather the vagueness resulting from the type indeterminateness of the indefinite quantificational DP in object position.

6. On the structural ambiguity contributed by thetic focus structure

Often it is possible to find states of affairs with respect to which one reading of an ambiguous sentence is true and the other false. Thus, with respect to the state of affairs depicted in (22a), the categorical clause (22b) is false while the identificational clause (22c) is true .

(22) a. $\alpha \longrightarrow 1$
$\beta \longrightarrow 2$
$\gamma \longrightarrow 3$

b. $[_{FocP}$ [Some letter]$_e$ $Foc_{[-foc]}$ $[_{IP}$ *t* is mapped to [every number]$_{<<e,<e,t>>,<e,t>>}$]]

c. $[_{FocP}$ [Some letter]$_{<<e,t>,t>}$ $Foc_{[+foc]}$ $[_{IP}$ *t* is mapped to [every number]$_{<<e,<e,t>>,<e,t>>}$]]

Indeed, this relation between states of affairs and linguistic expressions leads to the detection of structural ambiguity. But does this mean that, conversely, it should be possible to find ambiguity-sensitive states of affairs for every two structures that represent an ambiguity? I do not think so. While each truth-conditional difference in expressions using the same lexical material is reflected as a structural ambiguity in the syntax, there is, as far as I can see, no conceptual requirement that each case of structural ambiguity correspond to a difference in truth conditions. If this is correct, then there is no problem for my account when I concede that there is no state of affairs which is ambiguity-sensitive such that reference to it by a thetic sentence yields a truth evaluation not shared by any of the other corresponding sentences.[20] In other words: If some thetic sentence *T* has either a corresponding categorical or identificational sentence, as in (20), then *T* shares its truth evaluation with the corresponding categorical or identificational sentence. If some thetic sentence *T* has both corresponding categorical and identificational sentences, as in (18), then the truth evaluation of *T* is identical to that of at least one of the two others. In still other words: Depending on whether a thetic sentence *T* has one (categorical or identificational) or two (categorical and identificational) corresponding sentences, the set of truth conditions for *T* is either identical to the set of truth conditions for the one corresponding sentence ($C_T = C_{C/I}$),[21] or is the union of the sets of truth conditions for the two corresponding sentences ($C_T = C_C \cup C_I$).[22] Conversely, for categorical and identificational sentences which have a corresponding thetic sentence this means that the LF-difference existing between them does not correspond to a difference in truth conditions. Although LF-different, a thetic sentence does not differ truth conditionally from its corresponding categorical and/or identificational sentence(s).

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[20] In the present context I mean by 'corresponding sentences' those sentences which are not distinguished by the usual orthographical representation of a sentence-string, but which have different focus structures.

[21] With C_T the set of truth conditions for a thetic sentence *T*; $C_{C/I}$ the set of truth conditions for either the corresponding categorical or identificational sentence.

[22] With C_C the set of truth conditions for the categorical and C_I the set of truth conditions for the identificational sentence corresponding to *T*.

7. Implications and speculations

The main objective of the present paper was to propose an account of the different readings of such sentences as in (1) = (15) in terms of focus structure and type indeterminateness instead of the common quantifier scope explanation. However, the approach taken here implies that different focus structure types for sentence-strings have to be assumed not only for those cases where quantificational expressions in clausal subject and object positions are involved, but for all kinds of sentences.[23] That is, every root clause (apart from those mentioned in fn. 23) has one of the three focus structure types derived by the syntactic mechanism explained in section 3 above and, in the categorical and identificational cases, is subject to the type selection mechanism postulated in (17) with attendant semantic implications and, possibly, truth conditional effects. I believe that this is indeed the case. For example, sentence-strings like those in (23) are indeed focus structurally ambiguous in the way indicated.

(23)	a.	John is ill	
	a'.	categorical:	$[_{FocP}\ [John]_{e}\ Foc_{[-foc]}\ [_{IP}\ t\ is\ ill]_{<e,t>}]$
	a''.	identificational:	$[_{FocP}\ [John]_{<<e,t>,t>}\ Foc_{[+foc]}\ [_{IP}\ t\ is\ ill]_{<e,t>}]$
	a'''.	thetic:	$[_{IP}\ [John]_{e\ \sim\ <<e,t>,t>}\ [is\ ill]_{<e,t>}]$
	b.	Somebody is ill	
	b'.	categorical:	$[_{FocP}\ [Somebody]_{e}\ Foc_{[-foc]}\ [_{IP}\ t\ is\ ill]_{<e,t>}]$
	b''.	identificational:	$[_{FocP}\ [Somebody]_{<<e,t>,t>}\ Foc_{[+foc]}\ [_{IP}\ t\ is\ ill]_{<e,t>}]$
	b'''.	thetic:	$[_{IP}\ [Somebody]_{e\ \sim\ <<e,t>,t>}\ [is\ ill]_{<e,t>}]$
	c.	Everybody is ill	
	c'.	identificational:	$[_{FocP}\ [Everybody]_{<<e,t>,t>}\ Foc_{[+foc]}\ [_{IP}\ t\ is\ ill]_{<e,t>}]$
	c''.	thetic:	$[_{IP}\ [Everybody]_{<<e,t>,t>}\ [is\ ill]_{<e,t>}]$

The point is that we do not always experience truth-conditional effects with these ambiguities. We do not experience truth-conditional effects between (23a') and (23a''), for instance. On the one hand, this is because the distinction between the individual John and the set of sets to which John belongs is truth-conditionally irrelevant[24] – although not semantic-computationally irrelevant, for the direction of functional application is different between (23a') and (23a'').[25] On the other hand, the circumstances in which each of them can be appropriately uttered are disjoint. And this is because their relevance presuppositions (see above, sect. 3) are different, namely 'John is a topic for comment *x*' in the categorical case and '*x* is ill' in the identificational case.[26]

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[23] Except some kinds of thetic sentences like weather sentences (*It's raining*) or expletive *there*-sentences (*There was once a king*), where we know from the presence of an expletive in initial position that they can neither be categorical nor identificational, as expletives can neither be topic nor identificational focus expressions. On expletive *there*-sentences as thetic sentences see also Drubig 1992: 167, pass.

[24] This does not seem to be the case with indefinite quantificational expressions like *somebody* as in (23b), where the categorical reading with e-type (referential) *somebody* may be argued to differ truth conditionally from the identificational reading with <<e,t>,t>-type (quantificational) *somebody*.

[25] In (23c), there are no differences in the semantic type of *everybody* nor, consequently, differences in the direction of functional application between the identificational and the thetic reading. Hence we get semantic conflation of syntactically different structures.

[26] Note that this difference has an intonational reflex in that *John* will carry the nuclear pitch accent in the identificational sentence and no nuclear pitch accent in the categorical sentence.

But, of course, the relevance presuppositions of categorical, identificational and thetic sentences are always different, and thus the circumstances in which they can be appropriately uttered are always disjoint. Does it make (more than trivial) sense to compare the truth conditions of sentences which can never be uttered in the same circumstances? If the answer is no, as I am inclined to believe, then the general truth-conditional neutrality of thetic focus structure with respect to the corresponding categorical and/or identificational sentence and the truth-conditional neutrality of categorical and identificational sentences in cases like (23a') vs. (23a'') may turn out to be a meaningless construct we can do away with. The most appropriate way of viewing the relation between focus structured sentences, truth conditions and relevance presuppositions may then be this: Every (focus structured) sentence has its own set of appropriateness conditions of use restricted (among other things) by its relevance presupposition; the set of truth conditions is relativized to the set of appropriateness conditions.

8. Conclusion and outlook

In this paper I have discussed an alternative approach to the analysis of one simple type of sentences involving indefinite quantificational expressions for which ambiguities in terms of quantifier scope variations have traditionally been assumed. Such sentences and their different readings have been used to motivate the syntactic operation of quantifier raising at LF (QR). That is, QR has been invented in order to derive the different quantifier scope relations that we find in predicate calculus formulae of the $\exists\forall/\forall\exists$-type, which supposedly represent the different readings of such sentences. It has been argued that these logical formulae do not adequately express the differences in interpretation of such examples and that an account in terms of focus structure and type semantic considerations is more appropriate. In this analysis of the respective examples there is no need for QR.

The reader will rightly guess that I am dreaming of being able to dispense with both the quantifier scope hypothesis and the QR mechanism in all the other relevant examples as well. An attempt at the realization of such a dream will require much more work, a project which cannot be launched here. However, in response to a question raised by a commentator,[27] I would like to address the case of so-called inverse linking phenomena in the Appendix.

Appendix: Some remarks on inverse linking phenomena

'Inverse linking' refers to those examples where the reading in which a lower quantificational expression seems to take scope over a higher quantificational expression is the only one possible or at least the strongly preferred one (see e.g. May 1990 [1977]: 61ff., 1985: pass., Heim & Kratzer 1998: 197f., 221ff., 233ff.). The following are two cases in point.

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a. categorical: John is ILL
b. identificational: JOHN is ill

[27] In the discussion of my paper at DGfS 2001.

(24) a. One apple in every basket is rotten (from Heim & Kratzer 1998: 197)
b. Somebody from every city despises it (from May 1985: 68)

The inversely linked readings of (24a, b) are the salient, most natural ones: In every basket there is one apple which is rotten; every city has at least one citizen who despises the city of which he/she is a citizen. The point of these examples is that QR of the embedded *every*-DP seems to account straightforwardly both for the type-semantic issues involved in the semantic composition of the sentences (see Heim & Kratzer 1998: 197f. with respect to (24a)) and for the fact that the pronoun *it* in (24b) can be bound by *every city* (which it has to in the relevant reading) given standard assumptions about binding in terms of standard c-command (see ib.: 234f.).[28] As to the question of how the problem of binding may be solved in an approach in which there is no QR at all, see Hornstein (1995: 106ff., 118ff.) for various suggestions. I would like to go into some more detail about the type-semantic issue addressed by Heim & Kratzer (1998: 197) with respect to (24a).

Heim & Kratzer (1998: 197f.) present an attempt at a flexible type *in situ* analysis which fails. The essential passage is the following (ib.):

> 'in' has the same type of meaning as a transitive verb, <e,et>. So 'every' must have its type <et,<<e,et>,et>> meaning here. Thus we get:
> **[[in every basket]]** = λx . for every basket y, x is in y
> We proceed to the next node up by Predicate Modification and get:
> **[[apple in every basket]]** = λx . x is an apple and for every basket y, x is in y

Of course, combining the denotation of *apple* with that of *in every basket* by Predicate Modification will result in nothing but the non-salient (perhaps impossible) reading where there is one single apple which is in every basket and which is rotten. The analysis fails since Heim & Kratzer assume a single, rigid type for *in* here (but see ib.: 66f. and fn. 33 below) while allowing a flexible type only for *every*. However, there is no reason to assume that there is only one possible semantic type for a preposition like *in*. To assume type <e,<e,t>> for *in* and to use Predicate Modification, as Heim & Kratzer do in the above passage, is only justified if *in* is a lexical preposition.[29] Yet, *in every basket* within the DP *one apple in every basket* in the salient reading of (24a) does not seem to be a lexical PP. If it were one, then *in every basket* would denote a local space, and it would be possible to substitute the locative deictic pro-form *there* for it under preservation of meaning.[30] This is not possible, as the infelicity of (25B) suggests.

(25) A: One apple in every basket was rotten.
B: Yes, you're right. #One apple there was rotten.

Which semantic type does this 'non-lexical' *in* have?[31]

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[28] More precisely, it is QR in the form of adjunction to IP that allows for straightforward, standard, binding of the pronoun. In view of the problem that LF-extraction of *every city* from the subject violates a syntactic island condition, May (1985: 68f.) proposes an alternative to his 1977 analysis in which the embedded quantified expression does not adjoin by QR to IP but to its own containing DP. With an accordingly adjusted definition of c-command the configuration necessary for binding the pronoun is achieved.

[29] See Rauh (e.g. 1995, 1996, 1997a, 1997b) on lexical, grammatical and governed prepositions.

[30] Thanks to G. Rauh for pointing this out to me.

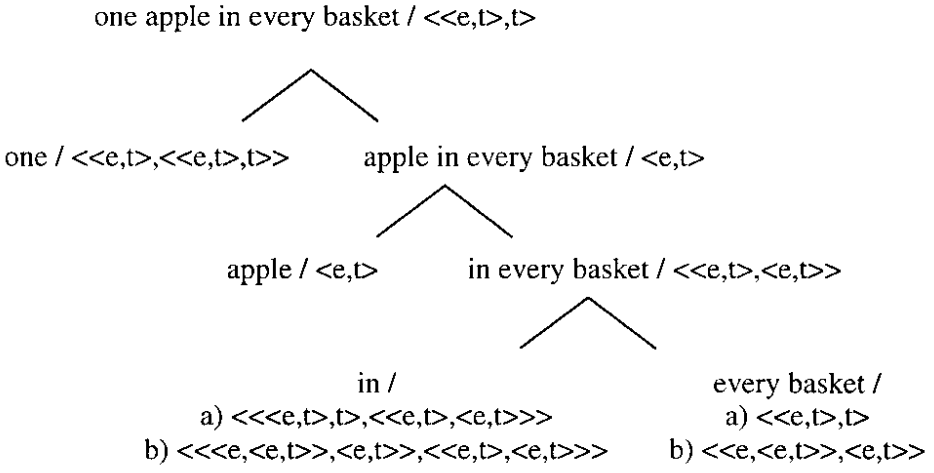
[31] I call it 'non-lexical' for brevity's sake here. In more cautious terms, it is at least not a typical lexical preposition. Nor is it a grammatical or governed preposition in Rauh's (1995, 1996, 1997a, 1997b) sense.

The syntactic bracketing of the DP *one apple in every basket*, reduced to the essentials for purposes of semantic composition, is this:

(26) [one [apple [in [every [basket]]]]]

Obviously, (25) in the salient reading of (24a), where it is subject, cannot be of type e, which leaves the generalized quantifier denotation <<e,t>,t> for it. For the quantificational determiner *one* we need that one of its alternative types which yields <<e,t>,t> when combined, i.e. <<e,t>,<<e,t>,t>> (cf. Heim & Kratzer 1998: 207, n. 26).[32] Consequently, the NP [*apple* [*in* [*every* [*basket*]]]] is of type <e,t>, that is, of the common noun type, just like *apple*. The PP *in every basket*, then, has to be combined with <e,t>-type *apple* so as to result in <e,t>-type *apple in every basket*. This means that the PP *in every basket* has to be of type <<e,t>,<e,t>>. *Every basket* being either of type <<e,t>,t> or of type <<e,<e,t>>,<e,t>>, it follows that the type of *in* is either <<<e,t>,t>,<<e,t>,<e,t>>> or <<<e,<e,t>>,<e,t>>,<<e,t>,<e,t>>>.[33]

(27)



In sum, a QR-less analysis of inverse linking sentences like (24a) does not pose any type semantic problems if we take into account that *in* here is not a typical lexical preposition and thus not of type <e,<e,t>>. This analysis undermines Heim & Kratzer's (1998) suggestion that one can hardly do without QR in view of sentences like (24a).

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[32] According to Heim & Kratzer (1998: 182) every determiner is either of type <<e,t>,<<e,t>,t>> or <<e,t>,<<e,<e,t>>,<e,t>>>. The latter is needed for DPs in object position.

[33] The type for the PP *in every basket* just derived, <<e,t>,<e,t>>, is that of the PP *in Texas*, which Heim & Kratzer (1998: 66) assume in their discussion of a Functional Application (FA) alternative to their Predicate Modification (PM) analysis of this constituent. As they assume type e for *Texas* in this PP, it follows that they derive <e,<<e,t>,<e,t>>> as the type for *in*. Note the systematic relationship between this type and the two possibilities given in (27) for *in*, such that all three types can be expressed in the general form <σ,<<e,t>,<e,t>>>, where σ is type e or <<e,t>,t> or <<e,<e,t>>,<e,t>> depending on which of these the DP complement of the preposition has. It seems appropriate to work with PM (and the corresponding types) when confronted with lexical prepositions and with FA (and the corresponding types) when confronted with non-lexical prepositions. Operating by FA in the interpretation of non-lexical PPs may be an alternative to considering them as either semantically vacuous or as denoting "the identity function of the appropriate type" such that a PP like *of John* is analyzed as ⟦of John⟧ = ⟦John⟧ (Heim & Kratzer 1998: 62). Note that assuming type <e,<<e,t>,<e,t>>> for *of* if combined with e-type *John* results in the PP *of John* of type <<e,t>,<e,t>>, which can be combined with any type <e,t> expression, such as *father* or *proud*, for example, so as to result in another constituent of type <e,t> (*father/proud of John*) – a satisfactory result.

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Information Structure and the Status of NP in Russian*

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1. Introduction

In his 1995 monograph, Apresyan suggests that it would be extremely interesting to investigate the means of expressing the definiteness/indefiniteness opposition in languages that do not have articles (Volume 1, p. 258, fn. 3). In this paper, I will attempt to find possible correlations between the organization of discourse and the positions in which the (in)definite nominals may appear within a sentence of Russian. I will examine the information structure of Russian sentences and, based on the previous analyses, provide a new account of their organization with respect to information packaging. I will then look at various nominal elements contained in certain parts of a sentence and arrive at a system describing the distribution of NPs in Russian with respect to the information structure.

The ultimate goal of this paper is to establish and motivate a system of correlations between various types of NPs and functions of information structure. This goal will be achieved by determining which characteristic of a NP may serve as a criterion allowing to provide a one-to-one mapping.

2. Information structure of Russian

In this section, I discuss the organization of Russian sentences with respect to information structure. I will consider the main points of previous research and propose a new analysis based on Vallduví's approach to the structure of discourse (1992). I will provide a brief account of both the neutral and emphatic sentences concentrating on the role word order plays in both contexts.[1]

2.1. Traditional Analyses

The two major traditional approaches to the problem of sentential word orders and discourse functions in Russian and other Slavic languages are Functional Sentence Perspective (FSP) (Mathesius 1964, Adamec 1966, Isačenko 1966, Sgall 1972, Hajičová

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[1] In some important sources (e.g., Yokoyama 1986; Krylova & Khavronina 1988; King 1995) neutral sentences are referred to as non-emotive, while emphatic sentences are called emotive. In this paper, I will use the traditional terminology, namely, the neutral vs. emphatic opposition.

1974, Krylova & Khavronina 1988, inter al.) and Topic Focus Articulation (TFA) (Firbas 1964, Rochemont 1986, Yokoyama 1986, inter al.). According to these analyses, a Russian sentence consists of two parts: a theme and a rheme (FSP) or a topic and a focus (TFA). The first part of the sentence constitutes given information while the second part constitutes new information. Within these parts, the material may also be arranged along a hierarchy known as Communicative Dynamism, a notion introduced by Firbas (1966): new information is more important and, therefore, more dynamic than older information (see Sgall, Hajičová, & Panevová 1986 for an overview).

However, problems with the two-way division were recognized. First, under the traditional approach, all material in a sentence must fall into the theme or the rheme. Rheme would contain the focused material and, therefore, theme would have to comprise the rest of the sentence including both the topic(s) and the discourse-neutral material. In particular, the role of non-focused verb in the division of the sentence was questioned. Some additional function should be assigned to such a verb, which does not seem to fit the definition of focus (or rheme) and, at the same time, may not be considered part of topicalized (or thematic) material.[2] To solve this problem, Firbas (1965) proposed that the verb behaved as a transition between the theme and the rheme. Therefore, the new sentence structure consisted of three parts: theme, transition and rheme.

It was later observed that non-focused verbs were not the only constituents needing a separate treatment. In fact, the issues connected with the so-called Complex Theme were discussed in Krylova & Khavronina (1988). The authors showed that within the thematic part of a sentence, independent parts could also be found. Along with multiple topics, perfectly possible in Russian, they observed the presence of material not fitting the description of topic as the items of immediate interest to both speakers. The non-topic material found in the theme was labeled discourse-neutral material.

Hence, we have two separate solutions with respect to the informational articulation of the sentence material not fitting into the previously assumed dichotomy. Combining these two ideas, i.e. allowing sentential elements other than the verb to appear in the transition, or allowing the non-focused verb to be treated as discourse neutral, we can get a three-way division into topic, discourse-neutral material, and focus (cf. King 1995). This trinomial articulation is reminiscent of Vallduví's (1992) system of discourse. His sentence consists of a mandatory focus, and the optional ground material responsible for the appropriate entry of information into the hearer's knowledge-store. The ground, in turn, is divided into two parts: the link and the tail. The link's task is to direct the hearer to a given address in the hearer's knowledge-store under which the information conveyed by the sentence should be

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[2] The claim that non-focused verb may not be considered part of the focus seems to some extent valid to me. However, Vallduví (1992), providing the bracketed structures for his examples, always includes such verbs into what he refers to as "focus." In fact, the answer to the problem whether intonationally non-focused verbs should be considered foci depends on the context. Consider the two examples below (the responses are from Vallduví, questions are mine):

(i) Q: What did the boss hate?

A: The boss hated [$_F$ the salty broccoli QUICHE].

(ii) Q: What did the boss think about the food?

A: The boss [$_F$ hated the salty broccoli QUICHE].

entered. The link must be sentence-initial and may be multiple. Finally, the tail is an element acting as a signal to indicate how the information encoded within the sentence must be entered under a given address. The position of tail is not universally constant: it is a non-focal, non-link part of the sentence.

3. Types of Speech in Russian

Let us now examine whether the proposed trinomial articulation of information is a solution for the discourse organization of the Russian sentence. Two types of sentences will be considered: neutral and emphatic. As argued by Yokoyama (1986), the difference between these two types of speech is one of sentence stress: neutral sentences have no sentence stress, while emphatic sentences have it. I will show that the presence of sentence stress plays a crucial role in discourse organization of Russian sentences, their possible structures and interpretations.

3.1. Discourse-neutral speech

In utterances characterized by neutral intonation and the lack of sentence stress, strict connection between word order and discourse functions is observed. Such sentences are organized along a scale from given to new information and topics (T) always precede foci (F), while the discourse-neutral information (NI) intervenes. Below are examples of the various patterns of discourse organization:

(1) a. Q: Kto igraet v pryatki?
who plays in hide-and-seek
'Who is playing hide-and-seek?'
A: [$_{NI}$ Igrajut] [$_{F}$ deti]. NI > F
play children
[$_{F}$ Deti] [$_{NI}$ igrajut] . #F > NI
'Children are playing hide-and-seek.'

b. Q: Čto delajut deti?
what are-doing children?
'What are the children doing?'
A: [$_{T}$ Deti] [$_{F}$ igrajut v pryatki]. T > F
children play in hide-and-seek
[$_{F}$ Igrajut v pryatki] [$_{T}$ deti]. #F > T
'The children play hide-and-seek.'

c. Q: Kto šil eto plat'je?
who sewed this dress
'Who sewed this dress?'

A: [$_T$ Eto plat'je] [$_{NI}$ šila mne] [$_F$ portnixa]. T > NI > F
this dress sewed me-DAT tailor
#[$_F$ Portnixa] [$_{NI}$ šila mne] [$_T$ eto plat'je]. #F > NI > T
#[$_{NI}$ Šila mne] [$_T$ eto plat'je] [$_F$ portnixa]. #NI > T > F
#[$_F$ Portnixa] [$_T$ eto plat'je] [$_{NI}$ šila mne]. #F > T > NI
'A tailor sewed this dress for me.'[3]

The word orders exemplified in (1a-c) show that the only order of discourse functions possible for a neutral intonation sentence of Russian is Topic(s) > Neutral Information > Focus. Intuitively, while topic and neutral information are optional, focus, being the source of new information, must be present in every sentence:

(2) Q: Kto činit igruški?
who is-fixing (**some**) toys-ACC
'Who is fixing toys?'
A: [$_F$ Mal'čik]./ #[$_T$ Igruški]./ #[$_{NI}$ Činit] [$_T$ igruški].
(a) boy (the) toys is-fixing toys

Thus, I conclude that while word order is relatively free in Russian and is not responsible for grammatical relations in this language, it is fixed with respect to the organization of discourse in the sentences with neutral intonation contour (cf. Junghanns & Zybatow 1995, Brun 2000, inter al.)

3.2. Emphatic speech

In sentences with emphatic intonation, the placement of sentence stress interacts with the discourse interpretation of the sentence. In such sentences, the word order is less constrained than in non-emphatic sentences: the focus is indicated not by means of the linear order of constituents but is marked by stress or intonation contour.[4] Hence, the location of a focused constituent does not necessarily coincide with the right edge of the sentence, as is the case with the intonationally neutral sentences. In fact, this word order is judged as marginal:

(3) a. Ivan [$_F$ VODKU] vypil.
Ivan VODKA drank
b. [$_F$ VODKU] Ivan vypil.

[3] I provide only three examples of impossible word orders with the intended meaning. However, all other structurally possible constructions are also unacceptable with the necessary interpretation and the indicated correct variant is the only possible for this context.

[4] According to Russian linguistic literature, Russian has a total of six intonation contours (IK). In this paper, I will only talk about the relevant patterns IK1 (neutral intonation) and IK2 (roughly, stressed focus intonations.) For detailed discussion of Russian intonation system, see Bryzgunova (1971, 1981); Yokoyama (1986), Krylova & Khavronina (1988) among others.

c. ?Ivan vypil [$_F$ VODKU].
'Ivan drank VODKA.'

Examples in (3) indicate that the stressed focus may be either sentence-initial or sentence-medial, while the judgement for sentence-final occurrence is degrading (3c). The following rule explains the mechanisms of assigning sentence focus:

(4) Focus Rule
Intonational focus (F_c) overrides focus marked by word order effects unless the two coincide. In the latter case, the double-marked sentence receives degrading status due to Economy (Chomsky 1991, 1992).

So far, I have established the account of structural and intonational foci assignment. Now I would like to consider the status and meaning of intonational focus in Russian and determine the differences between the two types of foci in this language. Recall that sentence-final focus in Russian (and other languages) was described as a subpart of the sentence where the information is concentrated and, more importantly, as the location of new information. However, the role of intonational focus is distinct from this definition. As claimed by King (1995, following Kiss' 1993 analysis of Hungarian intonational foci), stressed focus constitutes the category of contrastive foci. In other words, the information contained in such foci is not exactly discourse-new, but discourse-present as an implicature (e.g., within a set of related items) and, therefore, is recoverable (see Prince 1981 for discussion of the notions of givenness.) Consider the following examples:

(5) Neutral Intonation

Q:	Čto Ivan vypil?	
	what Ivan drank?	
	'What did Ivan drink?'	
A:	Ivan vypil [$_F$ vodku].	T > NI > F
	Ivan drank vodka	
	# Ivan vypil [$_F$ VODKU].	#T > NI > F_c
	'Ivan drank vodka.'	

(6) Emphatic Intonation

Q:	Ivan vypil vodu?	
	Ivan drank water	
	'Has Ivan drunk water?'	
A:	(Net)[$_F$ VODKU] Ivan vypil.	F_c > T > NI
	(No) vodka Ivan drank	
	(Net) Ivan [$_F$ VODKU] vypil.	T > F_c > NI
	#Ivan vypil [$_F$ VODKU].	#T > NI > F_c
	'No, it was VODKA that Ivan drank.'	

These data demonstrate that the intonational focus may not be used in the context requiring new information as the answer, or information from an open set (Kiss 1993). The intonationally focused material must belong to a closed set of members. Hence, the structurally grammatical but intonationally marked counterpart in (5) is ruled out. The neutral intonational focus, on the contrary, may only be associated with new, non-predictable information and may not be accepted as a contrastive answer as seen in (6).

3.3. Implications for the Articulation

In section 3.1 I showed that while neutral intonation sentences exhibit invariable order among the discourse functions (Topic(s) > Neutral Information > Focus), this is not the case for emphatic utterances. In fact, the latter allow for relatively free order of constituents. We have seen that the stressed focus may appear in any position within a sentence, thus moving the rest of material around. Allowing focus to appear sentence-initially or sentence-medially, the system must account for other possible deviations from the standard order. For example, the apparent position of discourse-neutral material may now be distinct: discourse-neutral material does not necessarily occur between topic and focus, but may actually appear sentence-finally. Also, focus may precede topic rather than always follow it. However, it is never the case that discourse neutral material precedes the topic:

(7)	Q:	Deti lyubyat ovošči?	
		children like vegetables	
		'Do children like vegetables?'	
	A:	[$_F$ POMIDORY] [$_T$ deti] [$_{NI}$ lyubyat]!	$F_c > T > NI$
		tomatoes children like	
		[$_T$ Deti] [$_F$ POMIDORY] [$_{NI}$ lyubyat]!	$T > F_c > NI$
		#[$_F$ POMIDORY] [$_{NI}$ lyubyat] [$_T$ deti]!	$\# F_c > NI > T$
		#[$_{NI}$ Lyubyat] [$_F$ POMIDORY] [$_T$ deti]!	$\# NI > F_c > T$
		'The/Gen children like TOMATOES!'	

Let us now see whether the possible orders of discourse elements contradict the idea of Communicative Dynamism. The characteristics of intonational (or contrastive) focus described in section 3.2 provide grounds for concluding that this type of focus is actually of a topic nature. Recall that it does not introduce new information as is required of a real focus, but instead refers to inferable information. Hence, topic and contrastive focus do not necessarily have to occur in some restricted order with respect to one another. As to the elements representing discourse-neutral material, as before, they always follow older, given, or inferable information and precede new information, since the contrastive focus may not appear in a sentence-final position. Therefore, the Communicative Dynamism hierarchy is preserved both with structural and intonational foci.

Recall now that in Vallduví's framework (1992) the focus was the only ineludible part of a sentence. This claim seems to be logically verifiable: sentence is a unit of information and focus is the part of the sentence providing new information. However, considering contrastive foci regular topics would permit focusless sentences. To avoid this problem, I

propose that contrastive focus be considered as hybrid element, *topic-focus*. This constituent would be both the source of new information and the connector to the previous context. Such a proposal does not contradict Vallduví's definitions. In fact, topics (or links) may be multiple (in Russian as well as other languages): focus-topic and topics may co-occur in one sentence. They must be sentence-initial: we know from the order facts that this prediction is borne out. Finally, the position of discourse neutral material (or tail) is not the same universally: in Russian, it may either precede the focus, or occur sentence-finally.

4. Russian NP

Russian is a language without obligatory overt determiners indicating (in)definiteness of noun phrases in such languages as English or French. The distinction between definite and indefinite nominals is an important element of discourse and, therefore, should be universally present in any natural language. Hence, the apparent difference among languages is not in the presence or absence of the definite/indefinite distinction but rather in the ways this distinction is expressed. In this section, I will consider several such mechanisms that will later be used in the analysis to check whether a particular type of NP may appear in a certain position within a sentence.

4.1. Means of expressing (in)definiteness

Russian distinguishes among several ways of expressing (in)definiteness of nominal phrases: lexical, non-lexical, and syntactic. All three types of distinction will be explained and exemplified in the following subsections. One important characteristic common to all of these mechanisms should be mentioned first. While in languages with overt articles the distinction is usually two-way (i.e. a NP may be either definite or indefinite), in Russian there exists an additional third status of NPs: unmarked NPs. The NPs of this type are ambiguous with respect to (in)definiteness and the value is determined only from the context.

4.1.1. Lexical Distinction

The lexical distinction is provided by means of certain overt lexical items placed in front of the noun phrase in question. These lexical elements may be viewed as determiners. The function of determiners is usually performed by demonstrative pronouns *eto* (this), *to* (that) or possessive pronouns *moj* (my), *tvoi* (your), *ih* (their), etc. Another group of lexical elements used to distinguish between the indefinite and definite interpretation is the class of attributive pronouns, e.g., *každyj/vsyakij* (everyone/anyone), *nečto/čto-nibud'* (something/ anything). In these pairs, the left member is unmarked while the right member contributes to the indefinite interpretation of the NP. The following examples illustrate how these pronouns affect the interpretation of the NPs they modify:

(8) a. Cvety vyanut.
flowers wither-PRES
'(The/Gen/Ø) flowers are withering.'
b. Eti/te/moi cvety vyanut.
these/that/my flowers wither- PRES
'These/that/my flowers are withering.'
c. Vsyakie/kakie-to cvety vyanut.
some/any flowers wither- PRES
'Flowers are withering.'

The sentence in example (8a) when placed out of context allows for both interpretations: the NP *cvety* 'flowers' may be considered either indefinite or definite. Example (8b), on the other hand, represents the only possible definite interpretation: similarly to English, the distributive pronouns act as definite articles in Russian. Finally, (8c) is an example of an unambiguous indefinite interpretation. In addition, although the NP in (8a) is treated as unmarked, some preference towards the indefinite reading will appear once the NP is placed after the verb. I will return to the discussion of the effects the word order has on the interpretation of NPs later.

4.1.2. Non-lexical Distinction

(In)definiteness may also be expressed non-lexically. One of the ways of non-lexical distinction is through the absence or presence of agreement between a noun and modifying adjective: agreeing adjectives denote indefiniteness, while non-agreeing (i.e. genitive-marked or possessive nouns) are unmarked for (in)definiteness:

(9) a. Za dver'ju slyšalsya ženskij golos.
behind door was-heard woman-MASC.SG.NOM. voice-MASC.SG.NOM.
'There was a woman's voice heard from behind the door.'
b. Za dver'ju slyšalsya golos ženščiny.
behind door was-heard voice-MASC.SG.NOM. woman-FEM.SG.GEN.
'The voice of a/the woman was heard from behind the door.'

The factor affecting the interpretation of the NPs in question is within the NP itself. In section 4.2, I will consider the effects of word order changes with respect to the position this NP occupies in the sentence.

Another interesting way of expressing definiteness in Russian is through verb morphology. In particular, perfectivizing verb prefixes denoting the completion of an event or action correlate with definiteness. Note that these morphemes do not correspond to the aspect dichotomy realized on Russian verbs. In other words, a verb may carry the prefix *do-*, describing event completion, and at the same time denote an imperfective event (e.g., ***dopisat'***-PERF,INF 'to have finished writing' vs. ***dopisyvat'***-IMPERF,INF 'to be finishing writing'). The following sentences illustrate the correlation between the verb denoting the achievement of a result and the definiteness of the nominal argument:

(10) a. On **na**pisal pis'mo.
he has-written-PERF letter
'He has written a/?the letter.'
b. On **do**pisal pis'mo.
he has-written-to-the-end-PERF letter
'He has written the letter to the end.'
c. On **do**pisyval pis'mo.
he was-writing-to-the-end-IMPERF letter
'He was finishing writing the letter.'

The example in (10a) contains the perfective verb denoting a completed activity (i.e. the verb has an event focus) and the argument is unmarked. The verbs in examples (10b&c), in turn, have the result-focus reading. Consequently, the direct object NP is unambiguously interpreted as definite.

4.1.3. Word order distinction

Finally, the last method of expressing (in)definiteness of a noun phrase is by means of the word order (or the order of constituents) within a sentence. The correct generalization of such effects for Russian is that the overt fronting of constituents correlates with definiteness. In the following examples, we will consider the interpretation of the nominal adjunct *po doroge* 'on (the) road':

(11) a. On prošel neskol'ko mil' po doroge.
he walked several miles on road
'He walked several miles on a road.'
b. On prošel po doroge neskol'ko mil'.
he walked on road several miles
'He walked several miles on a/the road.'
c. Po doroge on prošel neskol'ko mil'.
on road he walked several miles
'It was on the road that he walked several miles.'

A similar observation was made by Chvany (1973) and King (1995). These authors illustrate the effects of fronting by changing the position of the subject and adjunct:

(12) a. Na stole stojala lampa.
on desk stood lamp
'There was a lamp on the desk./On the desk was/stood a lamp.'
b. Lampa stojala na stole.
lamp stood on desk
'The lamp was on a/the desk.' (Chvany1973:266; King 1995:78)

These examples show that the closer the NP appears to the front of a sentence, the likelier its definite reading is. In addition, we may notice that what seems to matter is the position of the NP with respect to the verb: preverbal position provides for the definite reading:

(13) Na stole lampa stojala.
on desk lamp stood
The lamp was on the desk.

In fact, once the adjunct (11b&12a) or the subject (11b) and, crucially, both NPs (13) appear before the verb, the interpretation of the NPs disambiguates and becomes definite.

4.2. Interactions

In the preceding section, we observed that such factors as the presence of certain lexical items (i.e. words or morphemes), lack or presence of agreement, and differences in word order influence the interpretation of NPs in Russian. However, so far we concentrated on the effects of these factors independently, without looking at possible consequences of their interaction. Let us now examine whether the syntactic operation of word order change affects other means of definite/indefinite distinction.

We will begin with the lexical distinction. Recall that the possibilities were limited to the unmarked vs. definite opposition in the case of distributive pronouns. It was claimed that the preferred interpretation for the unmarked NP is indefinite if the NP appears after the verb, whereas the preverbal position competes between generic and definite interpretations:

(14) a. Vyanut cvety.
wither-PRES flowers
'??The/∅ flowers are withering.'
b. Cvety vyanut.
flowers wither- PRES
'The/Gen flowers are withering.'

However, when the noun is modified by one of the distributive pronouns, the interpretation is always definite and the actual position of the NP in the sentence is irrelevant:

(15) Vyanut eti/te cvety.
wither- PRES these/that flowers
'These/that flowers are withering.'

If we turn to the non-lexical means of distinction, we will discover that the marked indefinite interpretation (in the case of noun-adjective agreement) and definite interpretation (in the case of verb morphology indicating result focus) are preserved in every possible syntactic position of the NP:

(16) a. Za dver'ju slyšalsya ženskij golos.
behind door was-heard woman-MASC.SG.NOM voice-MASC.SG.NOM
'There was a woman's voice heard from behind the door.'
b. ???Ženskij golos slyšalsya za dver'ju.
woman-MASC.SG.NOM voice-MASC.SG.NOM was-heard behind door
'A woman's voice was heard from behind a/the door.'[5]

(17) a. Pis'mo on **do**pisal.
letter he has-written-to-the-end-PERF
'The letter he has written to the end.'
b. On **do**pisal pis'mo.
he has-written-to-the-end-PERF letter.
'He has written the letter to the end.'

If we consider the unmarked counterparts of the sentences in (16&17), we will see that the interpretation of the NPs becomes marked in some positions in the sentence but remains unmarked in the others:

(18) a. Golos ženščiny slyšalsya za dver'ju.
voice-MASC.SG.NOM woman-FEM.SG.GEN was-heard behind door
'The voice of the woman was heard from behind a/the door.'
b. Za dver'ju slyšalsya golos ženščhiny.
behind door was-heard voice-MASC.SG.NOM woman-FEM.SG.GEN
'The voice of a/the woman was heard from behind the door.'

(19) a. On **na**pisal pis'mo.
he has-written-PERF letter
'He has written a/the letter.'
b. Pis'mo on **na**pisal.
letter he has-written-PERF
'He has written the letter.'

It is obvious from the translations that the preferred interpretation becomes definite in both cases once the unmarked NP is moved to a preverbal position. However, in some cases the indefinite interpretation is still available even if the NP is fronted. These cases are characterized by the NP in question appearing within the focus of the sentence. Following are three examples of such structures:

(20) a. Q: Čto tebya otvlekalo?
what you distracted
'What was distracting you?'

[5] The reason for the degraded status of example (16b) will be considered later. Previewing the discussion still to follow, this sentence has a non-focused NP with indefinite interpretation in a preverbal position, which is strongly dispreferred in Russian.

A1: General description
Golos ženščiny slyšalsya za dver'ju.
voice-MASC.SG.NOM woman-FEM.SG.GEN was-heard behind door
'The voice of a woman was heard from behind a/the door.'
A2: Sentence Fragment
Golos ženščiny.
voice- MASC.SG.NOM woman- FEM.SG.GEN
'The voice of a woman.'

b. PIS'MO on **na**pisal.
LETTER he has-written-PERF
'A LETTER he has written.'

Example (20a) contains two all-focus sentences as answers to the same question: a general description and a verbless fragment. Example (20b) is a case of an emphatic sentence: the focused NP is focus-marked by the intonational peak. In both cases, the preferred reading for the NPs is indefinite.

4.3. Interim summary

I would like to sum up the observations with respect to the interactions between the syntactic and other ways of denoting (in)definiteness made earlier. First, we have seen that once a NP is marked for definiteness or indefinites by lexical or non-lexical means, its interpretation is not affected by word order effects. In other words, the non-syntactic marking dominates the syntactic one and overrides the effects of word order. The situation is quite different with unmarked NPs: the position within the sentence seems to affect the interpretation of these NPs. In particular, NP fronting results in definite interpretation while the interpretation of postverbal NPs depends on other factors such as context. In any event, no unified analysis of the described behavior of NPs may be offered based exclusively on what was said so far. I propose that the mechanisms behind the interpretation of unmarked NPs are based on the information structure of a Russian sentence provided in section 3 above.

5. Information structure and the status of NP

5.1. (In)definiteness

Having developed the mechanisms for determining the status of Russian NPs with respect to (in)definiteness, and also having established the articulation for the information structure of this language, we can now determine whether any correlations between the discourse function and definiteness exist. Prior to proceeding with this task, I shall present a definition of (in)definiteness employed in this work:

(21) **Definiteness:** Determiners bear the morpho-syntactic feature of +/-Definite. Definiteness is a purely syntactic notion.

Note that I assume that all Russian nominals are DPs and that bare (i.e., unmarked) nominals are headed by a phonologically null Determiner which might be specified as [+Definite] or [-Definite].

5.1.1. Discourse-neutral configurations

First claim I can make with respect to discourse functions of NPs in Russian is the degrading status of indefinite NPs in non-focus preverbal positions observed earlier:

(22) ???Vsyakie deti edyat moroženoe.
any children eat ice-cream
'Any children eat ice-cream.'

We now know that in non-emphatic speech, these positions are reserved exclusively for topics or discourse neutral information. As was already observed by many linguists (Vallduví 1992; King 1995, inter al.), topics tend to be expressed by definite NPs (being the source of old and usually already mentioned information). In addition, we may note that neutral information may not be discourse new, as this would put it into the focus category. Instead, neutral nominals correspond to familiar (in the sense of Karttunen [1968]) information that does not represent current concern for the interlocutors. Hence, discourse neutral nominals must be interpreted as definite. Such a prediction is empirically confirmed:

(23) Q: Kto šil eto plat'je?
who sewed this dress
'Who sewed this dress?'
A: #[$_{T}$ Eto plat'je] [$_{NI}$ šila komu-libo] [$_{F}$ portnixa].
this dress sewed anyone-DAT tailor
'A tailor sewed this dress for anyone.'

However, the observation that only definite nominals may appear in neutral information position is not borne out with respect to topics. Indefinite NPs with specific interpretation (24) and so-called 'partitive specifics' (25) (Enç 1991) are fine as topics (see Cresti 1995 for an in-depth discussion of indefinite topics in English):

(24) Koe-kakaja zvezda pojavilas' na nebe.
some star appeared on sky
'Some (specific) star appeared in the sky.'

(25) Q: Čto delajut deti?
what do children
'What are the children doing?'

A: [$_T$ Kakie-to/koe-kakie deti] [$_F$ edyat moroženoe].
some children eat ice-cream
'Some (specific) children are eating ice-cream.'

The observation that indefinite nominals may appear in the topic position is not surprising: cross-linguistically, indefinites may have a specific (i.e., presuppositional) reading (cf. Diesing 1992). Under this reading they refer to a member of a set already established in the universe of discourse and act as generalized quantifiers.

Another type of indefinite NPs that may be found in the topic position is a NP with generic interpretation:

(26) Topic-Focus
Q: Čto delajut deti?
what do children
'What do children do?'
A: [$_T$ Deti] [$_F$ edyat morozhenoe].
children eat ice-cream
'GEN children eat ice-cream.'

Once again, the NPs with generic interpretation are semantically closer to definite NPs than the ones with existential reading in that they describe an exceptionless set of individuals or items. Hence, for the purposes of information packaging, the NPs with generic interpretation have a characteristic of being specific as their referents are equally easy to be picked out as the particular referents of the definite NPs (see Diesing 1992:16-21 for discussion of generic NPs in English).

Let us now turn to the status of NPs functioning as foci. Consider the following examples:

(27) All-Focus
Q: Čto proisxodit?
what is-happening
'What is going on?'
A1: [$_F$ Deti/ kakie-to deti edyat moroženoe].
children/some children eat ice-cream
'(#The) children eat ice-cream.'
A2: [$_F$ Moi/eti deti edyat moroženoe].
my/ these children eat ice-cream
'My/these children eat ice-cream.'

(28) Neutral Information-Focus
Q: Kto igraet?
who plays
'Who is playing?'

A1: [$_{NI}$ Igrajut] [$_{F}$ deti/vsyakie deti].
play children/any children
'(#The) children are playing.'
A2: [$_{NI}$ Igrajut] [$_{F}$ moi/eti deti].
play my/these children
'My/these children are playing.'

These examples indicate that a NP marked as indefinite is grammatical in the focus position. Moreover, the preferred interpretation for noun phrases occurring within focus is indefinite when the NP is unmarked. However, when the NP is marked as definite, either lexically or non-lexically, the focused nominal is interpreted as definite.

5.1.2. Emphatic Configurations

In this subsection, I will examine the dependence on discourse position of NPs found in emphatic contexts. Examples in (24) below illustrate the possible distribution patterns:

(29) Q: Za dver'ju slyšalsya laj sobak?
behind door was-heard bark dogs
'Was it the barking of dogs that was heard from behind the door?'
A1: ???[$_{F}$ ŽENSKIJ GOLOS] za dver'ju slyšalsya!
woman-MASC.SG.NOM voice-MASC.SG.NOM behind door was-heard
???Za dver'ju [$_{F}$ ŽENSKIJ GOLOS] slyšalsya!
'It was A WOMAN'S VOICE that was heard from behind the door!'
A2: [$_{F}$ GOLOS ŽENŠČINY] za dver'ju slyšalsya!
voice-MASC.SG.NOM woman-FEM.SG.GEN behind door was-heard
Za dver'ju [$_{F}$ GOLOS ŽENŠČINY] slyšalsya!
'It was THE VOICE OF THE WOMAN that was heard behind the door!'

The data show that the preferred reading for the contrastively focused NPs is definite: the indefinite interpretation receives degrading judgement while definite is accepted. As expected, the described distribution is not affected by the position of the focused constituent within the sentence.

Finally, the presence of an intonationally focused NP in the sentence does not affect the interpretation of the topic:

(30) a. [$_{T}$ Mal'čik] [$_{F}$ PIS'MO] dopisal/napisal!
boy LETTER has-written/wrote-PERF
'It was THE LETTER that the/#a boy has finished writing/wrote!'
b. [$_{F}$ PIS'MO] [$_{T}$ mal'čik] dopisal/napisal!
LETTER boy has-written/wrote-PERF
'It was the letter that the/#a boy has finished writing/wrote!'

Independently of whether the topic of the sentence *mal'čik* 'the boy' occurs before or after the contrastively focused NP *pis'mo* 'the letter', the focused nominal is interpreted as

definite. This behavior is expected since (in)definiteness is associated with the discourse function of the NP rather than with its position with respect to other discourse elements.

5.1.3. Summary

Summarizing the discovered correlations between Russian discourse structure and the status of NPs with respect to (in)definiteness, I shall confirm the earlier proposed generalization about the correlation between the position and the interpretation of a nominal. Moreover, such a generalization receives a natural explanation once the information structure of the sentence is invoked. To recapitulate, the interpretation of an unmarked nominal depends on the information structure function it represents: topics, neutral elements, and contrastive foci are definite, while information foci are indefinite. However, overt marking for (in)definiteness overrides the status of NP obtained through information structure. In other words, the effects of lexical marking seem to be stronger than discourse-level effects.

Although the interpretation of unmarked nominals seems to be accounted for through the information structure, an obvious shortcoming of the analysis proposed so far is in the lack of uniformity between the behavior of marked and unmarked nominals. In what follows, I shall consider other possible solutions for this problem.

5.2. Specificity

In the previous subsection, I showed that the mapping between information structure and the interpretation of NP is problematic when the notion of (in)definiteness is used as a criterion for the distribution of the NPs. Recall also that main difficulty is caused by the availability of indefinite topics and definite foci. What all types of indefinite topics have in common is the underlying feature of specificity: in order for an indefinite NP to be topicalized, it must have a presuppositional reading. Naturally, the next candidate to consider in order to obtain a straightforward system of correlations is specificity. The definition of specificity used in this paper is given below (cf. Fodor & Sag 1982, Heim 1982, Runner 1994, Schaeffer 1997):

(31) **Specificity:** A specific nominal has a fixed referent in (the model of) the world, one that can be identified by the speaker and/or the person whose propositional attitudes are being reported.

The following predictions can be made with respect to the possible correlations between specificity of nominals and information structure:

(i) Both indefinite and definite topics must be specific.
(ii) Contrastive foci must also be specific since they are overwhelmingly expressed by definite NPs and involve known or inferable sets of items.
(iii) Finally, new information foci should be represented by non-specific nominals.

As was shown earlier in this paper, the first two predictions are borne out. As to the third statement, the following example indicates to the contrary:

(32) Q: Čto proisxodit?
what is-happening
'What is going on?'
A: Ivan/moj syn p'jet vodku.
Ivan/my son drinks vodka
'Ivan/my son is drinking vodka.'

The subject nominals in (32-A) represent the case of novel definites (discussed, for example, by Hawkins [1978] and Heim [1982], inter al.). The referents of such definite NPs are established by means of accommodation (see Clark 1977 and Heim 1982 for detailed discussion of this process) rather than through introduction in the previous discourse. Nevertheless, the referents of novel definites are specific and, since they occur in focus position, cause a problem for the analysis involving the connections between specificity and information structure.

5.3. D-linking

We have seen that neither the morpho-syntactic feature of (in)definiteness nor the semantic notion of specificity were sufficient to define the classes of nominals representing certain information structure functions. However, recall that the problem with the new information foci associated with specific reading has to do with the way the referent of the nominal is introduced into the discourse. While the specific referents of novel definite nominals are not introduced through the previous discourse, the specific referents of definite or indefinite nominals are necessarily pre-established in discourse. Such a distinction is provided by the notion of D(iscourse)-linking (Pesetsky 1987).

(33) **D-linking:** A D-linked nominal has a referent pre-established in the discourse, or a referent belonging to a set pre-established in the discourse. Non-D-linked nominal has a referent new in the discourse or in the utterance.

Note that such a definition requires that the referent of a D-linked element be familiar to both speaker and hearer. Now let us consider the system of correlations between nominals classified with respect to D-linking and the information structure:

(i) All topics must be D-linked since they are either previously mentioned individuals or items, or members of a set previously established in the discourse.
(ii) Contrastive foci must be D-linked since they represent elements familiar or inferable from previous discourse.
(iii) Finally, new information foci are obligatorily non-D-linked since their referents come from sets familiar only to the speaker and, therefore, are new to the hearer.

I conclude that D-linking may be used as a criterion describing the correlation between information structure and the status of NP in Russian. Such a choice seems to be justified since the nature of the functions of information structure is discourse-motivated. Hence a logical classification of elements representing information structure functions has to be discourse-based rather than be defined according to semantic or syntactic features.

6. Conclusions

In this paper, I have established that Russian NPs can be overtly *marked* as (in)definite, or alternatively appear *unmarked* for this feature. The status of unmarked NPs is determined based on the function of information structure it represents.

I also showed that the notion of (in)definiteness is not sufficient to provide a logical system of co-dependencies between the functions of information structure and the status of NP, both marked and unmarked. Instead, I proposed that the classification of nominals with respect to information structure be based on D-linking (Pesetsky 1987). D-linking, a tool of the syntax-discourse interface, appears to be a natural candidate for the connection between information structure and the referential status of a nominal.

Finally, topics for further research include an investigation of the mechanisms of D-linking with respect to information packaging in a wider range of languages demonstrating free word order and lack of obligatory overt marking for (in)definiteness. In addition, the development of a more structural analysis of the syntax-discourse interface accounting for the facts described in this paper is needed.

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What Do Definites Do That Indefinites Definitely Don't?*

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1. Introducing the Problem

This paper investigates how (in)definiteness in word order; more specifically, how it in the ordering of objects in the *Mittelfeld* of German double-object constructions. As a starting point I take what I'll call *the Indefinite Puzzle*.

1.1. The Indefinite Puzzle

According to Lenerz (1977), dative-accusative (henceforth *dat-acc*) order in German is unmarked, which means it can occur with all F(ocus)-patterns. Accusative-dative (*acc-dat*) order is marked, re by the fact that it can only occur with selected F-patterns. The reader is referred to Lenerz (1977) or Büring (forthcoming) for the full range of data, but a summary of the facts is given in the following table:

F-marked: / order:	Dat only	Acc only	both	neither
dative-accusative	ok	ok	ok	ok
accusative-dative	ok	*	*	*

Of particular interest here is the optionality in word oder in the first column of the table (only the dative object is F-marked). The following example illustrates this case (I use capitals to indicate pitch accents, both primary and, where relevant, secondary; where more than one accent is indicated within a sentence, the last one will be the primary, or nuclear, accent; focus patterns are elicited by lead-in questions or other lead-in material):

(1) Wem hast du das Buch gegeben?
'Who did you give the book (to)?'
a. Ich habe dem SCHÜler das Buch gegeben.
I have the-DAT student the book given
b. Ich habe das Buch dem SCHÜler gegeben.
I have the book the-DAT student given.
'I gave the book to the student'

It is important to be clear about the sense of the term 'unmarked' used here: (1b) as an answer to the question given is no less acceptable to native speakers than (1a). The reason Lenerz calls *acc-dat* order 'marked' relates to the grammar of German as a whole: *Dat-acc* order (the 'unmarked' one) can appear without any other factors such as

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focus/background order recommending it; *acc-dat* order on the other hand, is only possible where some other factor favors it. I will therefore speak of *dat-acc* order as the *lexico-syntactically unmarked order.*

Paraphrasing Lenerz in this way, the optionality in (1) arises because both forms have something to recommend them: (1a) displays (lexico-syntactically) unmarked *dat-acc* order, while (1b) displays unmarked background-focus (as opposed to focus-background) order. The reader can verify that this 'tie' between lexico-syntactic unmarkedness and focus-structural unmarkedness is not found in any of the other columns in the table above.

In Büring (forthcoming) I propose to derive these facts, among others, from a general theory of prosodic phrasing, focus and word order; this account will be summarized in section 2. My aim in this paper is to address a set of additional facts only noted in passing in that earlier work, a representative datum for which is (2):

(2) Wem hast du ein Buch gegeben?
'Who did you give a book (to)?'
a. Ich habe dem SCHÜler ein Buch gegeben.
I have the-DAT student a book given
b. Ich habe ein Buch dem SCHÜler gegeben.
I have a book the-DAT student given.
'I gave a book to the student'

Notice the contrast between (2), which doesn't allow for *acc-dat* order, and the earlier (1), which did. The only difference between the two is that the accusative object in (2) is indefinite, where its counterpart in (1) is definite. The immediate diagnosis for this case, it would seem, is that definite NPs want to precede indefinite NPs even more than focused NPs want to follow unfocused ones. The question I will explore in this paper is: Just what is the status of this tendency in grammatical theory? Three possible explanations will be discussed:

- A purely morphosyntactic constraint: 'Definites precede Indefinites'
- A pragmatic conspiracy: Definites are often discourse-old, indefinites are often discourse-new. New material is focused, old material is not, so indefinites will follow definites because foci follow the non-foci (the *background*).
- A semantic constraint: Indefinites have no quantificational force of their own, so they need to be in a position that is mapped onto the *nuclear scope* (NS) of a tripartite quantificational structure (if they are to be interpreted existentially); this mapping is in turn regulated by structural constraints which locate material that is to be mapped onto the NS towards the end of the sentence.

Each of these factors and its relevance for object ordering in word order languages such as German has been proposed somewhere in the literature, either without regard to the others, or as an alternative to one of them. My conclusion in this paper will be that indeed all of these factors seem to be active in German, and that none of them is sufficient to explain the data alone. Accordingly, I will provide a way of integrating them in a unified model, using ranked violable constraints.

1.2. Morphosyntax Isn't All

Let me start by arguing against a purely morphosyntactic account, which would strive to explain the contrast between (1) and (2) by postulating a general prohibition against the order indefinite-definite; note that (2b), but not (1b) would violate this prohibition. In terms of ranked constraints, this solution would postulate the following ranking:[1]

(3) definite before indefinite ≫ dative before accusative ≪≫ background before focus

I submit, however, that such a constraint cannot be the solution to the Indefinite Puzzle. Observe with Lenerz (1977) that the same asymmetry between definite and indefinite accusatives shows up if the focused dative itself is indefinite: An unfocused accusative can precede it, but only if the accusative is definite:

(4) Wem hast du das/ein Buch gegeben?
Who did you give the/a book (to)?
a. Ich habe einem SCHÜler das Buch gegeben.
I have a-DAT student the book given
b. Ich habe einem SCHÜler ein Buch gegeben.
I have a-DAT student a book given
c. Ich habe das Buch einem SCHÜler gegeben.
I have the book a-DAT student given
d. *Ich habe ein Buch einem SCHÜler gegeben.
I have a book a-DAT student given

This example aptly provides two arguments against using a general prohibition against indefinite-definite order. First, (4a) demonstrates that indefinites can precede definites given dative-accusative order. This should be impossible, if (3) were correct. Second, (4d) shows that an unfocused indefinite accusative cannot precede a focused indefinite dative, just as little as it could a focused definite dative in (2b). Clearly, this cannot be captured by any constraint that alludes to the definite-indefinite contrast. I conclude that reference to the morphological definite-indefinite distinction — even though active in German, as we will see — will not help us to solve the Indefinite Puzzle.

1.3. The Relation Between Definiteness/Indefiniteness and Background/ Focus

In this subsection I will brie outline the connection between (in)definiteness and focusing, and then show why the Indefinite Puzzle cannot be solved by it either.[2] The connection I am talking about can be illustrated by the following reasoning:

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[1] I presuppose familiarity with OT-type analyses and the standard notational devices used therein.

[2] I assume here the kind of theory of focus advocated in Selkirk (1984), Selkirk (1995), and Schwarzschild (1999), among others; see von Stechow (1981), von Stechow (1989), von Stechow (1991), and the references therein for a discussion of the *semantics* of focus.

(5) a. Definites and indefinites differ with respect to the familiarity of their referents:
   i. Indefinites introduce new discourse referents.
   ii. Definites refer to old discourse referents.
   b. New material must be in the focus of a sentence, old material constitutes the background.
   c. Therefore, indefinites are always focused, while definites are always in the background.
   d. To the extent that focused elements follow background elements (say, for prosodic reasons), it follows that indefinites follow definites.

While this reasoning is correct over all and might in fact be held responsible for some of the ordering restrictions on indefinites, it is simply not strict enough to account for the Indefinite Puzzle. The reason is that several steps in the argument are valid for the majority of cases, but not all. Let me make caveats about three of them here:

Definites refer to old discourse referents. While true in tendency, there are numerous exceptions to this, as critics of the so-called 'familiarity theory of definites' continue to point out, among them unique definites such as *the sun, the number 2* or *the first man on the moon* and dependent definites as in *John lost his keys/the keys to his house.*

New material must be in the focus of a sentence, old material constitutes the background. I know of no reason to doubt the first half of this claim (under a reasonably liberal construal of what can pass as non-new, at least), but the second half is clearly too strong. Consider a question-answer pair such *as Who did John's mother praise? — She praised JOHN.,* a variation on Schwarzschild's (1999:145) ex. (11). Here John in the answer is discourse old (i.e. the word *John* has just been spoken in the question) and refers to an old discourse referent (the same *John* that was mentioned in the question), yet it is focused. For an enlightening discussion of such cases, sometimes — though I believe misleadingly — called 'contrastive foci' (e.g. Rochemont 1986), see Schwarzschild (1999).

Therefore, indefinites are always focused, while definites are always in the background. I have just discussed two cases in which this equation breaks down for definites, namely definites that introduce a new discourse referent (*the keys to his house*) and definites that are in focus despite being discourse-old. On top of that, indefinites, even if introducing a new discourse referent, can be in the background if their lexical material has been previously mentioned, as in the following English examples, where *a rose* is not focused (it is unaccented despite being in the sentence-final position):

(6) (After Dirk had conveyed to Amber how much he likes roses,) she FInally BOUGHT him a rose.

The indefinite *roses* in the lead-in doesn't introduce a discourse referent, so the use of an indefinite in the answer is possible; but it makes the phrase *a rose* given, so that *a rose* doesn't need to be focused in the answer. Thus, while it is likely to be true that

indefinites, in declaratives at least, always introduce new discourse referents, it is clearly false that they always have to be in focus.[3]

As far as the Indefinite Puzzle is concerned, all three of the above caveats are potentially relevant here. First, the dative object *dem Schüler* in (1) and (2), although definite, is in focus. We interpret it either as truly discourse new (in which case it must be construed as a dependent definite or as discourse-unique in some other way); or, more likely, we accommodate a prior discourse in which its discourse referent has been introduced, in which case it is an instance of a given definite which is nonetheless focused. Second, the indefinite accusative object *ein Buch*, even though presumably introducing a discourse referent, is not focused, because its descriptive content is given in the context (here: the question). Thus the link between definiteness/indefiniteness and background/focus breaks down in these examples, yet the fact remains that the indefinite can't precede the definite. I conclude that the Indefinite Puzzle cannot be solved by recourse to the focus/background distinction alone.[4]

1.4. A Semantic Mapping Effect

We have seen that neither a morphosyntactic 'definites precede indefinites' constraint, nor recourse to background/focus structure can explain the Indefinite Puzzle. I believe, though, that something along the lines explored in the previous section is true: While they don't need to be in *focus*, indefinites do need to be with a certain *semantic* domain, namely in a place where they can get *existential closure*, to borrow a term from Heim (1982). As noted there, indefinites do not have quantificational force of their own; rather, their quantificational force is determined by their environment. If semantically an indefinite gets interpreted within the *restrictive clause* of a quantifier, it inherits the quantificational force of that quantifier. Only if the indefinite is interpreted within the *nuclear scope* of a quantifier does it receive an existential interpretation. Kratzer (1995) and Diesing (1992), elaborating on this idea of Heim's, have proposed that even sentences without overt quantificational elements are mapped onto a tripartite quantificational structure involving a nuclear scope and a restrictive clause. I'd like to explore the idea that indefinite accusatives such as *ein Buch* in (2) cannot precede the dative because they have to be in a syntactic position which will be mapped onto the nuclear scope, rather than the restrictive clause, of a quantificational structure, and that position is following the dative.

Evidence for this general line of reasoning comes from sentences such as (7):

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[3] I am less certain that indefinites in questions never introduce discourse referents, given examples like *Is there an ATM around here? — It's right behind you.* Note that, unlike in an example like *Did you see a big black cat? — It went that way.* it seems implausible to call an ATM 'specific' (even in scare quotes) in this example.

[4] An alternative that comes to mind is to count unstressed indefinites as 'focused' in some abstract sense and then insist that *acc-dat* order is impossible with an unstressed (yet allegedly focused) indefinite accusative object, given that the resulting structure will always violate the 'background precedes focus' constraint to at least the same degree as the *dat-acc* structure. Such a strategy is of course impossible to adopt in an approach like mine, which tries to reduce effects of focus to effects of stressing (unless I want to claim that indefinites are also always 'stressed' in some abstract sense . . .). The approach I present below, however, is as close as I can get to this strategy by claiming that indefinites do need to be within a certain domain, and that that domain wants to coincide with the focus.

(7) Wem würdest Du ein Buch schenken?
'Who would you give a book?'
a. Ich würde ein Buch einem SCHÜler$_F$ schenken.
I would a book a-DAT student give
b. Ich würde ein Buch dem SCHÜler$_F$ schenken.
I would a book the-DAT student give
'I'd give a book to a/the student'

The surprising thing about the two answers in (7) is that the unfocused indefinite *ein Buch* precedes the focused dative *ein/dem Schüler*. Why, then, are (7a) and (7b) possible, but (4d) and (2b) are not? The answer, I believe, is that the indefinites in (7) are not interpreted existential, but *generic*. The sentences can be paraphrased as:

(8) typically, if I had an x which is a book, I'd give *x* to a/the student

As opposed to that, the sentences in (2) involve an existential indefinite; their paraphrase is something like:

(9) there is an x which is a book, and I gave *x* to a/the student

It seems that indefinite accusatives can precede a dative only if they are to receive a generic interpretation. If they are to be interpreted existentially, they have to follow the dative, because that is the domain which will be interpreted as part of the nuclear scope, and hence receive existential force.

The reason (2b) and (4d) are unacceptable is thus a complex one: Their overall form (indicative mood, perfective tense) makes it pragmatically hard to understand them as generic statements. Their generic reading would be something as far-fetched as 'for typical *x*, if *x* was a book, I gave *x* to a/the student' (people like myself, who have trained themselves in getting farfetched readings do actually get this reading for (2b)/ (4d)). And their word order, in particular the *acc-dat* order, makes it impossible to give the indefinite accusative *ein Buch* the pragmatically plausible existential interpretation.

The question obviously is: Just what constitutes the syntactic counterpart to the semantic nuclear scope? In our particular case, why can an accusative following a dative get mapped onto the nuclear scope, whereas an accusative *preceding* a dative cannot? Different authors have given different answers to these questions: According to Kratzer (1995) and Diesing (1992), it is the VP that is mapped onto the nuclear scope; an accusative preceding a dative would have to be generic if we were to assume that *acc-dat* order can only arise through VP-adjunction of the accusative. Krifka (1995), on the other hand, argues that the *focus* is mapped onto the nuclear scope, a position slightly modified by Eckardt (1996), who postulates an abstract category *F1-focus*, which does not necessarily coincide with the focus marked by accenting (Eckardt's *F2-focus*), to be the structural counterpart to the nuclear scope; under this view, the *acc-dat* order must entail that the accusative is outside of the (F1-) focus.

My proposal is perhaps most similar to that in Eckardt (1996). It crucially differs from it, however, in that I assume that the relevant unit for the syntax-semantics mapping is in fact a prosodic one, the *accent domain* to be introduced in the next section. The gist of the proposal is that having an existential indefinite accusative in front of the focus cannot yield a structure which both constitutes an improvement over

the *dat-acc* order in terms of focus structure, and at the same time allows for the indefinite to be mapped onto the nuclear scope. Such an *acc-dat* order is thus only possible if either the accusative is a generic indefinite, as in (7), or a definite NP, which doesn't care whether it is in the nuclear scope or not, as in (1). To demonstrate how this accounts for the Indefinite Puzzle, I'll first have to introduce the prosody based account of focus-related word order variation proposed in Büring (forthcoming), which will be done in section 2. Following that, I will present and motivate a prosody-based account of existential closure in section 3. With all that in place I can then give an account of how (in)definiteness, focus and the existential/generic dichotomy in prosodic phrasing, accenting and word order in German double object constructions in section 4, where, among other things, a solution to the Indefinite Puzzle will be proposed.

2. Variation in Object Order —A Prosody Based Account

The cornerstone of the analysis I outline in this section (essentially that proposed in more detail in Büring forthcoming) is that word order is determined by at least two kinds of constraints: Constraints that refer to the *lexico-syntactic properties* of a constituent, such as its case, its animacy or its (morphological) definiteness; and constraints that refer to the properties of a constituent in an utterance type, such as whether it is focus or background, and what kind of semantic interpretation it receives. Languages that give more weight to the former, such as English, are traditionally called fixed word order languages (since the word order seems invariable if viewed from the morphosyntactic point of view, even though it is of course quite regarding the question of where, say, a focus can occur), while those that give more weight to the latter, such as the Slavic languages, are often called free word order languages (though their word order is rather fixed if viewed from a focus/background perspective).

A second hypothesis I explore here is that focus- and interpretation-related constraints do not directly in linear order, but only indirectly, via their effect on prosodic phrasing. Prosodic phrasing will in turn be related to word order by markedness constraints.

In German, optionality between two word orders arises if the two kinds of constraints favor different linear orders; strict word order, on the other hand, is the result of agreement between them. A helpful way to think about this is that German has two operative grammars, one lexico-syntactically driven, one prosodically driven (and hence heavily in by such things as focus). For each grammars, there is an optimal form; we thus have a lexico-syntactic winner and a, possibly distinct, prosodic winner. Formally, I will implement this via a constraint tie.

2.1. Lexico-Syntactic Factors

In many approaches, ditransitive verbs are taken to lexically specify an 'unmarked' order amongst their objects. In this paper, I follow an alternative line of analysis, according to which the unmarked order is determined by the interplay of three factors: Animacy, Case, and Definiteness. I adopt the specific analysis in Müller (1998), according to which these are encoded in the form the three constraints in (10), ordered as shown in (11):

(10) Lexicosyntactic Constraints:
  a. ANIMACY
     Animate NPs precede inanimate NPs.
  b. DATIVE
     Datives precede accusatives.
  c. DEFINITENESS
     Definites precede indefinites

(11) ANIMACY >> DATIVE >> DEFINITENESS

As these factors are not my primary concern in this paper, I refer the interested reader to Müller (1998) for a discussion and justification of them. For the purpose of my presentation I will almost exclusively consider cases involving animate datives and inanimate accusatives. That way, I can simply talk about the lexico-syntactically optimal candidate (the one with *dat-acc* order) and ignore cases where animacy and case push in different directions, as well as whatever subordinate effects morphological definiteness might have. In the tableaux to follow I will summarize these three constraints as d-a, reminiscent of 'dative precedes accusative', but this is no more than a convenient abbreviatory convention.

(12) abbreviatory convention:
D-A $=_{def}$ ANIMACY >> DATIVE >> DEFINITENESS

I should mention that this system, as developed by Müller, does not predict forms to be ungrammatical, but merely degraded. That is, *ceteris paribus*, an inanimate dative preceding an animate accusative will be degraded compard to an animate accusative preceding an inanimate dative (since ANIMACY outranks DATIVE), but not unacceptable; and even an inanimate accusative preceding an animate dative will be deteriorated, but not hopeless. These graded judgements, whatever their actual implementation, can be imported into the system here, but they will be immaterial for most all of the examples considered.

2.2. Focus

Let us now turn to those constraints that regard non-lexical properties of constituents, beginning with focus. Why do foci tend to follow non-foci? I suggest that the answer involves two steps: First, German (just like English) has an unmarked prosodic structure in which more or less each phrasal constituent of a clause corresponds to an *accent domain* (AD), the rightmost one of which becomes the head of the *intonational phrase* (iP), and thereby most prominent among the ADs.[5] The unmarked structure thus looks like (13):

[5] The prosodic correlate of an accent domain is the presence of phrase level stress (marking its head), which in turn is a necessary condition for association with a pitch accent. Quite presumably, ADs are identical to the *phonological phrases* of Selkirk (1984) or Truckenbrodt (1999) and show other prosodic correlates such as boundary tones, final lengthening, breaks etc. More investigation of this issue is needed, though. The prosodic correlate of the intonational phrase is a final boundary tone and, most prominently, an obligatory pitch accent on its head, the *nuclear accent*.

(13) (x x X)$_{iP}$
(XP)$_{AD}$(YP)$_{AD}$(ZP)$_{AD}$

Second, German (like many languages) adheres to a constraint that requires foci to be prosodically prominent, called FocusProminence or FP for short (Truckenbrodt 1995; 1999). For example, if an AD contains an F-marked constitutent, it wants to achieve prominence by becoming the head of the iP. Thus in (13), ZP could legitimately contain a focus, since it is the head of iP and thereby most prominent. Alternatively, YP and ZP could both contain foci, in which case YP violates FP (it is not the head of iP), but not fatally, since any alternative phrasing (e.g. one in which YP, rather than XP, is the head of iP) would violate FP as well (e.g. because XP isn't the head of iP) plus possibly additional constraints.[6]

What cannot happen is that YP, but not ZP is a focus, because this involves an avoidable violation of FP. To understand this we have to look at the constraints in more detail, though:

Accent Domain Formation To regulate accent domain formation we import the following two constraints, more or less directly from Truckenbrodt (1995):

(14) A(CCENT)D(OMAIN)F(ORMATION)
a. STRESSARG(UMENT)
A thematic argument bears phrase-level stress.
b. WRAP XP
An XP is contained within one AD.

STRESSARG prevents two non-overlapping NPs (or any two non-overlapping constitutents) from being mapped into one big AD, because that way only one of them would receive phrase-level stress (qua being the head of that AD). To see this we have to pay attention to secondary accents, as in the following example, where *meiner Mutter.* 'my mother', must bear a (secondary) pitch accent, which in turn is indicative of phrase-level stress, i.e. the presence of an AD:[7]

(15) Warum warst du auf der Post?
why were you at the post office
a. Ich will meiner MUtter eine POSTkarte schicken.
I want my mother a postcard send
b. #Ich will meiner Mutter eine POSTkarte schicken.

---

[6] The reader might wonder if YP and ZP cannot simply form one AD which then becomes the head of iP, thereby avoiding any violation of FP, as in (XP)AD (YP **ZP**)AD , where boldface indicates maximal prominence. The answer here is that this phrasing violates the formal version of FP at the AD level, because the prosodic word corresponding to YP fails to become the head of AD, despite containing a focus. And it's turtles all the way down: If a phrase contains two or more F-marks with neither dominating the other, a FP violation will inevitably occur at some level.

[7] My account predicts that XPs preceding the head of iP will almost always form an AD, due to STRESS-ARG; (15) illustrates this with a case in which *my mother* is also focused. It is less obvious that unfocused XPs necessarily form an AD; they certainly do not need to bear a pitch accent, even though they can. As noted above, the concept of an AD thus doesn't have a necessary prosodic correlate, but only entails the *possibility* of a pitch accent.

The following tableau derives this:[8]

i: XP YP	StressArg
a. → $(XP)_{AD}(YP)_{AD}$	
b. $(XP\ YP)_{AD}$	*!

WrapXp, on the other hand, prevents XPs from being unduely fractured. For example, a verbal predicate will be in the same AD as an adjacent argument, given that separating them would violate WrapXP for XP=VP. This is the effect Jacobs (1992) calls *integration*, cf. also von Stechow and Uhmann (1986):

(16) Gudrun möchte Astronautin werden, und Peter will . . .
Gudrun wants astronaut become, and Peter wants
a. . . . DAMPFschiffe bauen.
steam boats build
b. # . . . DAMPFschiffe BAUen.
c. # . . . Dampfschiffe BAUen.
'Gudrun wants to become an astronout, and Peter wants to build steam boats'

i: NP_{object} V	StressArg	WrapXp
a. → (NP v)$_{AD}$		
b. $(NP)_{AD}(V)_{AD}$		*!
c. (np V)$_{AD}$	*!	

Notice, too, that in an argument-head complex, the argument, rather than the head, will be the head of the AD, hence prominent (indicated by (NP *v*), as in (a), as opposed to (*np* V), as in (c), in the tableaux). This follows from StressArg as well, given that NP, but not V is an argument. The overall effect of these constraints is that predicates form an AD with their adjacent argument, while all other constituents form their own AD (see, once again, Truckenbrodt 1995).

Nuclear Stress and Accent: As mentioned above, ADs aren't the highest level of prosodic structure. Simple sentences like the ones I am concerned with in this paper are mapped onto an *intonational phrase* (iP). The only relevant constraint in connection with the present investigation is that the head of iP is right-peripheral in German (again, just like in English). This accounts for the fact that in a sentences with more than one pitch accent, such as (15) above, the final one is most prominent, cf. (18) (where x marks AD-level stress and X marks iP-level stress):

(17) IpHeadRight (IpHR)
An iP and the AD that is its head are right-aligned.

(18) a. (x X)$_{iP}$
(meiner MUtter)$_{AD}$(eine POSTkarte schreiben)$_{AD}$

[8] Here and throughout, the a. and b. numbers in the tableaux refer to the example sentence immediately preceding the tableau. Where there is more than one candidate structure for a single example sentence, I'll use a., a.', a." etc.

b. *(X x)$_{iP}$
(meiner MUtter)$_{AD}$(eine POSTkarte schreiben)$_{AD}$

In the following tableaux I use boldface for the constituent that is the head of iP (I continue to use upper case letters for the head of an AD):

i: NP NP V	IPHR	STRESSARG	WRAPXP
a. → (NP)AD (**NP** v) AD			
b. (**NP**)AD(NP v) AD	*!		

Focus Prominence: The final constraint I borrow from Truckenbrodt (1995) is FOCUSPROMINENCE:

(19) FOCUSPROMINENCE (FP)
Focus is most prominent.[9]

Space does not allow me to discuss the effects of FP with a wider variety of F-patterns, cf. Büring (forthcoming), but let me brie illustrate three basic cases: Focus on a rightmost XP, focus on two XPs, and focus on a penultimate XP.

If the rightmost phrase in a clause is F-marked, the standard pattern (13) will arise, in compliance with all constraints discussed:

i: XP YP_F	IPHR	FP	STRESSARG	WRAPXP
→ (XP) $_{AD}$ (**YP**) $_{AD}$				
(xp **YP**) $_{AD}$			*!	
(**XP** yp)$_{AD}$		*!	*	

The same prosodic structure emerges if two XPs are focused. One of them will inevitably violate FP, but this will be unavoidable: In (a) below, (the AD containing) XP fails to become the head of iP, in (b) (the prosodic word containing) it fails to become the head of AD, and in (c) the same happens to YP. Which structure is chosen thus depends on STRESSARG alone:

i: XP_F YP_F	IPHR	FP	STRESSARG	WRAPXP
a. → (XP)$_{AD}$ (**YP**)$_{AD}$		*		
b. (xp **YP**)$_{AD}$		*	*!	
c. (**XP** yp)$_{AD}$		*	*!	

The final and by far most interesting case arises if a non-final YP is focused. What we observe is that the non-final YP receives the nuclear accent, and that no secondary accents can be on the XP(s) following YP:

(20) Wem hast du eine Postkarte geschrieben? — Ich habe . . .
Who have you a postcard written? — I have

[9] As said, the most prominent prosodic constituent within a larger constituent is defined as the head of that constituent. The formal version of Fp is: If α is a prosodic constituent at level n which contains a syntactic node that is F-marked, α is the head of the prosodic category at level *n* + 1 that contains α.

a. . . . meiner MUtter eine Postkarte geschrieben.
my mother a postcard written
b. # . . . meiner MUtter eine POSTkarte geschrieben.
c. # . . . meiner Mutter eine POSTkarte geschrieben.

I interpret this to imply that we have one AD that spans from the left edge of the focus to the end of the sentence/iP. This, obviously, is an imperfect prosodic structure. Why is it chosen? Note that in a case like this, StressArg, Fp and IpHR are in con If perfect ADs are formed, IpHR and Fp cannot simultaneously be met. Either the final AD becomes the head of iP and thereby most prominent, as in (b), which violates Fp (given that the focus sits in the penultimate AD); or the non-final AD (the one containing the focus) becomes the head of iP, meeting Fp but violating IpHR, as in (b'). Alternatively, ADF could be sacrificed, as in (a), with the benefit of reconciling IpHR and FP (because now the focus is within the rightmost AD). Evidently, this is what happens in German. The conclusion is that StressArg must be outranked by IpHR and FP:[10]

i: XP_F YP	IpHR	Fp	StressArg	WrapXp
a. → (**XP** yp)$_{AD}$			*	
b. (XP)$_{AD}$(**YP**)$_{AD}$		*!		
b.' (**XP**)$_{AD}$(YP)$_{AD}$	*!			
c. (xp **YP**)$_{AD}$		*!	*	

This 'destructuring' effect of non-final foci has been observed for various languages, among them German in Uhmann (1991:237ff), where a similar rationale for it is offered, and Japanese (see, among others, Nagahara 1994, Uechi 1998, and the references therein). The essentials of the analysis adopted here are due to Truckenbrodt (1995:ch.5), where it is set in the context of a broader typology of focus-alignment effects. The fact that non-final foci lead to marked prosodic structures is central to the explanation of focus-related word order variation in Büring (forthcoming) to be presented in the next subsection; it has also been adopted for the analysis of focus-related word order variation in Spanish in Gutiérrez-Bravo (1999).

In the remainder of this paper I will summarize the constraints WrapXp and StressArg as Adf (reminiscent of *accent domain formation*) in the tableaux, which is violated whenever an AD contains less than an XP, or more than an XP plus its predicate.

(21) abbreviatory convention:
Adf = *def* StressArg, WrapXP

2.3. Focus Related Word Order Variation

We just saw that focus on a non-rightmost XP leads to a prosodic structure with an 'extra-large' AD, namely one that extends from the beginning of the focused XP to the end of iP (here: the sentence). Only in this way can the focus be maximally prominent *and* be in the rightmost AD in iP. Notably, this extra-large AD could be avoided while

[10] I assume for the sake of this exposition that WrapXp is subordinated, too, though this hasn't been demonstrated.

respecting all other constraints if XP and YP could be freely reordered (the use of {. . .} in the input specification of the following tableaux means that the input is unspecified for word order):

i: { XP_F YP }	IPHR	FP	ADF
a. (**XP** yp)$_{AD}$			*!
b. (XP)$_{AD}$(**YP**)$_{AD}$		*!	
b.' (**XP**)$_{AD}$(YP)$_{AD}$	*!		
d. → (XP)$_{AD}$(**YP**)			

This idea provides the basis of an account of focus related word order variation: If an XP is unfocused, having it in front of a focused one will provide for a perfect prosodic structure which is nonetheless in keeping with FP.

This isn't quite German, however, because while German *allows* non-canonical word order in such cases, it doesn't *require* it. To implement this, we go back to the lexico-syntactic constraints discussed in subsection 2.1 above and summarized there as d-a ('dative before accusative'). These constraints will be used to counter-balance the effects of the prosodic constraints, assuming a ranking as in (22), where prosodic constraints and lexico-syntactic constraints are tied:[11]

(22) IPHR, FP >> ADF <<>> D-A

The effect of this tie is that both the prosodically optimal candidate and the lexico-syntactic candidate are grammatical, in other words: optionality (where the two are different, that is). To demonstrate the effects of this, let us go back to our initial example (1), repeated here:

(23) Wem hast du das Buch gegeben?
'Who did you give the book (to)?'
a. Ich habe dem SCHÜler das Buch gegeben.
I have the-DAT student the book given
b. Ich habe das Buch dem SCHÜler gegeben.
I have the book the-DAT student given.
'I gave the book to the student'

i: { dat_F acc }	IPHR	FP	ADF	D-A
a. → (**DAT** acc)$_{AD}$			*	
a.' (DAT)$_{AD}$(**ACC**)$_{AD}$		*!		
a." (**DAT**)$_{AD}$(ACC)$_{AD}$	*!			
b. → (ACC)$_{AD}$(**DAT**)$_{AD}$				*

As said earlier, we can think of such a tie as encoding two different grammars. Thus the tableau above abbreviates the two tableaux below, which present the resolution of the tie into the 'prosodic grammar' and the 'lexico-syntactic grammar', respectively:

[11] The alert reader will have noticed that what is tied here are not two constraints but rather two sub-hierarchies of constraints, which, it must be admitted, constitutes a significant deviation from what is normally considered an ordering or ranking.

i: { dat_F acc }	IPHR	FP	ADF	D-A
a. (**DAT** acc)$_{AD}$			*!	
a.' (DAT)$_{AD}$(**ACC**)$_{AD}$		*!		
a." (**DAT**)$_{AD}$(ACC)$_{AD}$	*!			
b. → (ACC)$_{AD}$(**DAT**)$_{AD}$				*

i: { dat_F acc }	IPHR	FP	ADF	D-A
a. → (**DAT** acc)$_{AD}$				*
a.' (DAT)$_{AD}$(**ACC**)$_{AD}$		*!		
a." (**DAT**)$_{AD}$(ACC)$_{AD}$	*!			
b. (ACC)$_{AD}$(**DAT**)$_{AD}$			*!	

We thus have implemented the optional non-canonical word order. And we derive that optionality emerges only if the lexico-syntactically unmarked order yields an imperfect prosodic structure, compare (1)/(23) to (24), which corresponds to the second column in the very first table on page 1:

(24) Was hast du dem Schüler gegeben?
What have you the student given
a. Ich habe dem Schüler das BUCH gegeben.
I have the student the book given
b. #Ich habe das BUCH dem Schüler gegeben.

Here, since the lexico-syntactically unmarked *dat-acc* order also allows for a perfect prosodic phrasing, no word order variation is possible:

i: { dat_F acc }	IPHR	FP	ADF	D-A
a. → (DAT)$_{AD}$(**ACC**)$_{AD}$				
a.' (dat **ACC**)$_{AD}$			*!	
b. (**ACC** dat)$_{AD}$			*!	*!
b.' (ACC)$_{AD}$(**DAT**)$_{AD}$		*!		*

Our next task is to show why *acc-dat*$_F$ order is impossible if the accusative is indefinite. As shown above, this cannot just be due to a lexico-syntactic constraint that wants indefinites to follow definites. I argued that in order to understand what kind of constraint is operative here, we have to realize that the incrimated order is possible, but only if the indefinite is generic. It is thus an effect of being non-generic, rather than being indefinite *per se* that we observe here. Let us therefore examine the generic/existential contrast more closely.

3. Generic and Existential Indefinites

As announced at the end of section 1, I want to explore the idea that the domain of existential closure, the nuclear scope, corresponds to a prosodic domain. As we saw in the previous section, a sentence consists of a linear sequence of accent domains (AD_1) (AD_2). . . (AD_n). With respect to the mapping onto the tripartite structure, I propose that,

going from left to right, the mapping onto the nuclear scope can start at any accent domain AD_m , and then continues until the end of the sentence. As an additional restriction, the nuclear scope must be left-aligned with an AD which contains a focus.

Consider the abstract structure in (25), which represents a sentence with four accent domains, the last two of which contain foci. I will use $:_\exists$ to mark where the mapping onto the nuclear scope starts (=the domain of existential closure). According to the above idea, (25a) and (b) represent well-formed mappings, but (25c) and (d) do not, because in the latter, accent domains which do not contain a focus are mapped onto the nuclear scope:

(25) $(AD1)(AD2)(AD3_F)(AD4_F)$

a. $(AD1)(AD2)(AD3_F):_\exists(AD4_F)$

b. $(AD1)(AD2):_\exists(AD3_F)(AD4_F)$

c. $*:_\exists(AD1)(AD2)(AD3_F)(AD4_F)$

d. $*(AD1):_\exists(AD2)(AD3_F)(AD4_F)$

I will implement this as in (26):

(26) ALIGN NUCLEAR SCOPE (ANS)
The nuclear scope consists of complete accent domains, all of which contain focus.

On a speculative note, it is perhaps justified to think of (26) as an *iconicity* constraint, whose objective it is to mark a domain of *content*, the nuclear scope, by aligning it with a domain of *form*, ADs containing pitch accents. Be that as it may, indefinites are specified as either existential or generic in the input, a specification which cannot be overriden, due to an undominated constraint Faith(∃/G):

(27) FAITH(∃/G) (F∃G)
An indefinite specified as existential (generic) in the input is interpreted existentially (generically)

In the representations that follow I will use $:_\exists$ as above in the candidates, and subscript indefinites with ∃ or G in the candidates and the input. Viewed this way, (26) is an alignment constraint (because it seeks to align the nuclear scope with a focus), and (27) is an input/output faithfulness constraint (because it prohibits change of ∃ to G and *vice versa*).[12]

(26), in tandem with (27), will have two distinct effects: Existential indefinites will need to be in an AD that contains a focus (so that $:_\exists$ can precede that AD), while generic

[12] Eventually it might be advantageous, however, to view ∃/G and $:_\exists$ as notational shorthands for aspects of the interpretation, not parts of the syntactic or prosodic representation. On this view, a candidate will consist of an interpretation alongside with prosodic and perhaps syntactic structure(s), and (26) as well as (27) are correspondence rules that hold between the different representations that make up a candidate (cf. Jackendoff (1997)). Inspired by this perspective I refrain from giving a constraint that prohibits existential NPs preceding the $:_\exists$-boundary; there can be no existential indefinites outside of the nuclear scope, because being existential and being in the nuclear scope are one and the same thing. All there can be is an indefinite that was specified as existential in the input, but winds up generic in the output.

indefinites need to be in an AD that precedes at least one AD containing a focus (so that :∃ can follow the indefinite while still preceding a focus-containing AD). To motivate this, it is instructive to study the generic/existential contrast under circumstances where it does not interact with the other object-ordering constraints. Consider (28):[13]

(28) Wenn man in die USA einreisen will, muss man . . .
if one into the US enter wants, must one
a. . . . VORstrafen ANgeben.
previous convictions list
b. . . . VORstrafen angeben.
'If you want to enter the US, you have to list previous convictions.'

These two sentences differ only in their prosodic shape; in (28a) we find two ADs, as witnessed by two accents (the latter of which is the most prominent one, due to IPHR). It expresses the generic reading of this sentence, which happens to be true: If you travel to the US and you have previous convictions, you have to list them. In (28b) we find integration, i.e. object and verb form one AD whose head is the object, in accordance with the principles discussed above. It expresses an existential reading, 'if you want to enter the US, there must be previous convictions for you to list', which is of course false.

Let us start by deriving (28b), which is run-of-the-mill. The prosodic constraints in ADF favor the integrated structure. F∃g and ANS aren't involved here, since the sentence doesn't contain a generic NP, and since the indefinite is itself part of the focus (which is VP or some higher constituent) (I will henceforth leave out the AD subscript in the candidates for perspicuity; note that all parentheses in the candites represent ADs):

i: ACC $_{F,\exists}$ V_F	IPHR	FP	F∃G	ANS	ADF	D-A
a. :∃ (ACC∃)(**V**)		*			*!	
b. → :∃ (**ACC**∃ v)		*				

What about (28a)? This structure will be the optimal realization for a generic NP, provided that we rank F∃g and ANS higher than ADF:

i: ACC $_{F,\exists}$ V_F	IPHR	FP	F∃G	ANS	ADF	D-A
a. → (ACC$_G$):∃(**V**)		*			*	
a. :∃ (ACC∃)(**V**)		*	*!		*	
b. :∃ (**ACC**∃ v)		*	*!			
b.' (**ACC**$_G$:∃ v)		*		*!		

[13] Note that most of the examples I present in this sub-section involve *focused* generic indefinites. Notice the temptation to reduce the in of the generic/existential contrast to focus or familiarity along the following lines: Generic indefinites are prime candidates for staying unfocused, because they can be repeated in a discourse, in order to refer to the *genus* or kind they name, again and again, whereas an existential indefinite cannot be repeated in order to refer to the same *individual* again (that's were you use a definite instead). Repeated things (generic indefinites or definites) are unfocused, so we derive that generic indefinites patterns with definites.

The cases of focused generics warn us not to give in to that temptation: Focused generics behave different from focused existentials, just as unfocused generics behave different from unfocused existentials, as I will show later on.

We have thus captured the connection between semantics and prosody in (28). A generic NP will force separation into two ADs, against prosodic constraints (an observation made e.g. by Krifka (1999, sec.1.4.7)). An existential NP will integrate (as NPs generally prefer to do). Each of the resulting prosodic patterns is the optimal candidate for their respective NP-type. There is a one-to-one correlation between prosodic structure and reading.

This correlation, however, is not always observed, because crucially, ANS itself is not inviolable. Notice that formation of an object-only AD necessitates formation of a verb-only-AD. Since iP is right-headed, the verbal AD will bear the main prominence. This is fine in (28a), since the V is focus. It violates FP since the accusative, too, is focus but not most prominent within iP; but one violation of FP is unavoidable and thus not fatal. The alternative structure (28b) violates FP as well (this time on behalf of V), but looses out on Ans. This picture will change if V is not focused:

(29) Stimmt es, daß man sämtliche Knöllchen angeben muss?— Das nicht, aber
Is correct it that one all parking tickets list must? — That not, but
man muss . . .
one must
a. # . . . VORstrafen ANgeben.
b. ...VORstrafen angeben.
'Do you really have to list all your parking tickets? — Not quite, but you have to list previous convictions'

The former winning candidate, (29a), is unacceptable here. This is because it violates FP in making the non-focused verb *angeben*, rather than the focused NP *Vorstrafen* prominent in iP. We predict the correct form (29b) if we rank ANS lower than F∃g:

i: ACC $_{F,\exists}$ V_F	IPHR	FP	F∃G	ANS	ADF D-A
a. (ACC_G):$_\exists$**(V)**		*!			*
b. → **(ACC$_G$** :$_\exists$ v)				*	

Note incidentally that (29b) is optimal for the same F-pattern with an existential indefinite object, too — as in (28b) (the first tableau). The generic-existential contrast is thus prosodically neutralized in these narrow focus cases.

It is interesting to note that the generic indefinites in (28a) and (29b) bear stress, in the latter case even main stress. Data like these have been noted in Büring (1996:4, ex.(6)), and Eckardt (1996:60, ex (31), attributed to I.Kohlhof, p.c.), where it is also noticed that they pose serious problems for focus-based accounts of the generic/existential contrast such as Krifka (1995) and Eckardt (1996). It should also be noted that the present analysis is not committed to any phrase-structural difference between the sentences with different types of indefinites, as proposed in de Hoop (1992) and Diesing (1992). A thorough comparison to these theories is beyond the scope of the present investigation, however.

It is quite conceivable that a similar constraint-pattern holds for English. Since English is VO, the difference between $(V)_{AD}(O)_{AD}$ and $(V\ O)_{AD}$ does not result in a shift of the nuclear accent, as it does in the German cases in (28), and is thus less easily detectable. It has been observed, though, that *subject*-integration, i.e. forming a single

AD out of a subject and an intransitive verb, interacts with genericity. Consider the following contrast from Halliday (1967), reported in Rooth (1996:273):

(30) a. SHOES must be worn.
b. DOGS must be CARried.

Rooth comments:
"If you bring along no dog at all, you obey the second regulation, but if you bring no shoes at all, you violate the first. If you carry one dog and bring another on a leash, you violate the second regulation; but if you wear one pair of shoes and carry another pair in a shopping bag, you obey the first." (Rooth 1996:2)

It should be easy to see that the English subject-verb pattern is entirely parallel to the object-verb patterns observed in the German examples in (28):

$(\text{ARGUMENT predicate})_{AD}$	satisfies ADF, is compatible with ANS if argument is existential, but violates it if argument is generic
$(\text{ARGUMENT})_{AD}(\text{PREDICATE})_{AD}$	violates ADF, but satisfies ANS if argument is generic

In fact, the same relative ranking of ANS and ADF would account for these English facts, too, even though there doubtlessly are more complications. That this parallelism might not be coincidental is also suggested by the fact that the same 'neutralization' observed in (29) above occurs in English:

(31) Hey, you've got to carry your cat here. That's what the regulations say! - No dude,...
a. DOGS must be carried (, CATS can go on a LEASH).
b. #DOGS must be CARried

The same reasoning applies here: The generic indefinite *dogs* in (31) wants to form its own AD, on behalf of ANS, as the one in (30b). But then the rest of the sentence must form an AD, too, which would be the rightmost one and therefore receive main prominence; and that violates the higher constraint FP. The result is unacceptable as seen in (31b). Therefore, the sentence will be squeezed into one big AD as in (31a).

Summing up, we have seen that generic indefinites, unlike existential ones, like to form an AD of their own. I have proposed to capture this by a constraint that regards the mapping between prosodic structure and interpretation which governs the 'cut-off point' for the domain of existential closure, the nuclear scope. This constraint will not only affect generic indefinites (by forcing them to precede that point), but also existential indefinites (by forcing them to follow it). With this constraint, we finally have all the pieces in place to return to the placement of indefinites in double object constructions, and the Indefinite Puzzle in particular.

4. Indefinites In Double Object Constructions

4.1. Existential Indefinites in the Background: Solving the Indefinite Puzzle

We are now in a position to solve the Indefinite Puzzle: Why can't an unfocused indefinite precede a focused dative, where unfocused *definite* accusatives can?

(32) Wem hast du das/ein Buch gegeben?
who have you the/a book given
a. Ich habe das Buch dem SCHÜler gegeben
I have the book the student given
b. *Ich habe ein Buch dem SCHÜler gegeben
I have a book the student given

Recall that an unfocused accusative precedes the dative to improve prosodic structure:

($\mathbf{DAT}_F$ acc v)$_{AD}$ (lexico-syntactically unmarked)
(ACC)$_{AD}$($\mathbf{DAT}_F$ v)$_{AD}$ (prosodically unmarked)

To understand the peculiar behavior of *indefinite* accusatives, or existential indefinite accusatives, to be precise, note that the *acc-dat*-structure provides no basis for properly inserting the :$_\exists$-boundary in that case. Inserting it in front of the accusative would violate ANS (because the AD following it doesn't contain a focus), inserting it after the accusative would leave the indefinite accusative without existential force, violating F9g. The following tableau illustrates this:

i:	{ACC$_\exists$ DAT$_F$ V }	IPHR	FP	F$\exists$G	ANS	ADF	D-A
(2)	a. → :$_\exists$ (**DAT** acc$_\exists$ v)					*	
(32)	b. :$_\exists$ (ACC$_\exists$)(**DAT** v)				*!		*
	b.' (ACC$_G$):$_\exists$(**DAT** v)			*!			*
	b." :$_\exists$ (acc$_\exists$ **DAT** v)					*!	*!

We have thus solved the Indefinite Puzzle: Using *acc-dat* order to improve prosody makes it impossible to get an existential reading for the accusative indefinite. And the one candidate which displays *acc-dat* order and doesn't violate any of the indefinite-related constraints, (b."), is neither lexico-syntactically nor prosodically unmarked; it violates both ADF and D-A.

Let me review the logic of this account once more. It does not say that an existential indefinite generally has to follow the focus; nor does it say that an existential indefinite accusative cannot occur with *acc-dat* order. It merely says that an existential indefinite has to form an AD with a focus, and that the order of the indefinite and the focused argument within that AD will be determined by the lexico-syntactic constraints — ANIMACY, DATIVE and DEFINITENESS — alone, which, in the example above, all favor the outcome *dat-acc*. The remainder of this subsection is devoted to demontrating that this is indeed the correct generalization.

First, an existential indefinite can precede the focus, if that is what the lexico-syntactic constraints favor. Consider (33), in which we have an unfocused existential dative. DEFINITENESS doesn't apply, and both DATIVE and ANIMACY favor *dat-acc* order, even though that implies that the unfocused indefinite precedes the focus. And indeed the opposite order in (33b) sounds rather awkward:

(33) Obwohl der Verkauf von Schusswaffen an Minderjährige verboten ist,
although the selling of guns to minors prohibited is
haben Sie am 28.11. . . .
have you on 11/28
a. . . . einer Minderjährigen eine GASpistole verkauft.
a minor a gas gun sold
b. #. . . eine GASpistole einer Minderjährigen verkauft.
a gas gun a minor sold

Let us next see what happens if two lexico-syntactic constraints con In (34), ANIMACY isn't relevant, and DATIVE and DEFINITENESS pull in opposite directions. It seems to me that the *acc-dat* order in (34b) is much better than in the previous example:

(34) (Rainer saw a girl at a party we went to, who he wants to see again. He expects me to know her name, because he saw me introduce her to an Italian looking guy, so he asks:)
Wen hast du einem Italiener vorgestellt?
Who have you an-DAT Italian introduced
a. Ich habe einem Italiener MARION vorgestellt.
I have an-DAT Italian Marion introduced
b. Ich habe MARION einem Italiener vorgestellt.
I have Marion an-DAT Italian introduced

Is this expected under the present account? If DATIVE strictly outranked DEFINITENESS, only (34a) should be grammatical. Recall from subsection 2.1, though, that in the original conception in Müller (1998), the lexico-syntactic constraints derive degradation rather than ungrammaticality. Under that assumption, (34b) would be degraded, but much better than any of the examples to which I gave a # above. The candidate corresponding to that sentence is marked by ↘ in the tableau below:

i: {ACC$_F$ DAT$_\exists$ V }	IPHR	FP	F∃G	ANS	ADF	D-A
a. → :$_\exists$(dat$_\exists$ **ACC** v)					*	DEF
a.' (dat$_G$):$_\exists$(**ACC** v)			*!			DEF
a." :$_\exists$(dat$_\exists$)(**ACC** v)				*!		DEF
a. ↘ :$_\exists$ (**ACC$_F$** dat$_\exists$ v)					*	DAT
a.' :$_\exists$ (acc)(**DAT$_\exists$** v)		*!				DAT

Note then that (34b) constitutes a (rather rare and curious) case in which a focused accusative can precede an unfocused dative. As just discussed, the present system predicts this, given that accent domain formation isn't relevant in these cases, because

the non-focused NP is an existential indefinite.[14] It likewise predicts the sharp contrast to the cases of *acc$_F$ dat* in which the dative is definite and could thus form its own AD:

(35) Peter weigert sich, mir seine Schwester vorzustellen! Dabei habe ich . . .
Peter refuses self me-DAT his sister to introduce! Albeit have I
a. . . . dem Blödmann MArion vorgestellt.[15]
the-DAT jerk Marion introduced
b. #. . . MArion dem Blödmann vorgestellt.
Marion the-DAT jerk introduced

To sum up, an unfocused existential indefinite has to form an AD with the focus. This violates ADF, but it is necessary to meet the higher constraints F∃G and ANS. Therefore, prosodic considerations will not play a role in choosing between *acc-dat* and *dat-acc* order; only lexico-syntactic-constraints will. In standard cases as Lenerz' (2), the lexico-syntactic-constraints will unanimously favor *dat-acc*, accounting for the Indefinite Puzzle. In other cases, like (34), the lexico-syntactic constraints con with each other and a certain degree of word order freedom is predicted.

4.2. Generic Indefinites

In this subsection and the next I will look at those cases which are not part of the Indefinite Puzzle, but for which the system developed so far makes predictions. Let us start by checking how the constraints formulated so far account for *generic* indefinites in double object constructions.

4.2.1. Generics Accusatives that Obligatorily Precede Datives

A generic indefinite, unlike the existential one in (2), can precede a focused co-argument and thus allow for a perfect prosodic structure, cf. (36a). In fact, this *acc-dat* order is obligatory here, as (36b) shows:

(36) Bisher haben wir Ladendiebe nicht gemeldet, aber nach der neuen Regelung...
so far have we shopliftings not reported but according to the new regulation
a. . . . müssen wir Ladendiebe dem GeSCHÄFTSführer melden.
must we shoplifters the manager report
b. #. . . müssen wir dem GeSCHÄFTSführer Ladendiebe melden.
must we the manager shoplifters report
'So far we didn't report shoplifters but according to the new regulations, we have to report shoplifters to the manager'

This behavior is predicted, given that for a generic interpretation to obtain, the indefinite must be in the restrictive clause, i.e. preceding the :∃-boundary. The :∃ in turn must

[14] They present serious challenges for both phrase-structure and focus/backgroundstructure based accounts of the generic/existential distinction, though, as well as to accounts which directly relate word order variation to focusing.

[15] To see that *dem Blödmann*, 'the jerk', is not focused in this context, consider a sentence in which its accent would be nuclear, such as a continuation like . . . *und trotzdem mag ich den Blödmann* ('. . . and still I like the jerk'); the nuclear accent has to sit on *mag*, absolutely not on *Blödmann*.

precede an AD containing the focus, which means that the indefinite must precede a focus:

i:	$ACC_G\ DAT_F\ V$	IPHR	FP	F∃G	ANS	ADF	D-A
a. →	$(ACC_G):_{\exists}$(**DAT** v)						*
b.	(DAT $acc_G :_{\exists}$ v)				*!	*	
b.'	(DAT) $(ACC_G):_{\exists}$(**V**)		*!		*	*	

The exact same pattern obtains if the generic indefinite is itself focused, too:

(37) Bisher haben wir Ladendiebstähle nicht gemeldet, aber ab sofort werden wir . . .
so far have we shopliftings not reported, but as of now will we
a. . . . WiederHOlungstäter der PoliZEI melden.
repeat offenders the police report
b. #. . . der PoliZEI WiederHOlungstäter melden.
the police repeat offenders report
'So far we didn't report shopliftings, but as of now we will report repeat offenders to the police'

This is again as expected, given that the indefinite needs to get the $:_{\exists}$ between itself and the end of the sentence (recall from the discussion of cases like (25a) above that $:_{\exists}$ doesn't need to precede *every* AD containing a focus, but merely that it precedes *only* such ADs). This example also shows that optimization of prosodic structure in (36) was a welcome side-effect, but not the driving force behind the obligatoriness of *acc-dat* order, for there is a structure for the unacceptable (37b), namely (b.'), whose prosodic structure is perfect, too. But it is ungrammatical, due to the violation of F∃G:

i:	$ACC_{G,F}\ DAT_F\ V$	IPHR	FP	F∃G	ANS	ADF	D-A
a. →	$(ACC_G):_{\exists}$(**DAT** v)						*
b.	(DAT) (**$ACC_G :_{\exists}$** v)				*!		
b.'	(DAT)$:_{\exists}$(**$ACC_{\exists}$** v)			*!			
b."	(DAT) $(ACC_G):_{\exists}$(**V**)		*!		*		

4.2.2. Optional Acc-Dat Order with Generic Indefinites

In the examples discussed in the previous subsection, there were two constraints that favored *acc-dat* order; ADF, since the dative was narrow focus and thus should be sentence-final (modulo the verb, that is), and ANS/F∃G, since the generic accusative must have a prosodic phrase boundary following it (for : 9 to align with), which means it has to precede the focus. Note that the former is a weak motivation, since ADF can be overruled by the lexico-syntactic constraints on one resolution of the tie. It is the latter motivation that is responsible for the obligatoriness of *acc-dat* order, because ANS and F∃G dominate the lexico-syntactic constraints. The prediction is thus that if we manage to 'switch off' ANS and F∃G, we would observe optionality between the two orders again. This predication is borne out: If the generic has a chance to form an AD *on its* own while following its co-argument, both word orders are possible:

(38) Damit eine Seite wie diese funktioniert, ist es wichtig . . .
so that a page like this one functions is it important
a. . . . dass man verALtete LINKS dem WEBmaster meldet.
that one outdated links the web-master reports
b. . . . dass man dem WEBmaster verALtete LINKS MELdet.
that one the web-master outdated links reports
'For a page like this to work it is important that you report outdated links to the web-master.'

The present account predicts this, given that the generic accusative in (38b) can have the $:_{\exists}$ following it *and* preceding a focus (namely the verb), unlike in (37b), where the verb is unfocused (see the structure in the tableau below). While this structure violates ADF (the verb doesn't integrate with its adjacent argument), it is optimal under lexico-syntactic considerations. *Acc-dat* order, on the other hand, allows for optimal prosody at the expense of lexico-syntactic markedness, so candidate (a) is grammatical, too, just as in (36) and (37) above:

i: $\text{ACC}_{G,F}\,\text{DAT}_F\,\text{V}$	IPHR	FP	F∃G	ANS	ADF	D-A
a. → $(\text{ACC}_G):_{\exists}(\mathbf{DAT}\ \text{v})$		**				*
a.' $(\text{ACC}_G):_{\exists}(\text{DAT})\ (\mathbf{V})$		**			*!	*!
b. → $(\text{DAT})\ (\text{ACC}_G):_{\exists}(\mathbf{V})$		**			*	
b.' $(\text{DAT})\ (\mathbf{ACC}_G :_{\exists}\ \text{v})$		**		*!		
b." $(\text{DAT}):_{\exists}(\mathbf{ACC}_{\exists}\ \text{v})$		**	*!			

In the system developed here, the word order freedom in (38) arises from the same tie known from double object constructions that do not involve generic NPs, namely that between a perfect prosodic structure *(generic)(nongeneric verb)* and a lexico-syntactically unmarked structure *(dative)(accusative)(verb)*. The prediction, then, is that like in the simple cases, the optionality in word order should disappear if prosody and lexico-syntax favor the same outcome. Again, this seems to be a correct prediction:

(39) Damit eine Seite wie diese funktioniert, ist es wichtig . . .
so that a page like this one functions is it important
a. . . . dass man ERSTbenutzern die NUTzungsrechte erklärt.
that one novices-DAT the terms of use explains
b. #. . . dass man die NUTzungsrechte ERSTbenutzern erKLÄRT.
that one the terms of use novices-DAT explains
'For a page like this to work it is important that you explain the terms of use to first time users.'

This result follows in the same manner: The optimal structure (39a) meets both ADF and DAT, while the alternative order yields (39b), which violates both:

i: $\text{ACC}_F\,\text{DAT}_{F,G}\,\text{V}_F$	IPHR	FP	F∃G	ANS	ADF	D-A
a. → $(\text{DAT}):_{\exists}(\mathbf{ACC}_{\exists}\ \text{v})$		**				
b. $(\text{ACC})\ (\text{DAT}_G):_{\exists}(\mathbf{V})$		**			*!	*!
b.' $(\text{ACC})\ (\mathbf{DAT}_G :_{\exists}\ \mathbf{V})$		**		*!		*

4.3. Existential Indefinites in Focus

I close this section with a look at existential indefinites in focus. This is a rather boring endeavor, because these behave just like definites in focus: The reason is that a focused indefinite can always form an AD without running the risk of violating FP, and : 9 can then precede that AD in keeping with Ans, and thus guarantee an existential reading. Since a focused accusative wouldn't precede a dative for prosodic reasons, we expect to see focused existential indefinites wherever the lexico-syntactic constraints prefer them to be. The examples below illustrate two such cases. In (40) all lexico-syntactic-constraints favor the dat-acc order, which, accordingly, is the only one possible:

(40) Peter wurde für schuldig befunden, . . .
Peter was for guilty found
a. . . . einem KolLEgen / seinem CHEF eine BOMbe geschickt zu haben.
a-DAT colleague / his-DAT boss a bomb send to have
b. #. . . eine BOMbe einem KolLEgen / seinem CHEF geschickt zu haben.
a bomb a-DAT colleague / his-DAT boss send to have
'Peter was found guilty to have send a colleague / his boss a bomb.'

Example (41) is one of the sort I didn't consider much in this paper; DAT and ANIM conflict (with DEF, presumably irrelevantly, siding with DAT); since ADF is neutral on the issue, the *acc-dat* order, as preferred by the highest lexico-syntactic constraint Anim, wins:

(41) Die Sache wurde kriminell, als sie . . .
the thing became criminal when they
a. . . . einen GeFANgenen dem LÜgendetektortest aussetzen wollten.
a-ACC prisoner the-DAT lie detector test expose wanted
b. #. . . dem Lügendetektortest einen GeFANgenen aussetzen wollten.
the-DAT lie detector test a-ACC prisoner expose wanted
'The whole thing got criminal when they wanted to expose a prisoner to the lie detector test.'

i:	$ACC_{F,\exists,+an}\ DAT_{F,\exists,-an}\ V_F$	IPHR	FP	F∃G	ANS	ADF D-A
a. →	$:_\exists (ACC_{\exists,+an})\ (\mathbf{DAT}_{\exists,-an}\ v)$		**			DAT
b.	$:_\exists (\mathbf{DAT}_{\exists,-an})\ (ACC_{\exists,+an}\ v)$		**			ANIM!

We see, thus, that the definite/indefinite distinction is void if the pertinent NP is in focus.

5. Conclusion

This paper explored in what ways the defininte/indefinite distinction in word order in the German Mittelfeld. I have found three distinct factors to be relevant, the morphosyntax, focussing, and interpretation. The analysis developed models each of them and shows how they interact. Particular attention was devoted to the interpretation-related constraints that regulate the formal realization of the

generic/existential distinction. I took as my starting point a simple generalization about the phrasing-behavior of generic vs. existential indefinites, which was motivated outside the realm of double object constructions; I then demonstrated how that very generalization, when combined with a theory of stress-related word order variation such as that of Büring (forthcoming), yields a wide range of correct predications about double object constructions.

I have tried to control for the various parameters such as focus/givenness, animacy, case, definiteness etc. as scrupulously as I could, and I believe the picture presented in this paper to have a fine-grainedness and accuracy that exceeds that of previous studies. Nonetheless, I could only present here a fraction of the different combinations of parameters that the theory makes predictions for (about 430, I believe), and I won't pretend to have been able to reliably test all the others in the privacy of my office. Also, while I've been careful to steer clear of some potentially relevant factors such as scopal dependencies or more complex F-patterns within the argument NPs, I have no doubt that there are others which make themselves felt in the examples discussed in this paper and lead me to wrong interpretations of my findings (I can't shake off the feeling, for example, that some of the more complex double object constructions may involve a more articulated inventory of information structural categories than just focus and background; I resisted the temptation of introducing any further features such as 'contrast' or 'topic', because in the absence of clear criteria to test those, they would amount to no more than arbitrary features used to trigger certain word order anomalies). More work is waiting to be done.

Accepting the conclusion drawn in the present paper, that prosody, morphosyntax and semantics are all irreducible forces in the ordering of arguments, it is worthwhile to note that all three of them pull in the same direction in the majority of cases, often masking one another; often times, definites *are* in the background and indefinites *are* focused, and if an indefinite isn't focused, that is often because it *is* generic and as such can be repeated. In other words, the constraints regularly *converge*. We could easily imagine and construct a grammar in which the prosody wants foci to follow the background (as in German), but in which, say, the background ADs, rather than the focus ADs, are mapped onto the nuclear scope. Such a grammar would produce a very different language from German, presumably one without a clear rule of thumb such as 'indefinites tend to follow definites', i.e. without convergence of the constraints.

To take another example, it seems likewise 'natural' that definiteness and animacy should converge in that sense, assuming that we speak about humans and animals more often than we do about inanimate things, and given that that which we speak about would generally be encoded as a definite. Formal grammars such as the one used in the present paper do not offer an explanation for this convergence. To the extend that such convergences are common in grammars, they perhaps hint at something like 'usability': A language (as perhaps most systems) is simply more stable and usable if little changes don't yield big effects, that is, in which principles, often redundantly, converge. This is at least a conceivable alternative to a reductionist (or 'minimalist') approach, according to which convergence must be attributed to one grammar-internal force; and, if the findings of this paper are on the right track, it is perhaps the empirically more accurate one.

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Specificity Distinctions*

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1. Introduction

This paper is concerned with semantic noun phrase typology, focusing on the question of how to draw fine-grained distinctions necessary for an accurate account of natural language phenomena. In the extensive literature on this topic, the most commonly encountered parameters of classification concern the semantic type of the denotation of the noun phrase, the familiarity or novelty of its referent, the quantificational/non-quantificational distinction (connected to the weak/strong dichotomy), as well as, more recently, the question of whether the noun phrase is choice-functional or not (see Reinhart 1997, Winter 1997, Kratzer 1998, Matthewson 1999). In the discussion that follows I will attempt to make the following general points: (i) phenomena involving the behavior of noun phrases both within and across languages point to the need of establishing further distinctions that are too fine-grained to be caught in the net of these typologies; (ii) some of the relevant distinctions can be captured in terms of conditions on assignment functions; (iii) distribution and scopal peculiarities of noun phrases may result from constraints they impose on the way variables they introduce are to be assigned values.

Section 2 reviews the typology of definite noun phrases introduced in Farkas 2000 and the way it provides support for the general points above. Section 3 examines some of the problems raised by recognizing the rich variety of 'indefinite' noun phrases found in natural language and by attempting to capture their distribution and interpretation. Common to the typologies discussed in the two sections is the issue of marking different types of variation in the interpretation of a noun phrase. In the light of this discussion, specificity turns out to be an epiphenomenon connected to a family of distinctions that are marked differently in different languages.

2. Definiteness and determinacy of reference

Definite pronouns, proper names and definite descriptions, i.e., DPs whose D is a definite article, behave in many respects as a natural class within and across languages, which is why they are often grouped together under the label of 'semantically definite DPs'. On the other hand, within the rich realm of semantically indefinite DPs various distinctions in terms of an ill-defined notion of specificity have been drawn, among which that between overt or covert partitives and non-partitive indefinites. It is also well-known that 'specific' indefinite DPs in general, and partitive DPs in particular, are closer to semantically definite DPs than their non-specific or non-partitive sisters. A

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good illustration of this ambivalence is found in the morphology of the partitive Determiner in Romanian. The partitive article in this language is composed of the masculine singular (unmarked) form of the indefinite article, *un*, suffixed by the definite article, which bears the inflections of gender and number characteristic for Determiners in this language:

(1) a. Unul din studenţi a plecat.
a.Def.Sg.Masc from students has left.
One of the students left.

b. Una din fete a plecat.
a.Def.Sg.Fem girls has left
One of the girls left.

c. Unii studenţi au plecat.
a.Def.Pl.Masc students have left
Some of the students left.

d. Unele fete au plecat.
a.Def.Pl.Fem girls have left
Some of the girls have left.

Evidence for the necessity of distinguishing between various subtypes of definites and indefinites is furnished by data concerning Direct Object Marking, the phenomenon of morphologically marking a certain subclass of direct objects. Aissen 2001 shows that with respect to this phenomenon DPs form the hierarchy in (2) (where I substituted *Partitive* for Aissen's *Specific*).

(2) Personal Pronoun > Proper Name > Definite > Partitive

Once the relevance of this hierarchy is accepted, a question that arises is what semantic parameter is responsible for it. The answer suggested in Farkas 2000 is that what is at issue here is the question of the latitude the DP allows with respect to the choice of value for the discourse referent it introduces. In the rest of this section I review the gist of the earlier proposal concerning the typology of definites so as to have a starting point for the discussion of indefinites in the next section, which expands the left hand side of the hierarchy.

Crucial to making the proposal more precise is the assumption that argumental DPs (i.e., DPs in argument, rather than predicative positions) introduce discourse referents (aka variables), whose possible value is constrained by the information contained in the DP. Within the framework of D(iscourse) R(epresentation) T(heory), this amounts to the claim that such DPs contribute a variable and some condition on that variable. The process of interpretation of semantic structure involves assigning values to these variables by assignment functions, functions that have to meet the conditions in the DRT. One linguistically relevant DP typology, I claim, concerns the types of conditions induced by various DPs. Thus, DPs with descriptive content impose a predicative condition, i.e., a condition requiring the value of the variable to meet the property expressed by the description. The condition contributed by pronouns and proper names is of an essentially different type. A higher level classification concerns the details of

how variables are given values. The latter interacts with the former, since the conditions on a variable constrain its valuation.

The essence of the proposal in Farkas 2000 is that the DP types that form the stations of (2) differ with respect to the type of condition they impose on their discourse referent, which, in turn, has repercussions concerning the degree of latitude in choice of value for the discourse referent in question. It is this latter parameter that is crucial for semantic (in)definiteness.

Common to pronouns and proper names is that they do not have descriptive content. The condition they contribute equates the value to be assigned to their variable with another value. In DRT terms, the construction rule triggered by the use of pronouns involves the introduction of a discourse referent $x_{n'}$ and an equative condition of the form $x_{n'} = x_n$, where x_n must be a discourse referent within the domain of the input DRS. This discourse referent is contributed by the antecedent, in case there is a linguistic antecedent, or by the context, in the case of deictic pronouns. The new discourse referent $x_{n'}$ requires an update of the input assignment function relative to it; the equative condition requires the value the updated function f' assigns to $x_{n'}$ to be whatever the input function f assigned to x_n. Pronouns are felicitously used only in case the input DRS K provides an appropriate variable for the discourse referent introduced by the pronoun to be equated with. In the absence of such a variable the construction rule triggered by the use of the pronoun cannot be completed.

The condition supplied by proper names is also equative, though of a different type. Following Kripke 1972, I assume that proper names refer rigidly relative to the world in which they are used. The name *Sarah* used in an utterance in w refers rigidly to the individual *Sarah* names in w, independently of the linguistic context in which the name is used. One way of implementing this proposal is to assume as part of the model a (partial) function N from worlds and names to individuals in the worlds in question. Proper names then introduce a variable, $x_{n'}$ and an equative condition of the form in (3),

(3) $x_n = N_w$ (Name)

requiring the updated evaluation function f' to assign to $x_{n'}$ the value N assigns to the proper name in question in w, the world in which the discourse occurs. The special rigidity of proper names consists in the fact that their reference is determined by the world in which they are used and is unaffected by modal parameters within their linguistic context.

Descriptions, i.e., DPs with an NP constituent headed by a lexical N, are essentially different in that they contribute a restriction requiring the value assigned to the variable they introduce to be an element of the set denoted by the NP (or, if you prefer, an element of the set whose characteristic function is denoted by the NP). I assume then that descriptions introduce a variable $x_{n'}$ and a requirement of the form in (4),

(4) $x_{n'} \in A$

where A is the set denoted by the descriptive content of the description.[1] I chose this representation here rather than the more customary $P(x_{n'})$, where P is the predicate contributed by the descriptive content, in order to highlight the similarity of this view of

[1] I am ignoring intensionality issues here. They would be relevant to the question of the modal index of the description, which determines the world or worlds in which the value of $x_{n'}$ is to fit it.

descriptions to that of treating them as choice functions from A to an element of A, where A is given by the interpretation of the descriptive content. In what follows, the set A denoted by the descriptive condition is referred to as the *value* set because it provides the set from which the values of the variable introduced by the description may be chosen. The type of condition illustrated in (4) will be referred to as *predicative* because in effect it predicates the description of the value to be assigned to the discourse referent.

Following uniqueness-based accounts of definiteness, and in particular, Hawkins 1991, Farkas 2000 suggests that the definite/indefinite distinction in the case of descriptions involves the question of whether the value set allows a choice of value or not, in the given context. The difference between definite and indefinite descriptions is that in the case of the former there should be no choice with respect to the value assigned to the variable. The 'no-choice' situation signaled by the definite article may arise either because the description identifies a singleton set relative to the model (as in the case of descriptions such as *the present Queen of England*), or because the semantics of the description ensures that the set is a singleton (as in the case of superlatives), or, as in most cases, because within the context (i.e., within the domain of the input DRS) there is a singleton set A that serves as value set. This latter situation obtains if there is a single discourse referent that fits the description in the relevant domain, or, in case there are more, a single entity can be identified as most salient.[2] In effect then, the 'no choice' condition can be met relative to the domain of the model, the domain of the input DRS or the subset of the domain of the input DRS containing the salient discourse referents in the context. I will assume that the value set relevant to the interpretation of a description may be restricted to that of the input DRS or to the salient subdomain of the input DRS, in a parallel way to the type of domain restriction needed to account for the interpretation of quantifiers.[3]

In order to capture the notion of semantic definiteness, and therefore in order to capture what is common to proper names, definite pronouns and definite descriptions, Farkas 2000 introduces the notion of *determined reference*. Assuming K is the input DRS to K' and assuming x is new in K' relative to K, x has determined reference iff for every function f that embeds K there is a unique way of updating f relative to x so as to satisfy K'. More formally, let $G_M(K)$ and $G_M(K')$ be the set of assignments that embed K and K' in M respectively, such that every $g' \in G_M(K')$ is an update of some $g \in G_M(K)$, and let Dom(K) and Dom(K') be the set of variables in the universe of K and K' respectively.[4] The notion of determined reference can then be defined as in (5).

(5) Let x be in Dom(K') but not in Dom(K).
The variable x has determined reference if for every g', g" such that $g', g'' \in G_M(K')$ and g' and g" update the same $g \in G_M(K)$, $g'(x) = g''(x)$.

According to (5), x is a variable that has determined reference if for every g that verifies K, there is only one way of updating it relative to x so as to verify K'. Determined

[2] See Heusinger 2000 for a detailed discussion of how salience is established in discourse. Heusinger's approach is compatible with the present suggestions.

[3] Plural definite descriptions can be given an analogous treatment assuming that plural DPs denote sets of groups. The definite determiner in this case requires there to be a singleton such set whose element is meant as the value of the referent of the DP.

[4] A function g' updates a function g if g' agrees with g on all assignment of values for the variables that are in the domain of g.

reference is defined in dynamic terms: what matters is that there should be a unique value for the relevant variable *at the time of the update*. The dynamic nature of interpretation is crucially used here to capture the determined reference of pronouns and definite descriptions whose antecedents are indefinite or bound by a quantifier other than the existential. Thus, there may be many embeddings of (6a) that differ on the value they assign to the variable contributed by the italicized indefinite, but if (6b) is the continuation of (6a), the definite description or pronoun will have determined reference: for every way of embedding the input DRS, there is a single value that can be assigned to the variable contributed by the definite so as to meet the conditions contributed by (6b).

(6) a. *A student* came in.
b. *He/The student* sat down.

We can now characterize the definite article as a signal of determined reference. The valuation property it signals is that in going from K to K' there is no choice relative to the value to be assigned to the variable introduced by the DP.

Common to DPs involving a lexically headed NP is that they introduce predicative conditions. Using the definite article signals that the variable has determined reference. In the case of descriptions, this amounts to requiring the appropriately restricted value set to be a singleton. Following Hawkins 1991, I assume that DPs with the indefinite article lack this requirement. Whether we want to encode this difference between definite and indefinite descriptions at the level of semantic representation or whether we want to keep the distinction as a requirement on the properties of the transition from input DRS to output DRS is immaterial for present concerns. If the former route is chosen, we can differentiate variables with determined reference by having them preceded by an exclamation mark. The variables introduced by proper names and definite pronouns will always be of the form $!x_n$, while those contributed by descriptions will be of this form when the definite article is used, but not in the presence of the indefinite article. Assuming that the use of the definite article signals determined reference rather than the fact that the value set is a singleton has the advantage of allowing a unitary account of definite article use with proper names and definite descriptions in the languages or dialects that allow (or require) articles with proper names.

The basic difference between proper names and pronouns on the one hand, and definite descriptions on the other is that the former type of noun phrases have determined reference in virtue of the type of condition they contribute, while descriptions have determined or non-determined reference depending on whether the predicative condition they contribute identifies a singleton set or not.

Overt partitives are special in that in their case the value set is established by the DP argument of the partitive preposition, which we will refer to as the *domain DP*. This DP must introduce a 'plural' discourse referent (i.e., a discourse referent whose value must be a group-level entity). The value of the discourse referent of the partitive DP must be chosen from among the elements of this group. The condition they contribute is of the form in (7),

(7) $x \in f'(\mathcal{A})$

where $\mathcal{A}$ is the discourse referent contributed by the domain DP. Because the domain DP has to refer to a group-level entity with more than one element, partitives are unlike definites in that they do not have determined reference. What distinguishes them from ordinary indefinites, however, is that a partitive condition is formally more restrictive than a predicative condition: it restricts the value domain to the elements of a group denoted by an already restricted variable. As a result, partitives must refer within the universe of discourse while indefinites do not have to.[5] Because of the type of condition partitives contribute they must refer within the universe of discourse, while indefinites do not have to.

Ordinary indefinites, which in English are preceded in the singular by the indefinite article *a(n)*, are underspecified with respect to determinacy of reference. The contrast with definites can be accounted for, following Hawkins 1991, by assuming that they form a Horn-scale with definites, and therefore, that using an indefinite form implicates that the conditions for the use of the definite are not met. The only condition ordinary indefinites impose is that the value assigned to their discourse referent be an element of the set denoted by the description.

Note that the classification discussed here is one of DP types, rather than DP tokens. Since ordinary indefinites in English are not specially marked, to be a subset of the universe of discourse previously identified by a DP. Thus, the italicized indefinite in (8) may be interpreted either partitively or not, while the partitive interpretation is, of course, forced upon the partitive DP.

(8) a. Several students came into the room.
b. *A student* was carrying a large banner.
c. One of the students was carrying a large banner.

An interesting open question is the varying strength of the blocking relation between different types of DPs. Thus, the existence of the overt partitive does not appear to block the implicit partitive interpretation of ordinary indefinites, while the existence of the definite does block the determined reference interpretation of indefinites. This suggests that the distinction between DPs with determined reference and those without is more significant than that between various types of non-determined reference.

Note that the distinctions established so far cannot be naturally captured by the parameters of DP classification most commonly encountered in the formal semantics literature. Distinctions in terms of types would have difficulty capturing both what is common and what separates the various subtypes of semantically definite DPs. Distinctions in terms of familiarity/novelty are well-known to encounter difficulties in characterizing the whole spectrum of formally definite DPs. They would also have difficulty in explaining why proper names, which may be discourse-novel, are placed so high on the definiteness scale. The quantificational/non-quantificational distinction is again not fine-grained enough to be useful here. Note also that attempting to define the notional category of definites by reducing it to the property of referring to a singleton

[5] Note that what matters for this typology is not the actual size of the value set but rather, the type of formal condition contributed by the DP. It may well happen, as Barbara Abbott (p.c.) pointed out, that the domain DP of a partitive contributes an extremely inclusive condition, as in *one of the elements of the universe*, which will be less restrictive than the value domain of an ordinary indefinite such as *a man*. Formally, however, the partitive condition restricts the value set relative to the discourse, while the predicative condition restricts it relative to the model.

set would force an unnatural treatment of pronouns and proper names. Moreover, that approach would not be useful in explaining why partitives are closer to definites than their non-partitive sisters. Note also that the distinction between choice-functional and non- choice-functional DPs, while relevant to the distinction between DPs with descriptive content and those without, is not helpful in drawing the further distinctions needed here.

The determinacy of reference scale in (2) can be seen as a scale of specificity: the contribution of the various types of noun phrases specifies more or less completely the value one is to assign to the discourse referent introduced by the DP. Noun phrases with determined reference contribute a condition that specifies this value completely, while DPs with non-determined reference do not. Further distinctions can be made in terms of how complete specification is achieved, in the case of DPs with determined reference, and in terms of how free the choice of referent remains in the case of DPs with non-determined reference. In the next section we look at subtypes of such DPs.

3. More or less specific indefinite DPs

The DP types that fall on the right hand side of the scale in (2), within the category of DPs with non-determined reference, are collectively referred to as *indefinites*. Besides not being required to have determined reference, the interpretation of these DPs varies greatly and so do the overt morphological markings on them. A challenging task for the semanticist is to account for the distribution and interpretation of the subtypes of indefinites we find within a language as well as cross-linguistically. Moving beyond descriptive adequacy, the aim is to have a semantic framework which provides the tools for drawing the particular distinctions needed for natural language description and, optimally, predicts the class of distinctions needed. Below I discuss some subspecies of indefinites in the literature, whose characterization, I claim, makes crucial reference to the properties of the assignment functions that give values to the variable the DPs introduce.

Expanding on the suggestions in Section 2, I take it that the semantic function of morphemes occurring in the Determiner area of argumental DPs is to constrain various aspects of the function that is to give value to the variable contributed by the DP.[6] This proposal is in fact quite close to the traditional view of quantifiers. Recall that the semantic job of quantifiers in predicate calculus is to encode more or less complex instructions concerning the way one is to give values to the variable(s) they bind. Thus, the universal quantifier imposes a complex constraint: the variable it binds is to be given successive values until the value set is exhausted, and the 'nuclear scope' has to be true for all those values. The valuation instruction encoded by the existential quantifier, by contrast, is relatively simple: one has to find some value in the value set for which the nuclear scope is true. Below we explore the possibility that the various Determiners within and across languages encode more or less complex instructions of this type.

[6] Items occurring in the 'Determiner area' include, but are not necessarily limited to, articles, quantifiers and numerals. We will be concerned here primarily with articles and to a lesser extent with quantifiers.

The view of specificity that emerges is one in which it is seen as an epiphenomenon that breaks down into a variety of differences concerning the way variables are given values, differences that may be morphologically marked in various languages. In the case of descriptions, there are two ways in which valuation instructions may be restricted: one may restrict the nature of the function itself, or one may place restrictions on the nature of the value set. The restriction imposed by definite and partitive articles are of the latter kind: the definite article signals that the value set uniquely determines the value of the variable relative to the input DRS, while partitives signal that the value set is given by the referent of the domain DP. Ordinary, garden-variety indefinite DPs on the other hand, impose no special restriction on the value set beyond the requirement that it be atomic, in the case of singular Determiners such as *a(n)* in English, *egy* in Hungarian or *un/o* in Romanian. Garden-variety indefinites pose no special restrictions on the nature of the evaluation function either, which accounts for the versatility of their interpretation possibilities. 'Special' indefinites encode special restrictions on either the value set or the nature of the assignment function itself. We examine some relevant cases below.

3.1. Dependency and scopal specificity

In Farkas 1994 I argued that the notion of 'specificity' has been employed as a cover term for at least three separate phenomena, partitivity, scopal specificity, and 'epistemic' specificity. Here I will discuss scopal specificity in more detail. The discussion is phrased in terms of how scope issues affect the interpretation of variables directly, without assuming a strict correlation between scope and configurational properties. In line with proposals made in Peacocke 1978, Kuorda 1981, Farkas 1997a, I assume that scopal effects are the result of variation in evaluation parameters. In the case of argumental DPs, these parameters concern the assignment function that gives them values.

Scopal specificity concerns the question of whether the interpretation of a variable within a particular expression varies or not as a result of the presence of a variation inducing operator. One type of scopal non-specificity involves cases where the interpretation of a variable co-varies with (or is dependent on) the interpretation of another variable. In such cases the former variable will be called 'dependent' and the latter will be called, following Kadmon 1987, 'the boss' variable. In order for dependency to occur, the boss variable must vary, i.e., it must be given successive values within the course of the interpretation of a sentence. This may happen as a result of it being bound by a quantifier other than the existential, or as a result of it being part of a distributive predication. In what follows the case of distributive predication will be ignored.

Following the classical treatment of quantifiers within a dynamic framework, we can characterize the job of the existential as requiring the input function to be updated on the variable bound by the existential, whereas the job of other quantifiers, such as that realized by *every* or *most* is to introduce a set of such updates. Following work in dynamic semantics, and in particular that of Kamp 1981 and Heim 1982, the update required by existentials can be taken as a default operation, in which case ordinary indefinite DPs, just as definites or proper names, are non-quantificational in the sense that they simply trigger the default action, namely an update on the relevant variable. DPs such as *every student*, on the other hand, are quantificational in the sense that they trigger a complex evaluation procedure. Assuming a tripartite view of quantification,

quantificational DPs introduce a set of evaluation functions that update the input function on the variable introduced by the DP, and which give it values from the value set provided by the description. Each of these functions is an input function relative to which the expression in the Nuclear Scope is evaluated. Particular quantificational Determiners impose further conditions on what the results of such updates must be in order for the whole expression to be true (or embeddable) in a model.

Under these assumptions, the semantic structure of a sentence such as (9) will have the constituents in (10):

(9) Every student left.

(10) $\forall x_3 [x_3 \in \{y: \text{student}(y)\}] [\text{leave}(x_3)]$

The familiar truth (or embeddability) conditions for this expression would require the input function f to be such that each of its updates f' on x_3 such that $f'(x_3)$ meets the condition in the Restrictor, should have updates f'' which meet the condition in the NS. The quantificational Determiner *every* in the quantificational DP *every student* is responsible for the introduction of the functions f', and for the role they play in the evaluation of the NS. More generally then, quantificational DPs introduce a set of assignment functions which serve as input functions to the interpretation of their NS. The contribution of *every* is the introduction of the relevant functions f' and the requirement that the NS be satisfied by updates of *each* such function. The contribution of a Determiner like *most* would differ in the requirement imposed: the NS has to be satisfied by a majority of updates of the functions introduced by the quantificational DP.

Indefinite DPs that depend on a quantificational DP co-vary with the values assigned to the variable introduced by the latter. If *a paper about specificity* is within the scope of *every student* in (11)

(11) Every student read a paper about specificity.

the variable it introduces co-varies with that introduced by the universal. If the indefinite is independent of the universal, i.e., outside its scope, it does not. In previous work I proposed a particular 'in situ' treatment of scope based on the premise that the choice of function that gives values to variables introduced by non-quantificational argumental DPs is not fully determined by the structural position of the DP. In the case at hand, the choice between wide and narrow scope for the indefinite is a matter of choosing a function that the indefinite updates from the functions made accessible by the context. What functions *are* accessible to an indefinite depends on what functions have been introduced by the point the indefinite is interpreted. Assuming that the input function f is introduced initially and therefore always accessible, and assuming that the functions f'' that evaluate the NS are available to variables in the NS, there are two accessible functions to the variable contributed by the indefinite in (11): f and f''. The former choice results in the 'wide scope', or independent, reading of the indefinite, under which the indefinite updates the initial function. The latter choice results in the 'narrow scope', dependent, reading of the indefinite, under which it updates the functions f' introduced by the universal. In this latter case the indefinite co-varies with the variable bound by the universal. When the indefinite is dependent it is given a sequence of values, just like the universal, with the crucial difference, however, that the

functions responsible for this are introduced by the universal. The functions that interpret such narrow scope indefinites are Skolem functions.

The assumption made here is that the main predication in the NS is necessarily interpreted relative to the functions introduced by the quantifier but that the novel variables are in principle free to be interpreted by any accessible function. At the level of semantic representation, I assume that dependent variables are subscripted by their boss variable. There are then two semantic representations compatible with (11), one where the variable introduced by the indefinite bears the subscript of the variable introduced by the universal, and one where it does not. The former gives the 'narrow scope' reading of the indefinite, while the latter gives the 'wide scope' reading. A variable may appear as a subscript on another just in case it is bound by a quantifier that introduces a set of functions accessible to the subscripted variable.[7]

Note that the dependency parameter is independent of the question of determined reference. Whether a dependent DP has non-determined reference or not depends on whether for each value of the boss variable, the context provides a choice of values. Thus, dependency does not entail indefiniteness, which is as it should be, given that in appropriate contexts definite DPs may be interpreted as dependent, as exemplified in (12).

(12) Every student was given two poems to memorize and then had to recite *the longest of the two* to the class.

Note that in order for a dependent DP to have determined reference the context must meet a special complex condition: for every relevant value of the boss variable, the context must supply an appropriate singleton set to serve as value domain for the variable contributed by the indefinite. This is why dependent definites have close paraphrases involving a pronoun bound to the boss variable in their description (in our case, *the longest poem of the two poems assigned to him/her*). Note that the special interpretation conditions imposed by proper names discussed in Section 2 render them incompatible with dependency. The condition imposed on pronouns, on the other hand, does not. The valuation properties of a variable introduced by a definite pronoun will be inherited from its 'antecedent'.

Non-determined reference, on the other hand, is compatible with dependency under ordinary circumstances, which is why ordinary indefinite DPs participate in scopal ambiguities so readily. Such indefinites are compatible with both dependent and independent interpretations.

Some of the variation we find within the indefinite article systems of various languages concerns the possibility of dependent interpretations. Thus, in Farkas 1997b, it is argued that reduplicating the indefinite in Hungarian is a mark of dependency. The indefinite in (13),

(13) Minden gyerek hozott egy-egy csokrot.
every child bring.Past a-a bouquet.Acc

[7] The question of whether the distinction between dependent and independent variables as well as other matters of scope should be encoded in the semantic representation or left only as interpretation requirements is an issue that I will not discuss here, since it is not crucial to present purposes.

can only receive a dependent interpretation. Moreover, such indefinites are felicitous only in contexts which supply an appropriate boss variable for the indefinite to co-vary with. The condition imposed by a reduplicated indefinite article in Hungarian requires the variable to co-vary with an individual or situational boss variable. Under present assumptions, it requires the variable introduced by it to be subscripted by a situational or individual variable. The restriction of the boss variable to situation or individual-level variables is needed because reduplicated indefinites may not occur within the scope of modals:

(14) *Mari kell hozzon egy-egy csokrot.
Mari must bring a-a bouquet.

Assuming that modals involve quantification over worlds, a narrow scope reading for the indefinite here involves co-variation with the modal variable bound by the universal quantifier contributed by *kell* 'must'.

The fact that reduplicated indefinites in Hungarian may occur only in configurations where an appropriate boss variable is accessible follows from the requirement imposed by the reduplicated article. Thus, the ungrammaticality of (15) follows from the fact that no boss variable is available for the indefinite to depend on:

(15) *Mari lát at most egy-egy gyereket.
M. sees now a-a child.Acc

Note that as formulated here, the condition imposed by a reduplicated indefinite in Hungarian is not equivalent to a condition that would require it to have narrow scope with respect to some operator or, equivalently, a condition requiring it to occur in a subordinate DRS. Consider the interaction of indefinites and negation. A sentence such as (16),

(16) Mari is not reading an article on indefinites.

is ambiguous with respect to the scope of the indefinite relative to negation: under the wide scope reading, the claim made is that there is an article on indefinites that Mary is not reading (but there may be others that she is), while under the narrow scope reading there is no article on indefinites that Mary is reading. This latter reading is represented in DRT with the indefinite within the subordinate box introduced by negation.

An indefinite 'within the scope' of negation has special interpretive properties. Very roughly put, the negative operator requires the expression in its scope to be false (unembeddable) under *all legitimate assignments*, i.e., all assignments that meet the conditions imposed by the expression in question. In the terminology used here, the negative operator then introduces a set of functions that update the input functions, relative to which the expression in its scope is to be evaluated. In the case of a sentence such as *Mary didn't leave yesterday* the set of functions in question would differ only with respect to temporal indices within the relevant interval defined by *yesterday*. If, however, the expression in the scope of negation contains an indefinite, the variable introduced by this indefinite may be interpreted with respect to the set of functions introduced by the negative operator, resulting in the narrow scope reading of the indefinite, or with respect to the input function, resulting in the wide scope reading of the indefinite. In the former case the interpretation of the variable varies: the variable is

interpreted by a set of functions ranging over the whole value set. In the latter case, the interpretation of the variable does not vary: it is interpreted by a single function – an update of the input function. The interpretation of an indefinite within the scope of negation varies without co-varying with another variable.

Based on the above discussion, one can identify three distinct ways in which the interpretation of a variable may vary: (i) The variable is bound by a variation-inducing quantifier. This is the case of variables introduced by quantificational DPs. (ii) The variable is dependent on another, i.e., it co-varies with a variable bound by a variation-inducing quantifier. This is the case of indefinites within the scope of universals. (iii) The variable is interpreted by a set of functions introduced by a non-quantificational operator, i.e., an operator that introduces a set of assignment functions but no special variable that it binds. This is the case of indefinites within the scope of negation. The second type of variation is compatible with determined reference, the third is not. In what follows I will use the term *quantificational DP* to refer to DPs that induce variation of type (i): they introduce a variable and a set of functions that update the input function relative to the variable in question. The Determiner in such DPs encodes instructions concerning the relation between the functions introduced by the DP and their updates relative to the NS.

Returning to reduplication of the indefinite article in Hungarian, if it signals dependency rather than simply non-quantificational variation, we expect it not to be licit within the scope of negation. That this is indeed the case is shown in (17):

(17) *Mari nem lát at egy-egy gyereket se.
M. not sees a-a child.Acc neg

(The morpheme se signals that the indefinite is within the scope of negation.)

Note that the distinction between reduplicated and non-reduplicated indefinites in Hungarian cannot be captured by making reference to type-theoretic distinctions. Assuming an ambiguity between choice-functional and non choice-functional indefinites, as proposed by Reinhart 1997, Kratzer 1998 and Matthewson 1999 in other contexts, would not be helpful either. Reinhart 1997 assumes that choice-functional indefinites are associated with choice functional variables that may be bound by existential quantifiers in an unconstrained way, which is responsible for the free scope of such DPs. Quantificational indefinites, on the other hand, behave like universal DPs and are restricted in scope. This distinction cannot capture the requirement of co-variation associated with reduplicated indefinites. Reduplicated indefinites would have to be either special choice-functional indefinites that have to co-vary, or special co-varying quantificational indefinites.

Matthewson 1999, following Kratzer 1998, suggests that, on the contrary, choice-functional indefinites are not subject to co-variation while quantificational indefinites are. This distinction is not more helpful than Reinhart's in capturing the special requirement encoded in reduplicative morphology. Reduplicated indefinites would necessarily be quantificational, under this approach, but would still be subject to the co-variation condition. The point of this discussion is that assuming an ambiguity between choice-functional and non-choice-functional DPs does not render the special condition requiring these DPs to co-vary with some other variable superfluous.

Note that a distinction in terms of occurrence in the main DRS as opposed to an embedded one, quite naturally made in DRT, is not helpful either, given the observation about negation just made. I conclude then that allowing nominal morphology to restrict

interpretation characteristics of variables introduced by DPs is necessary in order to account for the interpretive characteristics of reduplicated indefinites in Hungarian. The semantic import of indefinite article reduplication in Hungarian is that of imposing the co-variation restriction on the variable introduced by the DP, on a par with the various other restrictions introduced by other Determiners.

The question now arises whether DP properties that were captured using different parameters could not be expressed in these terms. To illustrate, note that under present assumptions it is expected (or at least not unexpected) to find a language where nominal morphology is sensitive to non-quantificational variation, without distinguishing the special type of co-variation Hungarian is sensitive to. In present terms, an indefinite that is marked for not being able to vary is a DP that introduces a variable that has to update the input function. Such an indefinite would then introduce a variable marked for fixed reference. In DRT terms, this amounts to the requirement that the variable occur in the main DRS. An indefinite that has to vary would be a DP that introduces a variable marked for variation. In DRT terms such indefinites would be required to occur within an embedded DRS. Under the assumption made here, namely that interpretation requirements are made explicit at the representational level, and that variables have indices encoding such requirements, the difference between *fixed* and varying non-quantificational DPs may be encoded by assuming that the former have a function index fixed to the input functions f, while the latter require a functional index ranging over a set of functions.

Below I claim that the two indefinites in Lillooet Salish discussed in Matthewson 1999 appear to be of just this sort. Matthewson 1999 shows that in Lillooet Salish there are two types of indefinites, one marked by the prefix *ku-* and the other by the prefix *ti-*. Indefinites marked by *ti-* may only be interpreted as having 'widest scope', i.e., as not varying or co-varying. Such indefinites then are marked for updating the input function.[8] Indefinites marked by *ku-* on the other hand, must occur within the scope of another quantificational DP, modal or negation. It appears then that these DPs are marked for variation, without regard to finer distinctions concerning the type of variation involved. In present terms, they require their functional index to range over a set of functions.

The analysis Matthewson herself proposes is different: for her, the distinction between *ti-* and *ku-* indefinites marks overtly the choice-functional ambiguity mentioned above, that remains covert in English. From the larger perspective of cross-linguistic variation, however, it appears that the ambiguity posited by Kratzer and Matthewson addresses only one aspect among several differentiations within the realm of indefinites, and therefore assuming such an ambiguity becomes much less appealing. Note that extending the logic of the ambiguity proponents would make us assume English indefinites to be ambiguous also with respect to whether they co-vary or not (a distinction overtly marked in Hungarian). The parsimonious move is to assume a non-ambiguous interpretation of indefinites with a choice-function- like mechanism, and allow morphology to place further restrictions on the interpretation properties of these DPs.

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[8] Matthewson 1999 notes that *ti-* indefinites may co-vary with another variable that is bound by a quantifier just in case their description contains a pronoun bound by the quantifier in question. Note that in present terms, this means that variation in the values assigned to the variable contributed by the indefinite results from varying the value set to which the input function applies, rather than the function itself.

So far we have seen morphology marking 'wide scope only', non-varying, indefinites, indefinites that must vary and indefinites that must co-vary. There is a further type of indefinite whose scope is restricted: indefinites that may not have wide scope relative to another DP or operator, but which need not occur within the scope of any element, i.e., they are not necessarily co-varying. English 'existential' bare plurals, exemplified in (18) seem to fit this description.

(18) John read poems all afternoon.

One possible analysis of these noun phrases, suggested by van Geenhoven 1996, is to treat them as 'semantically incorporated', in which case, in present terms, they would not contribute an independent discourse referent that is given values by assignment functions but be part of the predicate. This is essentially the approach to morphological incorporation developed in Farkas and de Swart (2000). The scopal properties of incorporated nominals then follow from a more basic property, namely that they are incorporated.

Van Geenhoven extends her semantic incorporation analysis to all narrow scope indefinites. Such a move, however, would prevent us from distinguishing between ordinary narrow scope indefinites and reduplicated ones in Hungarian. Another line of analysis, explored in Farkas and de Swart, is to treat such bare plurals as argumental DPs introducing variables and involving a null Determiner that comes with the restriction of having to be interpreted by the current, most recently introduced assignment function. This type of 'local scope' DPs are the opposite of the 'widest scope' DPs exemplified by *ti-* indefinites in Lillooet Salish. From the point of view of scope, these DPs will behave just like incorporated nominals but for a different reason. Incorporated nominals cannot scope independently of their predicate because, in effect, they are predicate modifiers. Bare plural argumental DPs, on the other hand, are limited in scope by the restriction associated with the null Determiner.

3.2. Epistemic (non)-specificity

Below I suggest that epistemic specificity can be characterized in terms of variation, albeit of a special type. The question of epistemic specificity arises with respect to the interpretation of indefinites such as those in (19):

(19) A painting is missing from this room.
A student in Syntax 1 cheated on the exam.

These sentences are used in contexts which do not narrow down the choice of value for the variable in question to a unique entity, and therefore the variable contributed by them does not have determined reference. The speaker may, however, have a particular individual in mind, and the context may make it clear that she does. In this case the indefinites are epistemically specific. For epistemically specific indefinites all updates relative to the variable introduced by the indefinite that are consistent with the speaker's point of view agree in the value they assign to this variable. In the case of epistemic non-specificity, there is variation with respect to the value assigned to the variable in question not only given information provided by the context as a whole but also with respect to what the context presents as information available to the speaker. In this case then, the indefinite has fixed, non-variable reference relative to the speaker but not

relative to the context as a whole. In order to model the dual status of such indefinites one would have to enrich the notion of context along the lines proposed in Gunlogson 2001. The crucial suggestion there is to assume that Stalnaker's common ground is derived from a more basic notion of discourse commitments of a participant. Assuming a two-participant discourse, the context would include two such discourse commitments, CDa and CDb each determining a context set, ca and cb , defined as the intersection of the propositions in CDa and CDb respectively. In the case of epistemically specific indefinite DPs, all embeddings of the discourse in ca agree on the value they assign to the variable introduced by the indefinite (assuming the speaker is a).[9]

4. Conclusion

In conclusion, it appears that treating Determiners as lexically encoding complex valuation instructions allows us to capture the variety of scopal non-specificity we find across DP types without having to introduce additional machinery. We have isolated here several ways in which the interpretation of a variable may vary and we saw that languages sometimes mark DPs for a particular type of interpretation. The means of capturing these distinctions was by way of valuation restrictions, rather than directly in terms of scope. The parameter of variation is independent of that of determined reference, though it interacts with it.

With respect to degree of scopal independence, the indefinites we examined so far can be seen to form the scale in (20):

(20) widest scope only > neutral > co-varying, varying > local scope only > incorporated nominals

Lillooet Salish *ti-* indefinites illustrate the leftmost type, garden-variety indefinites such as DPs with *a(n)* illustrate neutral scope DPs, Hungarian reduplicated indefinites and Lillooet Salish *ku-* marked DPs illustrate the two subtypes on the next rung respectively, and English existential bare plurals are 'local scope only' DPs. Incorporated nominals form a rich world of their own, which lies beyond the scope of this paper.

The distinctions we have discussed here fall under the rubric of constraining the assignment function involved in the interpretation of the DP. Another possible way of constraining the interpretation of a variable contributed by a DP is to impose restrictions on the properties of the value set. Subjunctive relative clauses in Romance languages for instance, can be seen as imposing a special requirement on the modal interpretation of the world parameter of the description, i.e., the question of what world or worlds the description is interpreted relative to. The property known as d-linking is also characterizable in terms of a particular restriction on the value set, namely that it should be 'discourse old'. Recent discussions of *any* in English involve the nature of the value set as well. Thus, the widening condition proposed by Kadmon and Landman 1993 is also a value set condition. Horn 1999 suggests another constraint on the structure of this set, namely that its elements should form a scale. Under this proposal, just like under Kadmon and Landman's, *any*-DPs have no quantificational force of their own. Their universal flavor is as a consequence of the fact that even the extreme element of the

[9] For suggestions along similar lines, see Farkas 1994.

scale is an acceptable value for the variable introduced by the DP. Alternatively, one may assume that such DPs actually require successive evaluation, but unlike universals, the evaluation is disjunctive rather than conjunctive, and, moreover, the alternative functions are not introduced by the DP itself but must be provided by its context. It is this latter property that makes them indefinite under present assumptions.[10]

Finally, note that the case of epistemic specific indefinites highlights the common thread between determinacy of reference and variation, which unites the scales in (2) and (20). The determinacy of reference parameter concerns the issue of whether updates on the variable in question vary or not relative to the value they assign to it. Determined reference DPs have fixed values relative to each relevant input function. Non-determined reference DPs do not. The various notions of indefinites discussed under the scopal specificity rubric involved the issue of fixed or variable reference relative to different parameters. The questions discussed here lead us to examine the details of the distribution and interpretation of various types of Determiners in natural languages and try to account for the variation we find.

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On the force of V2 declaratives*

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Abstract:

This paper discusses a variant of German V2 declaratives sharing properties with both subordinate relative clauses and main clauses. I argue that modal subordination failure helps decide between two rivaling accounts for this construction. Thus, a hypotactic analysis involving syntactic variable sharing must be preferred over parataxis plus anaphora resolution. The scopal behavior of the construction will be derived from its 'proto-assertional force,' which it shares with similar 'embedded root' constructions.

It is well-known that the syntactic position of finite verbs in German is sensitive to the main vs. subordinate clause distinction. V1 and V2 structures tend to be main clauses while V-final order usually indicates subordination. However, exceptions in both directions have repeatedly been reported and even studied in more or less detail (cf. Reis 1997 and references cited there.) Here I would like to further our understanding of 'embedded V2' declarative clauses by investigating the following question.

(1) Q1: Are there V2 relative clauses in German?

I suggest that a proper answer to Q1 requires close analysis of minimal triples like the following. (Finite verbs are underlined in the relevant clauses.)

(2) a. Das Blatt hat eine Seite (/), die ganz schwarz ist.
the sheet has one side *that entirely black is*
'That sheet of paper has one side that is entirely black'
b. Das Blatt hat eine Seite (/), die ist ganz schwarz.
c. #Das Blatt hat eine Seite (\). Die ist ganz schwarz.

While (2a) involves a standard V-final relative clause and (2c) displays the sequence of two independent main clauses, the status of (2b) is unclear. This will be reflected in the following terminological convention.

(3) Terminological Convention
a. Call the second clause in (2b) 'V2 Relative' (V2R) if you want to emphasize properties it shares with its counterpart in (2a).

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b. Call the second clause in (2b) 'Integrated Verb Second' (IV2) if you want to emphasize properties it shares with its counterpart in (2c).

Remaining neutral at this stage, I will conflate the two terms in (3) and refer to the sentence type at issue as 'V2R/IV2.'

To begin with, the following three properties of V2R/IV2 should be noted.

(4) (Curious) Properties of V2R/IV2
   a. V2R/IV2 has to be immediately preceded by non-final phonological boundary marking (/).
   b. V2R/IV2 can only modify indefinites in the putative matrix clause.
   c. V2R/IV2 is able to restrictively modify its antecedent.

(4a) is important for distinguishing V2R/IV2 from parenthetical counterparts, for which most of the generalizations discussed here do not hold. The issue of quantifiers compatible with V2R/IV2 indicated in (4b) will not be taken up in this paper, although one way to account for it may be inferable from the analysis presented below.[1] (4c) can be substantiated by the observation that the initial clause in (2c) triggers the Horn-scale implicature (5).

(5) The sheet of paper has no more than one side

(5) arises in order to restore informativity to an otherwise vacuous sentence, given world knowledge such as is expressed in (6).

(6) $\forall x$ [Sheet of Paper (x) $\rightarrow \exists Y$ [Y = {z | Side of (z, x) } $\wedge$ |Y| = 2]]

The inconsistency of (5) and (6) then result in pragmatic anomaly (#). Crucially, implicature (5) does not arise with (2a) or (2b). This is evidence that there the initial clause is not evaluated in isolation. Instead the indefinite description is semantically intersected with the content of the adjacent clausal modifier, i.e. it is restrictively modified.

Another curious property of V2R/IV2 concerns scope.

(4) d. V2R/IV2 forces its indefinite antecedent to take wide scope.

Thus, consider (7).

(7) a. Maria möchte einen Fisch fangen (/), der kariert ist.
   Maria wants a fish catch that checkered is
   'Mary wants to catch a fish that is checkered'
   b. Maria möchte einen Fisch fangen (/), der ist kariert.
   c. Maria möchte einen Fisch fangen (\). Der ist kariert.

Here only (7a) is neutral as for the scope of the indefinite. (7b) and (7c), on the other hand, invariably induce a *de re* reading. In order to account for that effect, we may assimilate (7b) to (7c) on the basis of (8).

[1] For detailed discussion and an account based on different premises, see Gärtner (1998, forthcoming).

(8) Paratactic Hypothesis (PH)[2]
V2R/IV2 is a case of parataxis.

This could be fleshed out syntactically by postulating the existence of a functional category π_{REL}, which takes V2R/IV2 as its complement and another clause containing an indefinite as its specifier. (9) illustrates that idea.

(9) $[_{\pi P}\ [_{CP1}\ \ldots\ ]\ [_{\pi'}\ \pi_{REL}\ [_{CP2=V2R/IV2}\ \ldots\ ]\ ]\ ]$

PH predicts that V2R/IV2 involves anaphora resolution like (7c), that process being subject to standard conditions on accessibility. Therefore, (7b) would require a *de re* reading of the indefinite.

A closer look at pronouns linking the two clauses provides a fairly subtle additional argument in favor of PH and the concomitant anaphora-resolution view of V2R/IV2. (2) has already shown that all three constructions tolerate weak demonstratives. (10) adds *w*-pronouns and personal pronouns, none of which can figure in V2R/IV2.

(10) a. Das Blatt hat eine Seite (/), *welche* ganz schwarz ist.
b. *Das Blatt hat eine Seite (/), *sie* ganz schwarz ist.
c. *Das Blatt hat eine Seite (/), *welche* ist ganz schwarz.
d. *Das Blatt hat eine Seite (/), *sie* ist ganz schwarz.
e. *Das Blatt hat eine Seite (\). *Welche* ist ganz schwarz.
f. #Das Blatt hat eine Seite (\). *Sie* ist ganz schwarz.

This is summarized in (11) (*wd* = weak demonstrative; *w* = w-pronoun; *pers* = personal pronoun).

(11) Pronoun Compatibility

a.	Standard Relative Clauses:	[+ wd]/ [+ w]/ [- pers]
b.	V2R/IV2:	[+ wd]/ [- w] / [- pers]
c.	Cross-sentential anaphora:	[+ wd]/ [- w] / [+ pers]

The following paradigm, again in the domain of weak demonstratives, provides the crucial contrast.

(12) a. *Es gibt Länder (/), da das Bier ein Vermögen kostet.
It gives countries there the beer a fortune costs
b. Es gibt Länder (/), da kostet das Bier ein Vermögen.
c. #Es gibt Länder (\). Da kostet das Bier ein Vermögen.

While most weak demonstratives are (homonyms of) relative pronouns, the pronoun *da* ('there') is not. It can be used in contexts of cross-sentential anaphora but is banned from V-final relative clauses. Its compatibility with V2R/IV2 (12b) indicates that this construction patterns with cross-sentential anaphora.

However, the picture just outlined must be further complicated in the light of the following question.

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[2] See Gärtner (1998, forthcoming) for a comprehensive version of PH, including independent empirical evidence and a DRS-update mechanism able to cope with (most of) the scope facts.

(13) Q2: Does PH predict the possibility of modal subordination for V2R/IV2?

Curiously, this prediction underlying PH/Q2 is not borne out, as (14) demonstrates.

(14) a. Maria möchte einen Fisch fangen (/), den sie essen könnte.
Maria want a fish catch that she eat could
'Mary wants to catch a fish that she could eat'
b. *Maria möchte einen Fisch fangen (/), den könnte sie essen.
c. Maria möchte einen Fisch fangen (\). Den könnte sie essen.

Note, however, that property (4a) makes one suspect that V2R/IV2 does not give rise to text formation the way a sequence of sentences does. In fact, integration into the preceding clause is obligatory, given property (4e).

(4) e. V2R/IV2 forms an 'information unit,' definable as a single partition into focus and background, with its putative matrix clause.

(4e) is one of the essential building blocks in developing a formal account for the facts in (14). Thus, according to Groenendijk&Stokhof (1989) (cf. Honcoop 1998, Sæbø 1999), modal subordination involves a propositional discourse referent provided by an antecedent clause and picked up by a covert anaphor in the restrictor of a modal operator in the follow-up clause.[3] Given (4e), however, V2R/IV2 is itself part of the minimal proposition able to provide the required discourse referent. That is, V2R/IV2 is evaluated before the required discourse referent may become available. Therefore, modal subordination must fail and unacceptability of (14b) is predicted.[4]

Unfortunately, this way of dealing with (14b) runs into additional problems with PH. Q3 formulates the relevant issue.

(15) Q3: Doesn't PH rely on the mechanism of anaphora resolution and thus evaluation of V2R/IV2 after evaluation of the putative matrix clause?

Clearly, in order to avoid contradiction I must revise PH. I suggest that PH be replaced by (16).[5]

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[3] Concretely, Groenendijk&Stokhof (1989:38ff) argue that (i) should be given the meaning in (ii).

(i) Ein Tiger könnte hereinkommen (\). Der würde dich zuerst fressen.

(ii) Possibly (a tiger comes in) and necessarily (if a tiger comes in, it eats you first)

Technically this is implemented as in (iii).

(iii) a. *would* $\psi = \lambda p [\ [\ ^{\vee}D_{<s,<<s,t>,t>>} \Rightarrow \psi \ ] \wedge {}^{\vee}p \ ]$

b. *possibly* $\phi = £D\lambda p [\ \Diamond \downarrow {}^{\vee}D \wedge {}^{\vee}p \ ](\phi)$

'by dynamic conjunction' + 'some plausible assumptions about the semantics of this extension of DIL' + 'some obvious reductions':

c. $\lambda p [\ \Diamond \downarrow \phi \wedge \ \downarrow [\ \phi \Rightarrow \psi \ ] \wedge {}^{\vee}p \ ]$

Crucially, the indefinite in ϕ becomes accessible for dynamic binding of a pronoun in ψ, within the scope of .

[4] As far as I can see, this account carries over to the presuppositional theory of modal subordination developed in Geurts (1999).

[5] This move will leave the above mentioned pronoun facts without a satisfactory account.

(16) Hypotactic Hypothesis (HH)
V2R/IV2 is a case of standard (relative clause) hypotaxis.

Under HH, V2R/IV2 would share a variable with its indefinite antecedent, due to syntactic copying. Thus, the issue of anaphora resolution does not arise. Of course, HH generates the follow-up question in (17).

(17) Q4: How can V2R/IV2 and standard relative clauses be distinguished on the basis of HH?

The answer to Q4 lies in property (4f), the final one discussed in this paper.

(4) f. V2R/IV2 is an instance of 'embedded root phenomena' (a.k.a. 'dependent main clause phenomena').

Building on earlier work in this area (cf. Hooper&Thompson 1973, Wechsler 1991, Reis 1997), I would like to defend the following hypothesis.

(18) Proto-Force Hypothesis (PFH)
V2 declaratives have proto-assertional force.

Proto-assertional force forces V2R/IV2 together with its indefinite antecedent out of the scope of modal operators and negation (among many others). Interaction with negation is documented in (19).

(19) a. Kein Professor$_i$ mag eine Studentin (/), [die ihn$_i$ nicht zitiert]
No professor likes a female student who him not cites
'No professor likes a female student that doesn't cite him'
b. *Kein Professor$_i$ mag eine Studentin (/), [die zitiert ihn$_i$ nicht]

Since the negative quantifier in (19) binds the personal pronoun, the modifying clause is forced into the scope of negation. This fails in the case of V2R/IV2.

My claim then is that combining HH and PFH properly treats the properties of V2R/IV2. HH prevents modal subordination, which accounts for the unacceptability of (14b). PFH prevents syntactic 'scopal subordination.' This predicts the unacceptability of (14b) and (19b), as well as the unavailability of a *de dicto* reading in (7b).

At this stage, I cannot present a formal theory underlying PFH. Yet, a number of adequacy criteria indicative of the structure of such a theory are fairly clear. Thus, consider (20).

(20) Adequacy Criterion for PFH
'Embedded Force Exclusion' should be met.

This well-known issue has recently been raised again by Green (2000, p.440).

(21) Embedded Force Exclusion (EFE)
If φ is either a part of speech or a sentence, and φ contains some indicator *f* of illocutionary force, then φ does not embed.

Thus, it is preferable to avoid simplistic direct endowment of V2 declaratives with assertional force (potential). This requirement is met by PFH. Proto-forces will then have to be supplemented by (projection) rules of the following kind.

(22) Proto-Assertional Force Construal
- a. Unembedded proto-assertional force translates into assertional force (potential).
- b. Embedded proto-assertional force can be 'absorbed' by assertional force (potential) if there is no intervener.
- c. Embedded proto-assertional force can be 'absorbed' on arguments of predicates that denote acts of assertion etc.
- d. Non-absorbed proto-assertional force leads to semantic/pragmatic deviance.

(22c) takes care of complementation by V2 clauses, the content of which is not a speaker assertion. An example is given in (23).

(23) Ich hoffe du glaubst mir
I hope you believe me

The main theoretical burden of (22) rests on a notion of 'intervener,' which will have to be the subject of further research.[6]

In sum, I have argued that V2R/IV2 should be given a hypotactic analysis. Its scopal behavior, resulting in modal subordination failure, must be derived from its proto-assertional force. Proto-force in turn should be linked to the embedded root nature of V2R/IV2. If such an analysis is on the right track it would also justify giving a positive answer to question Q1.

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[6] To the extent that material in the scope of a universal quantifier is not (directly) asserted, universal quantifiers may count as 'interveners.' It is therefore important to note that V2R/IV2 can - under certain conditions (see Gärtner 1998, forthcoming) - modify an indefinite in the scope of a universal quantifier. This is shown in (i).

(i) a. Jedes Haus hat ein Zimmer, [in dem ist es gemütlich]
Every house has a room in that$_{DAT}$ is it cosy

b. Jeder Berg$_i$ hat eine Flanke, [über die lässt er$_i$ sich leicht besteigen]
Every mountain has a face over that$_{ACC}$ lets it itself easily climb
'Every mountain has a face across which one can climb it easily.'

However, a functional interpretation of the indefinite as proposed by Groenendijk&Stokhof (1984) would remove the content of V2R/IV2 from the scope of the universal quantifier *every house*, as indicated in (ii).

(ii) $\exists f[\, R(f) \wedge \forall x.\text{COSY-ROOM}(f(x)) \wedge \forall y[\, \text{HOUSE}(y) \rightarrow \text{HAVE}(\, y, f(y))\,]\,]$

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Information Structure and the Accessibility of Clausally Introduced Referents*

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1. Introduction

When certain entities are introduced into a discourse by a clause (or sequence of clauses), they are accessible to immediate subsequent reference with demonstrative pronouns, but comparatively inaccessible to reference with the personal pronoun *it*, as noted by Webber (1988, 1991), among others.[1]

For example, when the first sentence in (1a) introduces the situation of there being a snake on the speaker's desk, the demonstrative pronoun *that* in the second sentence can refer to this situation; and with this second mention of the situation, the pronoun *it* in the third sentence can also refer to this situation. But in (1b), the personal pronoun *it* cannot be felicitously used for immediate subsequent reference to the situation introduced by the first sentence; *it* is more naturally interpreted as referring to the snake itself.

(1) a. There was a snake on my desk. **That** scared me. **It** scared my office-mate too.
b. There was a snake on my desk. **It** scared me. [it = the snake, not the situation]

In (2), an act introduced into the discourse is subject to immediate subsequent reference using *that*, but *it* is more naturally interpreted as referring to the leaf collection, not the act of destroying it.

(2) A: Max destroyed his leaf collection last night.
B: **That** was dumb. [that can refer to the act of destroying the leaf collection]
It was dumb. [it = the leaf collection, not the act of destroying it]

In (3), the same referential behavior is exhibited by the fact, introduced in the opening quote, that Mr. Montanarelli and his associates believe Ms. Lewinsky, and the court does not.

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[1] Our examples here will be from English, although similar restrictions on pronominal reference to clausally introduced entities can be found in other languages.

(3) a. "We believe her, the court does not, and **that** resolves the matter," Mr. Montanarelli said today of Ms. Lewinsky's testimony that she had an independent recollection of the date. (*New York Times*, May 24, 2000)

a'. "We believe her, the court does not, and **it** resolves the matter," Mr. Montanarelli said today of Ms. Lewinsky's testimony that she had an independent ...

The same can be observed for a proposition in (4), and a complex situation in (5).

(4) ... University of Michigan psychologists David Lykken and Auke Tellegan ... speculated in their analysis of twin studies that "trying to be happier [may be] as futile as trying to be taller and therefore is counterproductive." ... Do we really believe that Romanian orphan babies left alone in their beds will have the same potential for happiness as those raised by caring parents of ample means? **That** is precisely what quotes such as those above will be taken to imply.
(Cook-Deegan, Robert. 2001. Hype and hope. *American Scientist* 89.1:62-64.)
It is precisely what quotes such as those above will be taken to imply.

(5) "The fact that you can get a sheep or a mouse that looks normal," said Stuart Newman, a developmental biologist at New York Medical College, "doesn't mean that some subtle things haven't gone wrong in brain development that you wouldn't necessarily notice in a sheep, but you would in a human ... Cloned humans might show higher rates of cancer or other diseases, but we'd only find out by cloning them and waiting to see if disaster strikes.

None of **this** means, however, that cloning services won't someday be marketed to desperate people—or even that human cloning isn't going on right now. (Talbot, Margaret. February 4, 2001. *New York Times Magazine*, Section 6, p.45.)
None of **it** means, however, ...

In (6), *that* refers to the proposition or statement that the poodle is one of the most intelligent dogs around. The pronoun *it* would have been infelicitous here.[2]

(6) A: I read somewhere that the poodle is one of the most intelligent dogs around.
B: well uhm..I definitely wouldn't dispute **that**. (Switchboard Corpus, Dialog 2019)
B': ??well uhm..I definitely wouldn't dispute **it**.

This paper will examine the role of various factors in affecting the salience, and hence the accessibility to pronominal reference, of entities introduced into a discourse by a full clause. We begin with the premise that the possibility of pronominal reference with *it* versus *that* depends on the cognitive status of the referent, in the sense of Gundel, Hedberg and

[2] In (6B), stress can fall on the demonstrative pronoun, or elsewhere in the utterance. In (6B'), in contrast, the personal pronoun *it* cannot bear stress. The point here is that (6B') is infelicitous with any stress pattern.

Zacharski (1993). This formulation of the problem provides grounds for an explanation of the data presented above, and provides a framework within which we examine the role of various other factors in promoting the salience of a clausally introduced entity, including the information structure of the utterance in which the entity is introduced. For entities introduced by clausal complements to bridge verbs, we show that the information structure of the utterance introducing the entity has a partial, or one-sided, effect on the salience of the entity. When the complement clause is focal, the salience of the entity depends only on its referential givenness-newness (in the sense of Gundel 1988, 1999b), as we would expect. But when the complement clause is ground material, the salience of an entity introduced by the clause is enhanced. Other factors, including the presuppositionality of factive and interrogative complements, also serve to enhance the salience of entities introduced by complement clauses.

2. The Givenness Hierarchy

The contrasts noted in the previous section can be insightfully formulated in terms of proposals made by Gundel, Hedberg and Zacharski (1993, and earlier work) regarding the relationship between referring forms and speaker assumptions about the cognitive status (memory and attention state) of a referent on the part of the addressee.

Gundel, Hedberg and Zacharski propose that determiners and pronouns constrain possible interpretations of nominal forms by conventionally signaling the cognitive status that the intended referent is assumed to have in the mind of the addressee. This helps solve a general problem posed by the fact that the descriptive content encoded in the form of a referring expression typically underdetermines the intended referent of the expression on a particular occasion of use. For example, in (7), the content words of the phrase *these primitive reptiles* do not uniquely determine which primitive reptiles are being referred to, but the determiner *these* serves to restrict possible referents to ones that are currently activated (that is, in working memory) for the addressee.

(7) A restudy of pareiasaurs reveals that these primitive reptiles are the nearest relatives of turtles. (M.S.Y. Lee, The origin of the Turtle Body Plan. *Science*, v.261, 1993, 1649).

Gundel, Hedberg and Zacharski identify six different cognitive statuses (under a total linear order, as discussed below). The array of statuses is called the Givenness Hierarchy:

Figure 1. The Givenness Hierarchy (GH) and associated forms in English

in focus	>	activated	>	familiar	>	uniquely identifiable	>	referential	>	type identifiable
{ *it*}		{ *that* *this* *this* N}		{ *that* N}		{ *the* N}		{ indefinite *this* N}		{ *a* N}

Statuses on the hierarchy correspond to memory and attention states, ranging from most restrictive, 'in focus', to least restrictive, 'type identifiable'. The forms serve as processing signals which assist the addressee in restricting possible interpretations. In (8) below, for example, the nominal forms used signal the restrictions on interpretation shown at right.[3]

(8) I couldn't sleep last night.

Form used	Signaled restrictions
a. **A** dog next door kept me awake.	-- (at least) type identifiable
b. **This** dog next door kept me awake.	-- (at least) referential: associate a representation by the time sentence is processed
c. **The** dog next door kept me awake.	-- (at least) uniquely identifiable: associate a unique representation by time NP is processed
d. **That** dog next door kept me awake.	-- (at least) familiar: in memory
e. **This** dog/**that/this** kept me awake.	-- (at least) activated: in working memory
f. **It** kept me awake.	-- in-focus: center of attention

The statuses are in a unidirectional entailment relation. If something is in focus, it is necessarily activated; if it is activated, it is necessarily familiar; and so on. The theory thus correctly predicts that a given cognitive status can be appropriately coded by a form which explicitly signals that status, but also, in general, by forms whose meanings are entailed by that status. In (9), for example, the phrase *these systems* explicitly signals that the referent is activated, since this is part of the meaning of the proximal demonstrative determiner *this/these* in English.

(9) These incredibly small magnetic bubbles are the vanguard of a new generation of ultradense memory storage systems. These systems are extremely rugged... [Gordon Graff. Better bubbles. *Popular Science* 232(2):68 (1988)]

The determiner *these* in *these systems* is appropriate since the intended referent was just introduced in the preceding sentence and therefore could be expected to be activated for the addressee. But since anything activated is also familiar, uniquely identifiable, referential and type identifiable, other forms would have been appropriate here as well, including *those systems*, which requires familiarity, *the systems*, which requires the ability to associate a

[3] As a practical matter for the linguistic theorist seeking to discover the form-status correlations for a language, it is essential to determine the cognitive status of an entity on a particular occasion of reference independently of the linguistic form used by the speaker or writer on that occasion. This can be done by examining prior mention of the entity in the discourse, the environmental salience of the entity on the occasion of reference, the descriptive content of the nominal form used on the occasion of reference, and other clues to the cognitive status assumed for the entity by the speaker (or writer) on the part of the addressee.

unique representation, or *ultradense memory storage systems*, which requires only the ability to identify the type.

The use of less restrictive forms has limits, however. The indefinite article is rarely used if the status is higher than referential, and typically implicates non-familiarity. Most in-focus referents are not coded with demonstratives, even though they could be; and demonstratives often implicate a focus shift. Such facts follow from interaction of the Givenness Hierarchy with general pragmatic principles involved in language production and understanding (see Grice 1975, Sperber and Wilson 1986/95). The implicational nature of the GH gives rise to 'scalar implicatures', in the sense of Horn (1972), which further restrict the distribution and interpretation of referring forms (see Gundel, et al 1993, Gundel and Mulkern 1998).

With this background, Gundel, Hedberg and Zacharski propose that the possibility of reference with personal pronouns versus demonstratives depends on the cognitive status of the referent. While both types of pronouns restrict possible referents to those that are activated (in working memory), personal pronouns also require the more restrictive status in focus, that is, their referents must be the current center of attention. This is illustrated in (10)-(11) below, from Gundel et al (1993).

(10) a. My neighbor's bull mastiff bit a girl on a bike.
It's the same dog that bit Mary Ben last summer.
b. Sam found an abandoned dog. It had a broken leg.

(11) Sears delivered new siding to my new neighbors with the bull mastiff.
#It's the same dog that bit Mary Ben last summer.
That's the same dog that bit Mary Ben last summer.

In (10), an entity introduced prominently in the first sentence is rendered in focus, and then referred to by a personal pronoun in the second. In (11), an entity introduced more peripherally in the first sentence is made activated, but not in-focus, and can be referred to more felicitously by a demonstrative than a personal pronoun in the second.

This permits an explanation of the facts in section 1 in terms of the Givenness Hierarchy. For example, in (2), at the conclusion of A's utterance, the act of destroying the leaf collection can be assumed to be activated, since it was just introduced in the preceding sentence, but not in focus; the focus of attention after the utterance is processed is on the referents of the major arguments in (2A), specifically, John and the leaf collection. Similarly, in (5), the complex situation consisting of potential drawbacks to human cloning is rendered activated by the first paragraph, but we can assume that it is not rendered in focus given the higher salience conferred by this passage on cloned humans, rates of cancer, and other referents of main clause arguments. Accounts of other examples in section 1 proceed along similar lines.

In the following section, we examine factors that contribute to bringing an entity into focus, including the role that information structure plays in determining the cognitive statuses of referents introduced by clauses and thus the nominal forms which can be used to refer to these entities.

3. What brings an entity into focus of attention?

3.1. Syntactic structure

The framework outlined above makes predictions about the appropriateness of different pronominal forms depending on whether or not the intended referent can be assumed to be in focus for the addressee. Although the theory itself does not predict what brings an entity into focus, Gundel et al (1993:279) suggest that "the entities in focus at a given point in the discourse will be that partially-ordered subset of activated entities which are likely to be continued as topics of subsequent utterances." Membership in this set is partly, though not wholly, determined by syntactic structure. For example, subjects and direct objects of matrix sentences are more likely to bring an entity into focus than elements in subordinate clauses and prepositional phrases. For similar reasons, the focus of attention at the end of an utterance is more likely to be on the thematic arguments of the verb of a clause within the utterance (including the main clause), than on the proposition, fact, or situation expressed by that clause (cf. the Centering Algorithms of Grosz, Joshi and Weinstein 1983, 1995).

A fact or proposition introduced by an NP within a clause is thus more likely to be brought into focus than one which is introduced by the whole clause. Compare (12) and (13) with the examples in (3) and (4) above, for example.

(12) a. At that moment, Maria brought up another fact. **It** sent shivers down my spine.
b. Alex then introduced a new proposition. But **it** was immediately pooh-poohed.

(13) Last November, Bailey and Daniel Halperin of the University of California San Francisco wrote an article for *The Lancet* in which they pointed to evidence that circumcision protects against HIV, and accused public health agencies of disregarding **it**. [*New Scientist*, July 8, 2000: 18]

A possible reason for why nominal forms are more likely to bring an entity into focus is that they are not higher order expressions. The difference in semantic type determines different referential behavior, possibly correlated with different criteria of individuation. Hegarty (2001) discusses this connection, proposing that the denotation domains of nominal expressions such as those in (12) are unordered sets, and that elements of unordered sets are conceptualized as fully individuated, discrete objects, akin to concrete objects. Like concrete objects, they can be rendered immediately in focus upon their introduction into a discourse, depending, as in (10)-(11), on whether they are introduced in a sufficiently central syntactic position within the introducing sentence.

3.2. Less overt factors

Conditions which appear to boost the salience of entities also include less overt factors such as presuppositions and prior beliefs, and even inquisitive looks, all of which can cause an

entity to be "reprocessed", and thus brought into focus, even when it is overtly mentioned only once (see Borthen et al 1997 and Gundel et al 1999).

In (14), a baseline case for comparison, the speaker, upon clausally introducing the fact that linguists earn less than computer scientists, can assume that this fact is rendered activated, but not in-focus, for the hearer, leading to a preference for *that* over *it* in the follow-up reference to this fact.

(14) a. I hear linguists earn less than computer scientists, and **that**'s terrible.
b. ??I hear linguists earn less than computer scientists, and **it**'s terrible.

In (15), in contrast, the follow-up reference is made by another speaker, which results in somewhat more complicated inferences regarding the cognitive status of the fact at issue.

(15) Speaker A: I just read that linguists earn less than computer scientists.
Speaker B: (i.) **That**'s terrible! (ii.) **It**'s terrible!

At the completion of A's utterance, B can assume that the fact that linguists earn less than computer scientists is at least activated for A. In response B(i), B signals the assumption that this fact has been activated, but possibly not brought into focus by A's utterance, thereby inviting A to infer that the fact is news to B. In response B(ii), B signals the assumption that the fact is in focus for A, or ought to be, consistent with it being accepted background information for discourse in the relevant social circle; this invites A to infer that B already knew the fact.

In (16) below, the proposition that B has a dental appointment is clausally introduced by A's utterance. This, by itself, suffices to activate the proposition, but not to bring it into focus, accounting for why the response (16)B' sounds unnatural.

(16) A: You have a dental appointment at noon.
B: That's true. B': ??It's true. B": It's true, then.

But (16)B" is noticeably more acceptable than (16)B'. Following Gundel, Borthen and Fretheim (1999), we suggest an explanation of this fact, drawing on a relevance-theoretic approach to the pragmatics of language understanding (Sperber and Wilson 1986/95). *then* in B" functions as an interpretive particle which conveys the meaning that the content of the sentence it is appended to follows by way of inference from something the addressee just said. The response by B in (16)B" means essentially, "Given A's assertion that I have a dental appointment at noon, then I can take it as confirmed that I have a dental appointment at noon." The only way B's utterance can yield contextual effects for A is if A's utterance confirmed the truth of a proposition that B had been questioning, and B knows that A is aware of this. Thus, the fact that B had a dental appointment at 3 was not activated for the first time by A; rather, A's utterance brought into focus a fact that was already mutually manifest to both A and B beforehand, thereby licensing the use of *it* in B".

Salience can also be boosted non-linguistically. For example, the exchange in (17) below is fully natural if A gives B a skeptical look during the indicated pause.

(17) A: Why didn't you come to the rehearsal yesterday?
B: I thought I told you. I had to help Peter move. (Pause) It's true!

The skeptical look communicates A's skepticism about the truth of the proposition just expressed by B, thus causing the proposition that B has to help Peter move to be reprocessed (by both A and B) and assuring that it is mutually in focus, making it accessible to reference with *it*.

Salience of an entity in the environment also suffices for pronominal reference with *it*. If A and B are in a room together with a baby who suddenly begins to walk, A can produce the utterance in (18), or, if A sees B watching the baby walk, the utterance in (19).

(18) Will you look at **that**! The baby's walking. (Jackendoff 2001)
(19) Isn't **it** great? [it = the fact that the baby is walking]

3.3. The referential behavior of different types of clausally introduced referents

Another factor which seems to have an effect on whether or not a clausally introduced entity is brought into focus is the degree of world immanence of the entity and, correlatively, its manner and degree of individuation. Asher (1993) suggests that there is a spectrum of world immanence. Events and states, which have causal, spatial and temporal properties, have high world immanence; "purely abstract objects" such as propositions and thoughts have very low world immanence, and their individuation principles depend more on the means we use to describe them than on independent properties of objects in the world. Facts and situations are somewhere in between. Interestingly, this distinction appears to correlate with the accessibility to reference with *it* versus *this* or *that* when the entities in question are introduced by clausal constituents. Events, whose individuation properties are largely independent of the means we use to describe them, have referential properties similar to those of concrete objects and other referents denoted by nominal constituents of clauses, as seen in (20), where either *it* or a demonstrative *this/that* can refer to the event described in the first clause. [4]

(20) a. John broke a priceless vase. **That** happened at noon. [that = the event]
b. John broke a priceless vase. **It** happened at noon. [it = the event]

Such facts are explained if we assume that the individuating properties that events share with referents of nominal constituents make it more likely that they will be brought into focus immediately subsequent to their introduction with a full clause. The addressee, in processing the first sentence in (20), posits a relation 'break' between John and a vase, and this relation involves an event of John breaking the vase. In the terms of Discourse Representation Theory, with an underlying event semantics for active verbs, the introduction of **break'**(u, v, e), into a DRS, for discourse entities u, v satisfying **John**(u) and **vase**(v), requires a discourse entity e for the event in which John broke the vase.

[4] Since *that* merely requires activation of its referent, and anything in focus is also activated, in focus entities can be referenced with either *that* or *it*.

Situations are somewhat less accessible to reference with *it*, as seen in (21).

(21) a. John broke a priceless vase. **That/this** was intolerable to the embassy.
b. John broke a priceless vase. ??**It** was intolerable to the embassy.

The predicate *intolerable* in (21) precludes an interpretation on which the demonstrative pronoun refers to the event of John breaking the vase, since an event is unchangeable once it has occurred, and thus cannot fail to be tolerated. The situation of John breaking the vase, in contrast, includes its ramifications, and those at least, are subject to amelioration or change, making it sensible to say that the situation is intolerable to the embassy, which will therefore require a change in the situation (realized as a change in the consequences or ramifications) without any change in the associated event in which the vase was broken. The inclusion, or potential inclusion, of ramifications as part of a situation, but not as part of an event, is plausibly what makes a situation not clearly delimited in spatiotemporal extent, and therefore less fully or clearly individuated upon introduction than an event.

Thus, situations, which are less world immanent than events, and less susceptible to individuation by spatiotemporal extent, are also less likely to be brought into focus upon first introduction with a full clause. The examples in (1) and (5) bear this out. Example (3) shows that facts pattern with situations, and not with events, in their availability for subsequent pronominal reference. Finally, as examples (4) and (6) show, clausally introduced propositions, which lie at the low end of the world immanence spectrum, are typically not available for subsequent pronominal reference with *it*. The proposition expressed by an utterance is activated by that utterance but is typically not brought into focus.

In order for an utterance to bring some entity into focus it is necessary, (though not sufficient) that the entity be directly expressed as part of the propositional content of the utterance. This explains, at least partly, the contrast between events on the one hand, and situations, facts and propositions on the other. Speech acts (i.e. acts performed by an utterance, which are not part of the propositional content) are thus never brought into focus, and consequently inaccessible to subsequent reference with 'it'. This is illustrated in (22) and (23).

(22) Thorne: So you fired her?
Eric: We're going to do a lot more than just fire her, Thorne.
Thorne: What does **that** mean? (from the TV soap opera "The Bold and the Beautiful")
#What does **it** mean?

(23) A. John snores.
B. That's rude.
B'. It's rude.

In (22), the demonstrative *that* is interpreted as referring to Eric's statement 'We're going to do more than just fire her'. This interpretation is impossible if *that* is replaced with *it*, and

the resulting sentence is thus unacceptable in this context. In (23), the demonstrative pronoun *that* in (B) is ambiguous between an interpretation where it refers to the act of John snoring and an interpretation where it refers to A's illocutionary act of informing B of this fact. By contrast , (23B') can only have the former interpretation.

4. The role of information structure

The cognitive status, and therefore the accessibility to pronominal reference, of a clausally introduced entity is partly constrained by the information structure of the utterance in which it is introduced into a discourse.[5] In particular, information structure yields some striking effects, but also a surprising asymmetry, when higher order entities are introduced by (or within) clausal complements.

Entities introduced by clausal complements to bridge verbs, such as *think*, *believe*, and *say*, exhibit the familiar pattern of being rendered activated, but not in-focus, through mention by a clause. This is shown by the naturally occurring example in (24) below, as well as by the constructed data in (25), tested on a small survey of English speakers.[6]

(24) Ising reportedly believed that his negative results would hold in higher dimensions as well.
In this conjecture he was wrong. (*American Scientist* 88:385)
In this/ #it, he was wrong.

(25) A: Alex believes [$_F$ that the company destroyed the FILE].
B: **That**'s false; the file has been submitted to the district judge.
B': **#It**'s false; the file has been submitted to the district judge.

When (25A) is used with the focus-structure shown, to introduce the proposition that the company destroyed the file, the response by B using *that* is much more felicitous than the response with *it*. However, *it* and *that* are equally good when the complement clause is in the ground (theme; topic) of A's utterance, as in (26A).

(26) A: Alex [$_F$ INSISTS/BELIEVES] that the company destroyed the file.
B: But **that**'s/**it**'s false; the file has been submitted to the district judge.

---

[5] By information structure, we mean a bifurcation of material in an utterance into what has been called focus versus ground, comment versus topic, or rheme versus theme. This notion is not to be identified with contrastive focus or with the more general distinction between new versus old information. Information structural focus is also distinct from the cognitive status 'in focus'. See Vallduví (1990) and Gundel (1999a) for more detailed discussion of related terminological and conceptual issues. We will indicate information structural focus by the subscript 'F'.

[6] The use of *it* in (24) would be just as infelicitous if the PP were not preposed. Thus, the infelicity of *it* in (24) cannot be attributed to its incompatibility with the secondary focal stress it bears in this position.

Since an entity associated with the ground (theme; topic) is already at least familiar to the addressee prior to the utterance (see Gundel 1988 inter alia), its mention within the utterance suffices to bring it into the focus of attention, if it does not already have that status.

In (24)-(26), relational givenness/newness and referential givenness/newness (in the sense of Gundel 1988, 1999a,b) are coextensive. For example, the information structural focus in (25) represents a proposition that is not only new in relation to the topic (what Alex believes), but also referentially new to the hearer; and the clausal complement in the ground of (26) expresses a proposition which is not only given in relation to the informational structural focus, but also referentially given in the sense of being already at least familiar and probably also activated. But material in the informational focus doesn't have to be referentially new (see Gundel 1980, 1999a,b, Vallduví 1990, Lambrecht 1994). So when we have a bridge verb complement which is an information structural focus, but is already activated in the discourse, which factor wins out? Is an entity expressed by such a complement rendered in focus or does it remain merely activated? Is it accessible to reference with *it*, or only with *that*? Consider (27B2).

(27) A1: I believe that the company destroyed the file, but not everybody does.
B1: What does Alex believe?
A2: Alex believes [$_F$ that the company destroyed the file].
B2: But **it**'s/**that**'s false; the file has been submitted to the district judge.

(27B2) suggests that it is referential givenness (i.e. cognitive status of a discourse entity), and not relational givenness (i.e. topic-focus structure), that determines whether the complement of a bridge verb will be brought into focus.

But now flip the problem around. Content in the topic/ground of an utterance does not always have a high degree of referential givenness. It's cognitive status may be merely familiar, but not necessarily activated. So when we have a bridge verb complement which is ground material, but new to the discourse, which factor wins out? Is an entity introduced by such a complement rendered in-focus, because it is in the ground, or merely activated, because it is new to the discourse? Is it accessible to reference with *it*, or only with *that*? Consider (28) [secondary stress on *murdered*]:

(28) a. Alex is hopeless.
b. He [$_F$ INSISTS] that Tom was murdered, for example,
c. -- even though there's not a shred of evidence for that.
-- even though there's not a shred of evidence for it.

Use of *it* is as felicitous as *that* in (28c). The information structure of (28b) forces the addressee to accept the content of the complement clause as already familiar, so that (28b) renders it in focus, making it available to reference using *it*. Thus, presentation of a clausally introduced entity in the ground of an utterance is another way to promote salience, and bring the entity into focus, even if it is, in fact, new to the discourse.

With bridge verb complements, we thus appear to have an asymmetric situation: bifurcation into focus/ground has no effect on the cognitive status of an entity introduced within the information structural focus.[7] But it can have an effect when an entity is mentioned (even introduced) within ground material, because mention within the ground necessarily signals a higher cognitive status for the entity. This conclusion is preliminary, however, in that the judgments are subtle, and naturally occurring data that would bear directly on the issue is sparse.

5. Lexical structure versus information structure

When the bridge verb in (25)-(28) is replaced with a factive verb, demonstrative and personal pronouns can both be used to immediately refer to the entity expressed by the complement clause, regardless of the information structure of A's utterance. (Constructed data surveyed on a sample of English speakers.)

(29) A. Alex verified that the company destroyed the file.
B. That's false; the file has been submitted to the district judge.
B'. It's false; the file has been submitted to the district judge.

Thus, the contrast in (25) between subsequent reference with *it* versus *that* is not exhibited in (29), and the contrast between (25) and (26), exhibiting a partial effect of information structure on cognitive status, is also absent. The lexical semantics of the factive verb enforces the condition that the entity expressed by the complement clause be already familiar (or at least capable of being accommodated as familiar) to the addressee, so that its further mention in A's utterance renders this entity in focus.

In order to understand this fully, it is useful to note that this pattern is not confined to complements of factive verbs. It is also obtained in complements to certain non-factive (and non-bridge) verbs, including *agree*, *emphasize*, *deny*, and *doubt*, and in complements to the non-factive adjectival predicate *be certain*.[8]

(30) a. Alex and Susan agree that the company destroyed the file.
I'm surprised that they believe it.
b. Alex and Susan agree that the company destroyed the file.
I'm surprised that they believe that.

(31) A: Alex is certain that the company destroyed the file.
B: That's false: the file has been submitted to the district judge.
B': It's false: the file has been submitted to the district judge.

[7] Gundel (1999a) makes a similar observation, concluding that mention within the information structural focus (her 'semantic focus') doesn't necessarily bring an entity into focus of attention.

[8] Cattell (1978) noticed that these non-factives pattern with factives in wh-extraction from their complements. See also Melvold (1991), Hegarty (1992), and Schulz (1999) for discussion of this class of predicates.

As with factive predicates, the pattern in (30)-(31) is one in which *it* is at least as felicitous as *that* in referring to the content of the complement clause, and, in some cases, more so.

The predicates in (30)-(31) are not factive (in the sense made clear by Kiparsky and Kiparsky 1971) since they don't commit the speaker of the ascription in which they occur to the truth of their complement clauses. However, they share with factives a slightly more subtle semantic property: they are felicitous when the proposition, fact, or situation expressed by the complement clause is not an entirely new entity, but rather, an entity already accepted as given or familiar in the discourse. The ascriptions with *agree* and *certain* in (30)-(31), as well as the factive ascription in (29), would be odd if used to introduce into the discourse the fact or proposition that the company destroyed the file. Using a situation variable in the semantics, in the context of Discourse Representation Theory (Kamp and Ryle 1993), the interpretation of the factive ascription in (29) can be expressed by the Discourse Representation Structure (DRS) shown in (32) below.[9] The ascriptions with *agree* and *certain* in (30)-(31), though non-factive, would have identical DRS's, with trivial substitution of the verb denotations.

(32)

u, v, z, s
Alex (u)
Company (v)
File (z)
destroy (v, z, s) (w_O)
verify (u, λw[destroy (v, z, s)(w)])

In contrast, a belief ascription such as that in (25A), using a bridge verb, is interpreted semantically as just a relation between Alex and the proposition expressed by the complement clause. A DRS for (25A) is presented in (33).

(33)

u, v, z, s
Alex (u)
Company (v)
File (z)
believe (u, λw[$\exists s$[destroy (v, z, s)(w)]])

Of course, the ascription made by A in (25) could express a proposition which is already familiar to the hearer. The property distinguishing bridge verbs from the factive and other predicates discussed here is not that the content of the bridge verb complement must be

[9] Subordinate DRSs are abbreviated as formulas here to save space. For semantic representations using a situation variable, see Ginzburg (1995ab), and, for similar structures with an event variable, Higginbotham (1985, 1989). Schultz (1999) presents a proposal very similar in spirit to that represented in (32), but implemented quite differently in the context of Heim's (1982) File Card Semantics.

unfamiliar, but only that it can be. Bridge verbs, unlike other predicates discussed here, do not assume the familiarity of the content of the complement.

Interrogatives pattern with factive complements with regard to the status of abstract entities mentioned by or within them. Naturally occurring data are shown in (34) and (35).[10]

(34) One common attribute of a scientist is an unusually acute sense of numbers and their implications. I think it was Bertrand Russell who once observed that mankind would rather commit suicide than learn arithmetic. In other words, the meaning and implications of some numbers are often lost on most people – even when those numbers bring a very important message. George Bernard Shaw stated that one distinguishing characteristic of an educated person is that he or she can be emotionally moved by statistics.

A sense of numbers – why do I dwell on this observation? Perhaps **it**'s because we who come from a background of engineering, mathematics and science tend to convey concepts and findings in terms of numbers; yet many for whom our messages are intended find our communications (full of numbers as they are) unappetizing, boring, unconvincing and a bit standoffish. (*American Scientist* 88:378)

(35) Where and for how long saguaro, cardon, and organ pipe lived together before moving into the Sonoran Desert is currently unknown. Thus, we do not know where these species evolved the phenological differences that reduce their joint reliance for pollination on a single species of nectar-feeding bat.

One hint about **this**, however, comes from geographic variation in the timing of peak flowering in organ pipe. [*This* can be felicitously replaced with *it* here, without affecting interpretation:]

One hint about **it**, however, comes from geographic variation in the timing of peak flowering in organ pipe. [*it* = where these species evolved the differences that reduce their joint reliance for pollination on a single species of nectar-feedingbat.]

Constructed data has been tested on a small survey of English speakers, with the results shown in (36)-(37).

(36) A: Alex wonders whether the company destroyed the file.
B: **It**'s not likely. The file contained no incriminating information.
B: **That**'s not likely. The file contained no incriminating information.
[it/that = that the company destroyed the file]

(37) a. Alex wonders who destroyed the file; **it** has impeded the investigation.
b. Alex wonders who destroyed the file; **that** has impeded the investigation.
[it/that = that someone destroyed the file]

[10] Also, note that the first paragraph of (35) could felicitously be followed by ***It** is a mystery*, with *it* interpreted as specified at the end of the example.

The possibility of immediate subsequent reference with a personal pronoun in (36)-(37) follows from the presuppositional nature of questions. To simplify, within DRT, the *wonder*-ascription in (36A) should be represented with a DRS of the form shown in (38), where φ is an appropriate relation between Alex and the proposition *p* specified on the penultimate line of the DRS.[11]

(38)

u, *v*, *z*, *s*, *p*
Alex (*u*)
Company (*v*)
File (*z*)
$p(w) = \lambda w \exists s$[destroy (*v*, *z*, *s*)(*w*)]
φ

Interpreted as in (38), the *wonder*-ascription in (36A) is a question about the proposition that the company destroyed the file. This should be the form of any semantic account of the *wonder*-ascription which captures the presuppositionality of the embedded question: the proposition that the company destroyed the file must be an established discourse entity prior to the utterance of (36A), or it must be accommodated in the sense of Heim (1982). The assertive content of (36A) should be captured in the last line of the DRS, φ. On one realization of φ, given in Hegarty (2001), (36A) asserts that Alex is in the state of wonder with respect to the proposition that *p* holds of the actual world, w_O.

The embedded interrogative in (37) is also presuppositional: it pertains to the property that holds (across worlds) of those who destroyed the file, and asserts of it that Alex is in the relation of wonder to this property instantiated on the actual world. The property must be either established prior to the utterance of (37), or accommodated on the occasion of utterance. A DRS expressing the semantic interpretation of the *wonder*-ascription in (37) should therefore have the form shown in (39).

(39)

u, *v*, *z*, *s*, *p*
Alex (*u*)
Company (*v*)
File (*z*)
$P(w) = \lambda w \lambda x \exists s$[destroy (*x*, *z*, *s*)(*w*)]
φ

A simple representation of the assertion of the *wonder*-ascription in (37) is φ = wonder (*a*, $P(w_O)$).

[11] To unsimplify, questions are, in fact, constrained not only by the formal semantic condition captured here, but by rich contextual conditions on what would count as a suitable answer to a question in a given context. See Ginzburg (1995ab) and Asher and Lascarides (1998). The important point, for present purposes, is that these accounts would incorporate, and add to, the presuppositional condition given here. The proposals sketched here would therefore be a part of an account given according to these richer theories of the interpretation of questions.

The content of *p*, specified in the penultimate line of the DRS in (38), is thus mentioned again within the condition φ. The penultimate line in (38) thus enforces double processing of the proposition that the company destroyed the file, rendering it in-focus at completion of the *wonder*-ascription in (36A). The penultimate line in (39) does the same for the property "destroy the file" at completion of the *wonder*-ascription in (37). Thus the penultimate line expressing the presuppositionality of questions in (38) and (39) is analogous to the effect of the penultimate line of the DRS for factive (and similar) ascriptions, in (32) above.

Thus, the presuppositionality involved in the lexical structure of a factive (or related) predicate, and the semantic presuppositionality of embedded questions, are additional factors which can bring an entity into focus. In these cases, information structure has no bearing on the cognitive status of the clausally introduced entity.

6. Conclusion

In this paper, we addressed the fact that clausally introduced entities, immediately subsequent to their introduction into a discourse, are typically accessible to reference with a demonstrative pronoun, but not with the personal pronoun *it*. We found that this fact can be explained on the basis of the observation that such entities are typically activated, but not brought into focus, upon their introduction to a discourse. However, clausally introduced entities are, in fact, sometimes referenced with *it* immediately subsequent to their introduction. An examination of the discourse environments in which this is possible provides important insights into the various syntactic, semantic, and pragmatic factors that can boost the salience of an entity and bring it into focus.

We've shown that information structure, in the sense of a focus/ground bifurcation, is one such factor when an entity is mentioned with a bridge verb complement, but only in a way which is asymmetric, depending on whether the entity is mentioned within focal or non-focal material. When the complement is focal, there is no effect: the cognitive status of an entity expressed by a focal complement depends entirely on the referential givenness/newness (i.e. the cognitive status) of the entity. But when the complement is part of the ground (topic/theme), the entity is brought into focus.

In factive complements and embedded questions, the lexical nature of the embedding predicate and the semantic nature of the construction require an entity mentioned with the subordinate clause to be treated as referentially given independently of the information-structure of the utterance.

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Scrambling and Reference in German

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Although the linear order of arguments (and adverbials) in German is relatively free, it underlies certain restrictions; these don't apply to the so-called unmarked order for arguments (Lenerz 1977) and adverbials (Frey/Pittner 1998). It is a common assumption to take the unmarked order as basic and derive all other orders from it by scrambling, whatever its specific characteristics may be (cf., amongst others, Haider/Rosengren 1998). The observable restrictions obtaining for some linear ordering may then be considered as constraints on a movement operation (scrambling). Some well known restrictions are given in (1), exemplified by the linear order of indirect (IO) and direct object (DO). In the examples (2) – (4), the focussed NP is the questioned argument, e.g. Q:IO in (2):

(1) a. [±def IO] > [±def DO] : "unmarked order", regardless of focus position (cf. (2a), (3a), (4a)).
b. [+def DO] > $[IO]_F$: scrambling of [+def, -F] is ok (cf. (2b)).
c. *$[\pm$def DO$]_F$ > IO = *Don't scramble focus !* (cf. (3))
d. *[-def DO] > $[IO]_F$ = *Don't scramble (existential) indefinites !* (cf. (4))

(2) Wem hast du das Buch gegeben? Q : IO
'Whom did you give the book ?'
a. Ich habe [dem/einem StuDENten]$_F$ das /ein Buch gegeben.
[±def. IO]$_F$ > [±def. DO]
I have the / a student the /a book given
("unmarked order")
b. Ich habe das Buch [dem/einem StuDENten]$_F$ gegeben
[+def. DO] > [±def. IO]$_F$
I have the book the / a student given
(scrambled [+def DO,-F] is o.k.)
'I gave the book to the student.'

(3) Was hast du dem Studenten gegeben? Q : DO
'What did you give to the student?'
a. Ich habe dem Studenten [das BUCH]$_F$ gegeben.
[+def. IO] > [+def. DO]$_F$
I have the student the book given ("unmarked order")
b. *?Ich habe [das BUCH]$_F$ dem Studenten gegeben.
*[+def. DO]$_F$ > [+def. IO]
I have the book the student given (*scrambled focus)
'I gave the student the book.'

(4) Wem hast du ein Buch gegeben? Q : IO
'Whom did you give a book?'

a. Ich habe [dem/einem StuDENten]$_F$ ein Buch gegeben
[±def. IO]$_F$ > [-def. DO]
I have the / a student a book given
("unmarked order")

b. *Ich habe ein Buch [dem StuDENten]$_F$ gegeben.
*[-def. DO] > [+def. IO]$_F$
I have a book the student given
(*scrambled indefinite NP)

c. *Ich habe ein Buch [einem StuDENten]$_F$ gegeben.
*[-def. DO] > [-def IO]$_F$
I have a book a student given
(*scrambled indefinite NP)

'I gave a book to the student.'

As the standard examples in (2)-(4) show, IO > DO is assumed to be the unmarked order for most verbs taking two objects; here, no specific restrictions apply: every distribution of definite or indefinite NP and focus is possible for that order, cf. (2a), (3a), (4a). Scrambling a definite DO to the left of a focussed IO gives a possible order, too, cf. (2b). If, however, the scrambled DO is a focussed NP, it must not be scrambled in front of an IO, cf. (3b). Thus, (1c) "*Don't scramble focus*!" is a crucial restriction on scrambling in German. It may be accounted for by the interaction of focus placement, focus projection and, possibly, the proper assignment of prosodic features (cf., amongst others, Büring 1997, 2001, von Heusinger 1999). Thus, this restriction may find a plausible functional explanation ensuring the proper interpretation of a sentence wrt background-focus structure and the formal means for its expression, i.e. linear order and prosodic prominence.

There is, however, an additional restriction, for which, to my knowledge, so far no explanation has been proposed. As (4b), (4c) show, an indefinite DO should not be scrambled across an IO, even if the condition (1c) on focus-scrambling is not violated. Examples (4b), (4c) suggest that scrambling of an indefinite DO is not possible in general. As (5a), however, shows, the scrambled DO *einen obszönen Witz* ('an obscene joke') may be scrambled under certain conditions:

(5) Wem erzählt Peter einen obszönen Witz? „Whom does Peter tell an obscene joke?"

a. Peter erzählt einen obszönen Witz immer einem Schulfreund. (generic)
Peter tells an obscene joke always a-DAT schoolmate
'Peter tells an obscene joke always to a schoolmate.'

As far as is known, in this case the scrambling must be to a position outside the VP, as indicated by the temporal adverbial *immer* ('always') which is assumed to indicate the left boundary of VP. In this case, the scrambled DO may receive a non-existential, *generic* reading. Thus, the proper constraint on scrambling is assumed to be (1d) "*Don't scramble existential indefinites*!". *Generic* indefinites, however, *may* be scrambled (provided that the sentence itself allows for a generic interpretation).

It should be pointed out, however, that this restriction is still too weak: Scrambling across a subject (6a) is still not possible, whereas the (generic) subject itself may be scrambled as in (6b).

(6) a. *weil einen obszönen Witz immer Peter einem Schulfreund erzählt.
since an obscene joke always Peter a-DAT schoolmate tells
b. weil obszöne Witze immer an Herrenabenden erzählt werden.
since obscene jokes always on boy-nights told become
'Since obscene jokes will always be told on boys' nights.'

Thus, scrambling seems to be also sensitive to the syntactic hierarchy of arguments. Possibly, the restriction as stated above in (1d) is also too strong: In some cases the scrambling of existential indefinites seems to me to be possible, as will be shown below, cf. (14b).

In the following, I will try to present the outlines of a possible explanation for the restriction (1d), based on a proposal governing the proper referential interpretation of indefinite NPs.
Before doing so, however, let me point out some crucial shortcomings of some current proposals.

It has been assumed that syntactic structure shows a bi-partition parallel to the bi-partition of a formula of standard predicate logic (cf. Diesing 1990 and much consecutive discussion). A quantified logical formula like

(7) $\forall x$ (man (x)) $\exists y$ (woman (y) $\wedge$ love (x, y)) (*every man loves a woman*)

may be split into a *restrictive clause* defining the domain of the universal quantifier ($\forall x$ (man (x))) and the so-called *nuclear scope* ($\exists y$ (woman (x) $\wedge$ love (x, y))) containing the assertion being made of the individual(s) in the restrictive clause.

(7) a. $\forall x$ (man (x)) ‖‖ $\exists y$ (woman (y) $\wedge$ love (x, y)) (*every man loves a woman*)

restrictive clause ‖‖ *nuclear scope*
(CP) $_{IP}$[.... [Sadv ‖‖ $_{VP}$[....]]
$\forall$, GEN ‖‖ $\exists$

So, some authors have assumed that the part of a sentence *before* the sentence adverbial corresponds to the restrictive clause, the part following the adverbial representing the nuclear scope. The readings in (8a,b) are thus assumed to follow from a syntactic bi-partition corresponding to the bi-partition of the formula of standard predicate logic.

(8) a. weil <u>ein Feuerwehrmann$_i$</u> natürlich immer [$_{VP}$ t_i beREIT]$_{VP}$ ist:
<u>generic reading</u>
because a fireman naturally always ready is
'because a fireman is of course always ready'

b. weil natürlich immer [$_{VP}$ ein Feuerwehrmann beREIT]$_{VP}$ ist:
existential reading
because naturally always a fireman ready is
'because there is of course always a fireman ready'

Notice, however, that there is no reason why the syntactic structure should correspond to a fairly arbitrary partition of a formula of standard predicate logic as the latter was *not* devised to reflect syntactic structure at all. Consequently, a proper semantic structure giving us a *compositional* semantic interpretation of sentences like (8a) or (8b) will deviate from the fairly simple format of (7), as a more detailed representation in categorial grammar would show immediately. Such representations are indeed *based* on the syntactic structure which is taken to be *independent* of semantic translations like (7) and exist *prior* to them.

For this reason, I tried to provide an independent motivation for the syntactic bi-partition (Lenerz 2001). I assumed that the part preceding the sentence adverbial (thus: outside the VP) be interpreted as the part of the sentence containing *background information* (B-part) whereas the VP proper be the part containing the focussed elements (F-part), i.e. the new information being asserted to hold true of the B-part.

(7) b. (CP) $_{IP}$[.... [Sadv |||| $_{VP}$[....]]
B-part |||| F-Part (background vs. focus)
b-determined reference |||| *isc-dependent reference*
(isc = immediate sentence constituent)

This provided a first step towards an explanation of the scrambling restriction (1d):

The reference of the elements in the B-part is plausibly established by background information (*b-determined reference*). Thus, indefinites in the B-part should be interpreted as given or known in their reference, hence as *generic*. On the other hand, the referential expressions in the F-part represent new information. Their reference is, however, restricted by other referential expressions in the sentence as a whole, i.e. dependent on immediate sentence constituents (*isc-dependent reference*). Although I think that this proposal was basically on the right track, it has two shortcomings: First, in the light of recent work of Frey (2000) the characterization of the bi-partition into "B-part" and "F-part" is misguided. Rather, as Frey (2000) points out, the sentence adverbials (or, more precisely, possibly the temporal adverbials) marking the left boundary of the VP proper distinguish between a field containing a (number of) *topic* phrase(s) and the VP proper containing only the *comment* (cf. also Rizzi 1997), cf. (12) below.

Second, the restriction of the reference of isc-dependent expressions seems to me far more general than I assumed in Lenerz (2001).

Let us therefore take a closer look at the referential properties of indefinite NPs.
Indefinite determiners may be interpreted as choice functions which pick an *arbitrary* referent out of a "reference set" which is characterized by the noun (cf. von Heusinger 1997). The proper choice of the "reference set" of a given NP itself is dependent on (restricted by) the reference of expressions which c-command the NP in D-structure (X ← ref.dep. ← Y = Y is *referentially dependent on / referentially restricted by* X); hence the 'unmarked order' of arguments (SU< IO< DO< V) which does not underlie

any restrictions w.r.t. context / information structure / referential status: SU ← ref.dep ← IO ← ref.dep. ← DO.

So, in (9) the indefinite NP *ein Buch* does not refer to any arbitrary element of the set of books but is in its reference restricted by at least the c-commanding referential expressions *der Professor* and *dem Studenten.* A rough rendering of its interpretation may be given as (9b).

(9) a. weil (der) Professor (dem) Studenten gestern ein Buch gegeben hat.
since the professor the-DAT student yesterday a-ACC book given has
'Since the professor gave the student a book.'

(9) b. ein Buch = [| an arbitrary element of the set of books which were available yesterday to the professor and the student |]

Here, '*available*' is a rather vague term synonymous with what I dubbed *dependent* or *restricted* further above.

Similarly, the reference of the indefinite NP *einem Studenten* in (9c) may be paraphrased as (9d).

(9) c. weil der Professor gestern einem Studenten das Buch gegeben hat.
since the professor yesterday a-DAT student the-ACC book given has
'Since the professor gave a student the book.'

(9) d. *einem Studenten* = [| an arbitrary element of the set of students *which were available yesterday to the professor* |]

The essential idea now is that an indefinite NP looses its referential dependency if it is scrambled. Different versions of this idea come to mind, as W. Frey (p. c.) pointed out to me: In a strong version, a scrambled NP looses its referential dependency *altogether.* In this view, a scrambled NP has to be interpreted as referring to an arbitrary element of the *non-restricted* set of elements defined by the noun. A weaker version would hold that a scrambled NP looses only the referential dependency which extends from those referential expressions across which it has been scrambled. I have not been able to decide empirically which version is correct. One observation may be in favor of the weak version: Scrambling across an object NP (10a) seems to result in a weaker deviation than scrambling across an object and a subject (10b):

(10) a. ?*weil der Professor ein Buch dem Studenten gegeben hat.
since the professor a-ACC book the-DAT student given has
'since the professor gave a book (to) the student.'

b. *weil ein Buch der Professor dem Studenten gegeben hat.
Since a-ACC book the professor the-DAT student given has

Similar grades of ungrammaticality may also be observed with scrambling across adverbials. This is an area requiring some further investigation. It follows, however, from both versions that the scrambling of an indefinite NP results in a loss of its proper referential dependency. Thus, a proper interpretation of the sentence will no longer be possible if the sentence consists of a *specific* predication made of its subject NP. So, in the strong version of the principle of referential dependency, an interpretation of an ungrammatical sentence like (10b) will be something like (11), certainly a paraphrase of an utterance which does not make any sense.

(11) *it is true for [I *any arbitrary book* I] that a specific professor gave it to a specific student at a specific time.

So far, a concept of the referential dependency of indefinite NPs will enable us to account for the ungrammaticality of scrambled NPs if they are to be interpreted as existential.

In order to account for the *generic* interpretation of (at least some) scrambled indefinites, we will have to take a closer look at the topological and hierarchical structure of German sentences. As Rizzi (1997), Fry (2000), Frey/Pittner (1998), Meinunger (2000) have pointed out, there are several functional projections above VP, giving us two or three "fields" for scrambling. Details of the differences between the various proposals aside, it seems necessary to assume at least a number of topic phrases (TopP) above VP, constituting a field for scrambling which may also contain at most one Focus Phrase (FocP). Also, there is, of course, still the VP proper which is a field for (VP-internal) scrambling. Following Frey (2000), one may in addition assume scrambling to a field between the sentence adverbial and a temporal adverbial at the left periphery of the VP.

(12) (at least) three scrambling- "fields":
[CP $_{?}$[TopP* (FocP) TopP* $_{?}$[Sadv ... $_{?}$[TempAdv $_{VP}$[(SU) ...]]]]

I shall not be concerned with a detailed analysis; for valuable observations and their theoretical implications cf. Frey (2000). For my present purpose, it suffices to point out, following Frey (2000), that the Topic Phrases in (12) are to be interpreted not as 'familiarity'-topics but as *'aboutness'-topics*. This is immediately made clear by the example (13), taken from Frey (2000). Here, the context given in (13) provides for an 'aboutness'-interpretation of the NP *Otto*. The following sentence (13a) complies with this, as *Otto* is in an ('aboutness')-topic position. (13b) is not a proper successor for (13) since *Otto* in (13b) is not an 'aboutness'-topic.

(13) Ich erzähl dir mal was von Otto. ‚Well, I'll tell you something about Otto.'
a. Nächstes Jahr wird Otto wahrscheinlich seine Kollegin heiraten.
next year will Otto probably his colleague(fem.) marry
'Next Year, Otto will probably marry his colleague.'
Nächstes Jahr wird wahrscheinlich Otto seine Kollegin heiraten.
next year will probably Otto his colleague marry

From the assumption that we are dealing with 'aboutness'-topics, it follows immediately that non-referring expressions like *keiner* ('nobody'), *not* being 'aboutness'-topics, cannot appear in this position.

If this is basically correct, as I assume, the possibility of a generic interpretation of NPs which have been scrambled to a topic-position follows: If an indefinite NP is scrambled to a topic-position, it becomes an 'aboutness'-topic, the rest of the sentence being a comment on this topic. In other words, a topic-comment structure establishes a kind of secondary prediction. The comment itself, containing the primary predication (subject-predicate, possibly represented inside the VP) has to make sense w.r.t. the topic it is about. Thus, a scrambled generic NP requires, of course, a generic comment, as in (14a).

(14) a. weil Väter natürlich oft mit ihren Kindern spielen. (GEN)
since fathers naturally often with their children play
'Since fathers do of course often play with their children.'

If this analysis is correct it does not follow however that a NP which is scrambled to a topic-position must be interpreted as generic. Thus, given a proper specific comment, the scrambled NP should also be interpretable with a specific existential reference, as (14b), I believe, shows.

(14) b. weil Väter natürlich auch gestern mit ihren Kindern spielten. (∃, specific)
Since fathers naturally also yesterday with their children played
'Since also yesterday fathers played with their children.'

Notice that in my present analysis this is predicted whereas with a bi-partition analysis along the lines of (7a) a generic reading is stipulated, and an existential reading for a scrambled NP is ruled out. The same holds for my previous analysis (7b) since the reference of a scrambled NP in the B-part of the sentence (referring to background knowledge) has to be taken to be established, hence an existential reading should not be possible. I conclude, thus, that the restriction on the scrambling of indefinites as given above is wrong. The correct restriction seems to be (15):

(15) a. don't scramble indefinites inside the VP (=this follows from referential dependency)
b. indefinites which are scrambled to the topic-position are only allowed if they can be interpreted as referentially independent from referential expressions which they c-command in the scrambling position.

Both parts of this condition follow from a proper theory of referential dependency together with a proper theory of topic-comment-structure and its interpretation. Details of both theories will of course have to be worked out.

In the rest of this paper, I will discuss some ramifications and some possible consequences of a theory of referential dependency.

As pointed out above, scrambling across a subject is ungrammatical in most cases, cf. (16).

(16) *weil Eisbären natürlich Paul gestern fotografierte.
Since polar bears(ACC) naturally Paul yesterday took-pictures-of

This statement has to be relativized, however, given examples like (17).

(17) weil Eisbären natürlich alle mögen / niemand mag. (GEN)
Since polar bears(ACC) naturally all like / nobody likes
'Since, naturally, everybody / nobody likes polar bears.'

Here a subject NP with a universal quantifier (*alle* 'everybody') or a negated existential quantifier (*niemand* , 'nobody') does not block scrambling of the indefinite NP *Eisbären* ('polar bears'). It cannot be the generic quality of the subject NP as such

which allows for scrambling, as (18) shows, where the generic indefinite NP *Eisbären* ('polar bears') has been scrambled across the generic subject NP *ein Eskimo* ('an Eskimo').

(18) *weil Eisbären natürlich ein Eskimo gerne jagt.
since polar bears naturally an Eskimo gladly hunts
'since an Eskimo likes to hunt polar bears.'

The facts are far from clear especially as one tends to utter sentences like (17) or (18) with a bridge accent, stressing the scrambled NP (*Eisbären*) as well as the subject NP (*alle, keiner, ein Eskimo*). This specific intonation pattern seems to 'rescue' the sentences. (For details of a proper analysis of bridge accent structures cf. Büring 1997, among others). With normal sentence intonation, however, (18) seems to me to be ungrammatical. What would follow along the lines of explanation which I suggested is the following:

While (17) is a possible topic-comment structure, (18) is not. In (17), a kind of 'secondary predication' is made of polar bears in general: Everybody/nobody likes them. In (18) however, the comment on the topic phrase *Eisbären* does not seem reasonable: It does not make much sense to assert of polar bears that in general it is true that any (generic) Eskimo has the property of liking to hunt them. So, again, an explanation for the constraint to scramble across referentially restricted subjects (as in (18), as opposed to (17) with subject NPs which are not restricted referentially) relies on a proper theory of referential dependency and a proper theory of topic-comment structure and its interpretation.

Another observation concerns the order of arguments in the topic field. As Meinunger (2000) points out, Rizzi's (1997) proposal of a series of topic phrases wedged in between the functional projections CP on the left and possibly IP or some part of it on the right, cf. (12), has to be revised: Meinunger analyzes the Topic Phrases as Agreement Phrases. Their unmarked hierarchical order seems to be the same as inside the VP, as (19a,b,c) show.

(19) a. weil Paul seiner Freundin Schmuck natürlich gerne schenkt.
since Paul his-DAT girl-friend jewelleyr(ACC) naturally gladly donates
'Since Paul likes to give his girl friend jewellery'
b. *weil Paul Schmuck seiner Freundin natürlich gerne schenkt
since Paul jewellery(ACC) his-DAT girl-friend naturally gladly donates
c. *weil Schmuck Paul seiner Freundin natürlich gerne schenkt.
Since jewellery(ACC) Paul his-DAT girl-friend naturally gladly donates

All the arguments in these sentences are scrambled across the sentence adverbial *natürlich* ('naturally'), thus above the VP-projection. If their ordering violates the unmarked order SV>IO>DO, as in (19b,c), the sentence is ungrammatical. If this is true, it indicates strongly that referential dependency does not only apply inside the VP but inside the whole 'middle field' of German sentences, i.e. to the whole part of the sentence below the CP.

The initial field, however, does not seem to participate in the overall relationship of c-commanding referential dependency. Thus, a NP in SpecCP *retains* its referential dependency from its original position. Hence, movement to SpecCP does not have to obey the restrictions which hold for scrambling; consequently, any NP (or any other

maximal projection) may be placed in the initial field no matter where its source in the base structure is. This can be shown quite clearly if we consider possessive phrases, a good example of referential dependency. A possessive pronoun may refer to a c-commanding NP only in the unmarked order (20a):

(20) a. Gestern hat tatsächlich (der) Peter$_i$ seinen$_i$ Bruder gelobt.
yesterday has actually (the-NOM) Peter$_i$ his$_i$-ACC brother praised
'Yesterday, Peter actually praised his brother.'

b. * Gestern hat tatsächlich seinen$_i$ Bruder (der) Peter$_i$ gelobt.
yesterday has actually his$_i$-ACC brother the-NOM Peter praised

c. *Gestern hat seinen$_i$ Bruder tatsächlich der Peter$_i$ gelobt.
Yesterday has his$_i$ –ACC brother actually the-NOM Peter$_i$ praised

d. Seinen$_i$ Bruder hat (der) Peter$_i$ gestern gelobt.
His$_i$-ACC brother has the-NOM Peter$_i$ yesterday praised

If the possessive phrase is scrambled, as in (20b,c), it looses its co-reference with a NP across which it has been scrambled. If, however, the possessive phrase is moved to the initial position as in (20d), it retains the possibility of co-reference with the subject NP across which it has been moved. (Non-co-referential readings of the possessive pronoun are possible throughout since they do not show the kind of (co)-referential dependency requiring the corresponding c-command relations.)

A closer look reveals, however, that the conditions are a little more complicated if we consider the interaction with adverbials. If my judgement is correct, then movement of an object NP to the sentence initial position seems only possible if the subject has been scrambled from its VP-internal position, as the examples in (21a-c) show.

(21) a. Eisbären hat Paul natürlich immer geliebt.
polar bears(ACC) has Paul naturally always loved
'Polar bears, Paul always loved them'

b. Eisbären hat natürlich Paul immer geliebt.
polar bears(ACC) has naturally Paul always loved

c. *Eisbären hat natürlich immer Paul geliebt.
polar bears(ACC) has naturally always Paul loved

The case is different if the subject is moved to SpecCP as in (22). In this case the object *Eisbären* 'polar bears' may either remain inside the VP (22a) or be scrambled to a topic position (22b).

(22) b. Paul hat natürlich immer Eisbären geliebt.
Paul has naturally always polar bears (ACC) loved

a. Paul hat Eisbären natürlich immer geliebt.
Paul has polar bears(ACC) naturally always loved
'Paul has of course always loved polar bears.'

Still, both sentences seem to have a slightly different interpretation. What comes to mind in the present discussion is the idea that here, too, referential dependency plays a role. For the cases in (21), my explanation would be as follows: Let us assume a referential dependency between the subject and the temporal adverbial. If the definite

subject *Paul* stays in its base position inside the VP, as in (21a), the temporal adverbial *immer* ('always') is not restricted referentially. Thus, (21a) would have the interpretation that *for all times in the universe* it be true that the specific individual Paul loves polar bears, clearly not a reasonable assertion, given that individuals like Paul only live for a specific period of time. In (21b), however, the temporal adverbial is referentially dependent from the scrambled subject which c-commands it from its topic position. In this case, *immer* ('always') may only refer to all times *available to Paul*, as it were, giving the intended interpretation. Similar considerations will apply to the slight difference in meaning between (22a) and (22b). Whatever the details of the analysis will turn out to be, what (21) and (22) show us is that there exists some paradoxical kind of interaction between scrambling and movement to SpecCP which has to be investigated in more detail: A temporal adverbial seems to be referentially dependent from a subject in SpecCP. This looks as if movement to SpecCP presupposes scrambling to a topic position in which the required referential dependency is established. On the other hand, an object in SpecCP seems to retain its referential dependency from its base position.

As regards possessive phrases, they also show that it is necessary to assume such an interaction between scrambling and movement to the initial position. As (23a) shows, scrambling of the definite IO *dem Otto* ('the-DAT Otto') to a topic position enables us to interpret the subject NP *sein Vater* ('his father') with a co-referent possessive pronoun, as indicated by the indices. This is not possible for (23b). Here, the subject is scrambled to a topic position in which its possessive pronoun is not c-commanded by the co-referential NP *Otto*, hence cannot be interpreted as referentially dependent. (Again, as in (20), non-co-referential readings are possible.)

(23) a. Allerdings wird dem Otto$_i$ wahrscheinlich sein$_i$ Vater **t** das Auto ausleihen.
Indeed will the-DAT Otto$_i$ probably his$_i$ father the car lend
'Indeed, Otto's father will probably lend him the car.'

b. *Allerdings wird sein$_i$ Vater wahrscheinlich **t** dem Otto$_i$ das Auto ausleihen.
Indeed will his$_i$ father probably the-DAT-Otto$_i$ the car lend.

(24) a. Sein$_i$ Vater wird dem Otto$_i$ wahrscheinlich **t** das Auto ausleihen.
His$_i$ father will the-DAT Otto$_i$ probably the car lend
'Probably, Otto's father will lend him the car.'

b. *Sein$_i$ Vater wird wahrscheinlich **t** dem Otto$_i$ das Auto ausleihen.
His$_i$ father will probably the-DAT Otto$_i$ the car lend

Fronting of the possessive phrase in (24a) is possible with the co-referential reading. Given the scenario I assumed so far, this is explained if we assume the structure indicated by the trace in the VP-internal subject position, i.e. if we assume an underlying structure with the IO scrambled to a topic position. (24b), however, is ungrammatical with a co-referential reading. This would be explained if we assume an underlying structure in which the fronted phrase originates in the position indicated by the trace.

Many puzzles remain. What the preceding discussion of but a few cases of referential dependency , however, shows, to my mind, is that the area of application of the concept

of referential dependency is quite diversified and the crucial facts are as yet not understood very well at all. Furthermore, it seems to me, the very general concept of referential dependency, if correct, may also be relied upon to derive the property and position of personal pronouns and other referential expressions. Hence, binding theory and a proper theory of the interaction of quantifiers may eventually turn out to follow from a general theory of referential dependency yet to be elaborated.

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Sentence mood constitution and indefinite noun phrases*

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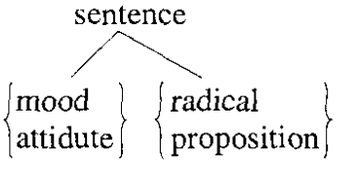
Abstract

Sentence mood in German is a complex category that is determined by various components of the grammatical system. In particular, verbal mood, the position of the finite verb and the wh-characteristics of the so called 'Vorfeld'-phrase are responsible for the constitution of sentence mood in German. This article proposes a theory of sentence mood constitution in German and investigates the interaction between the pronominal binding of indefinite noun phrases which are semantically analyzed as choice functions. It is shown that the semantic objects determined by sentence mood define different kinds of domains which have to be uniquely accessible as the range of the choice function. The various properties of the pronominal binding of indefinites can be derived by the interplay of the proposed theoretical notions.

1. Introduction

Since at least Frege (1892) a sentence is analyzed as a mood operator that is combined with a proposition. While Frege introduced only an assert operator (!), Stenius (1967) and, in following contributions Lewis (1970), Bierwisch (1980) and others[1], proposed that sentences contain two components in general: a mood or attitude component and a propositional component, the sentence radical.

(1)



(Stenius 1967)
(Bierwisch 1980)

Montague (1974) claimed that the formulation of truth conditions for declaratives have to be extended to fulfillment conditions in order to capture imperatives and interrogatives adequately. Hausser (1980),-using the Montegovian framework, proposed a semantic analysis for various sentence moods which tries to explain the differences by assigning to each sentence mood a different logical type. Brand et al. (1992), Reis/Rosengren (1992) developed a compositional system of sentence moods which tries to account for the various kinds of wh-constructions in a compositional fashion by strictly using the grammatical means in order to drive the semantic effects for interpretation. In Cheng (1991) and Brandner (2000) wh-movement is analyzed

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[1] See Altmann (1993), Bäuerle/Zimmermann (1991), Grewendorf/Zaefferer (1991) to get an overall view about the topic of sentence mood.

under the perspective of sentence type marking. The purpose of clausal typing is to mark the illocutionary force of a sentence. In a similar way, I suggest, the force phrase mentioned in Chomsky (1995) and Rizzi (1997) has to be interpreted.

In Lohnstein (2000) a compositional theory of sentence mood is developed which makes crucial use of the category *verbal mood* and the syntactic operations of A-bar- and head movement. This theory takes verbal mood to be a functional category which projects a mood phrase MP as being the highest projection of the clause. It licenses a specifier position and takes as functional argument a tense phrase TP. The differences in the lexical fillings of the head position M°, and the specifier position SpM of the MP, lead to different sentence moods and their respective interpretations in a strictly compositional fashion. The ingredients of the composition belong to the interpretation of the different verbal moods, the index partitioning property of propositions, the semantic characteristics of [± wh]-phrases (being A-bar moved to the position SpM) and the contribution of head-movement of the finite verb from the base position V° to M° passing I°. By this means the head movement constraint (HMC) first proposed by Travis (1984) is obeyed. It is shown that verbal moods, in analogy to the temporal interpretation of tense, determine relations between the actual world and alternatives to it. The differences in interpretation are related to different conversational backgrounds in the sense of Kratzer (1978, 1991).

In this article the basic elements and operations, which appear to be necessary for a theory of sentence mood are introduced and the semantic properties of the regular grammatical means are related to the semantic components and their composition in a 1:1 fashion. This leads to a direct mapping between the syntactic structures and the objects of the semantic interpretation.

The referential accessibility of indefinite noun phrases by pronominal binding depends on the choice of the sentence mood. As proposed in Egli (1991) and von Heusinger (1996, 1997) noun phrases can be interpreted by a term building ε–operator, which is interpreted as a choice function mapping the donation of a noun (i.e. a set of individuals) to some member of that set. Various data belonging to the interaction between sentence mood and the binding of indefinite NPs allow for an explanation in terms of the proposed theory of sentence mood constitution and the interaction with the theory which treats NPs as choice functions. As will be shown, indefinite NPs can only be bound by a pronoun if the range of the choice function is uniquely given. This is not the case if the indefinite NP occurs in interrogative contexts. If the indefinite NP appears in a declarative, imperative, or some other construction, its referential binding is less problematic.

2. Syntactic assumptions

In German as well as in English (and the other Germanic languages too) not all verbal moods allow for question formation. First of all, the imperative verbal mood is incompatible with fronted [+wh]-phrases.

(2) *Wen bring zum Bahnhof?
(Who bring to the station?)

Clauses marked with subjunctive I behave similarly.

(3) *Wen bringe er zum Bahnhof?
Who bring (–subj I) he to the station?

These sentences are well formed if the verbal mood is changed to indicative or subjunctive II.

(4) Wen bringt/brächte Peter zum Bahnhof?
(Who brings/(would bring) Peter to the station?)

Furthermore, subjunctive I and imperative clauses do not form sentences which can be interpreted truthfunctionally. That is, even if a [-wh]-phrase has been moved to the sentence initial position, no truthfunctional evaluation is possible. Note that, although [+wh]-movement is prohibited in the case of imperatives –see (2) and (3)–, [-wh]-movement is not, as shown by (5).

(5) (i) Den Kollegen bring zum Bahnhof!
(The colleague bring to the station!)
Bring the colleague to the station!
(ii) Den Kollegen bringe er zum Bahnhof!
(The colleague bring (-subj I) he to the station!)

Again, the corresponding sentences with verbal mood changed to indicative or subjunctive II allow for evaluation according to truth or falsity.

If we look at long wh-movement from a complement clause into an imperative matrix clause (so called wh-imperatives) the wh-phrase is possible at the left periphery of imperative clauses. However, the scope of the [+wh]-phrase is restricted to the embedded clause.[2]

(6) (i) Wohin, sag mir, dass Du nie wieder gehst!
(To which place tell me that you will never go again!)
(ii) Sag mir, wohin Du nie wieder gehst!
(Tell me to which place you will never go again!)

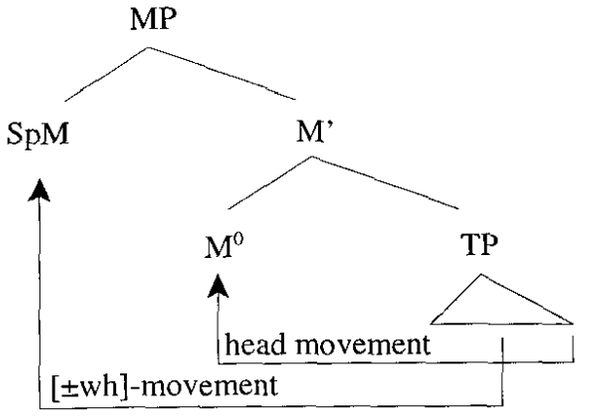
These data provide strong evidence for a systematic interaction between verbal mood in German and other syntactic operations especially [±wh]-fronting, which are relevant to the sentence mood distinctions.

In order to relate the category *verbal mood* to the fronting of wh-phrases I assume that the verbal mood in German establishes a functional category MP with a specifier position SpM. This functional category replaces the classical CP-projection, which is motivated on purely positional grounds for main clauses. On the one hand, replacement of these projections by a morphologically motivated functional category meets the need for the derivation of syntactic structures from morphological and lexical units. On the other hand it provides a syntactic domain in which sentence type and sentence mood distinctions can be expressed, in that a systematic interaction of the various components can take place in a uniform system and at the same time in a uniform fashion. This is a necessary requirement for all natural languages as Cheng (1991), Brandner (2000), Lohnstein (2000) have pointed out. The consequences according to syntactic A'–

[2] See Reis/Rosengren (1992).

movement and head movement are minimal in that A'- movement targets SpM instead of SpC and head movement of the finite verb targets M° instead of C°. The left periphery of German main clauses then looks like that described in (7).

(7)



The theoretical advantage of these assumptions about the left periphery of German main clauses belongs in the first place to the uniform domain in which the sentence mood is determined, and second to the interaction of its constituting components, which meet in a well defined domain of the syntactic structure.

Since Thiersch (1978) and den Besten (1977) it is assumed that main clauses in German are derived by two root transformations, one of which moves the finite verb to the left periphery, while the other moves one constituent from the middle field to a position in front of the finite verb. According to the [±wh]-characteristics of this so called 'Vorfeld' phrase a wh-question results if this phrase contains a [+wh] feature. A declarative sentence results if the phrase is marked [-wh], or is unmarked with respect to the wh-specification. If the position SpM remains empty a y/n-question results. These options are available only if the verbal mood is either indicative or subjunctive II. If the verbal mood is either imperative or subjunctive I question and declarative formation are blocked, but yield other types of modal interpretation.[3]

Before going into the details of the semantic interpretation for syntactic movement processes let us take a closer look into the relational properties of verbal mood. As pointed out in Farkas (1992) and Quer (1998) a shift in the mood involves a shift in the model of interpretation of the respective proposition.

According to main clauses it can be observed that propositions marked with imperative mood are only interpretable with a progressive reading, while sentences marked with subjunctive I allow for a present or progressive reading only. In both cases the respective proposition allows only for an interpretation with a word to world direction of fit. If the verbal mood is indicative or subjunctive II the direction of word-world-fit reversed in that the words have to fit the world.[4]

These elementary distinctions suggest that verbal moods divide into at least two classes with respect to the word-world direction of fit together with their modal interpretation. Both classes supply a specific contribution to the sentence mood respectively. The table in (8) lists the differences:

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[3] Although the theory proposed in Lohnstein (2000) covers these cases too, I will not go into further exploration here.

[4] This distinction was introduced by Searle (1975) to discriminate speech acts, but it seems to be relevant even with respect to semantic differences.

(8)

words have to fit world:	**world has to fit words:**
indicative	imperative
subjunctive II	subjunctive I
y/n-question	* y/n-questions
wh-question	* wh-questions
assertion	* assertion

Elaborating the semantic intuitions more closely, we can assume that the two classes of verbal mood relate propositions to different kinds of conversational backgrounds in the sense of Kratzer (1978,1991). In Lohnstein (2000) I proposed that at least two such domains have to be identified in order to capture the relevant distinctions: an epistemic and a factive domain. Propositions marked with imperative or subjunctive I are related to the factive domain, while propositions marked with indicative or subjunctive II are related to the epistemic domain[5]. In model theoretic terms we can identify the factive domain with definition of the model and the epistemic domain with knowledge about it.

These two domains are interrelated in systematic ways. Take the factive domain to include all facts in the past, the present and the future of the actual world.; and take the epistemic domain to include all contents which are knowable. Assume further that human beings distinguish well between the outer world (of facts) and the inner world (of knowledge). This distinction goes back at least to Descartes' 'res extensa' and 'res cogitans'.

However, relating the two domains to the word-world-direction of fit, the notion of *making something topical* plays a major role. The states of affairs we know about the actual world belong to the past or present, but the future ones are not accessible epistemically. Furthermore, the states of affairs in the past will never be made topical again. On the other hand, we do not know things which will be facts in the future of our world, but exactly these things will become topical. The distinction between epistemic and factive domain is intended to grasp exactly these intuitions.

It now follows that only propositions from the epistemic domain can be true or false, and that propositions from the factive domain are truthfunctionally not evaluable. The main properties of imperative and subjunctive I-clauses are then derivable from the properties of the factive domain, together with general principles of interpretation.

3. The semantics of sentence mood

Let us now take a closer look at the semantics of questions and declaratives. According to Groenendijk/Stokhof (1982, 1984, 1996), Higginbotham (1996), questions denote exhaustive partitions of the class of possible answers. For a y/n-question like (9)(i) this partition is given as in (9)(ii).

(9) (i) Did Peter stroke the cat?
(ii) {Peter stroke the cat | Peter did not stroke the cat}

Since every proposition induces a bipartition of the set of indices (i. e. pairs of world-time points), the proposition from (9) separates the class of indices for which the

[5] Further elaboration is necessary to account for the main use of the subjunctive I in German, namely its use in indirect speech. Several suggestions regarding this can be found in Bredel/Lohnstein (2001a/b). See also Farkas (1994), Quer (1998).

proposition 'Peter stroke the cat' is true from the class of indices for which the proposition 'Peter did not stroke the cat' is true. That is, every proposition leads to a bipartition of possible world states. In general, a bipartition contains two classes of indices. In one class are those indices at which the proposition is true, and the other class contains all indices at which the proposition is false (or rather the negation of the proposition is true). The essential and general characteristic of a partition from a set is, that it divides its members into disjoint (equivalence-) classes, which unite into the whole set under set union. The elements in each class are equivalent with respect to some property.

According to that, a proposition resembles a y/n-question, in that it leads to a similar semantic object, namely a bipartition. This object P is shown in (10).

(10) P = {x stroke the cat | x did not stroke the cat}

Together with a wh-phrase, a wh-question as in (11) (i) leads to a more differentiated partition as in (11) (ii), where Peter, Fritz and Clara are the relevant individuals in the context of discourse.[6]

(11) (i) Who stroke the cat?

(ii) Peter stroke the cat & Fritz stroke the cat & Clara stroke the cat

Peter stroke the cat & Fritz stroke the cat & Clara did not stroke the cat

.

.

.

Peter did not stroke the cat &Fritz did not stroke the cat &
Clara did not stroke the cat

(11) (ii) has the structure of a Boolean lattice which is closed under negation and conjunction. This lattice is formed from the semantic content of the proposition together with the semantic content of the wh-phrase. It remains to be determined how the semantic contribution of the proposition interacts with the semantic contribution of the wh-phrase to yield the lattice in (11)(ii).

The proposition –as we have just seen- corresponds to a bipartition of possible states of affairs (or indices). Assume now, that a wh-phrase denotes a partition too. Then the wh-phrase WHO denotes the exhaustive set of equivalent classes of people, WHERE denotes the exhaustive set of equivalent classes of locations, WHEN denotes the set of all temporal equivalent intervals, and so on. The denotation of WHO from our earlier context of discourse looks like (12).

(12) WH = {Peter | Fritz | Clara}

If we now combine each element from the propositionally induced bipartition P in (10) with each element from the partition WH in (12) building the Cartesian product P x WH, we obtain the partition in (13).

(13) WH x P = {Peter | Fritz | Clara} x {x stroke the cat | x did not stroke the cat}
= {Peter stroke the cat | Peter did not stroke the cat |
Fritz stroke the cat | Fritz did not stroke the cat |
Clara stroke the cat | Clara did not stroke the cat}

[6] See Groenendijk/Stokhof (1982, 1984, 1997), Higginbotham (1996).

This partition still does not build the lattice we are after. We furthermore have to extend each class with all other classes in such a way that each class contains all but the contradicting propositions. That means that we may combine the elements 'Peter stroke the cat' and 'Fritz did not stroke the cat' which are compatible, but we are not allowed to combine 'Peter stroke the cat' with 'Peter did not stroke the cat', because the latter combination would lead to a contradiction. With this operation -closure under conjunction- we yield exactly the lattice in (11)(ii).

We are now able to derive the semantic object which corresponds to a wh-question from the semantic content of the wh-word and the semantic content of the proposition, using the concept of the partition in a unique manner.

Following this, we may look how an assertion is formed using exactly the same material and processes, except that we use a [-wh]-phrase instead of the [+wh]-phrase. A [-wh]-phrase denotes a partition of exactly one class. For instance, the [-wh]-phrase 'Peter' denotes the (trivial) partition WH^{-} = { Peter }. If we combine this partition with the bipartition given by the proposition in the same way as we combined the [+wh]-phrase with the proposition, we must build the Cartesian product. As a result, we receive the structure in (14).

(14) $WH^{-} \times P$ = { Peter } x {x stroke the cat | x did not stroke the cat}
= {Peter stroke the cat | Peter did not stroke the cat}

Again, we have built a Cartesian product, in this case from WH^{-} and P. The operation of forming all classes by combining those elements which do not contradict the other is now a trivial matter, because there is no possibility to form any combinations without encountering contradictions. By using the [-wh]-phrase the bipartition in (14) is reduced to the class of indices at which P applied to 'Peter' is true, leading to an assertion, as required.

Let us now look more closely at a topic Gottlob Frege (1892) has pointed out in his 'Logical Investigations' (Logische Untersuchungen). Frege (1986[3]:35) writes: "Wir erwarten ja zu hören oder nein. Die Antwort 'ja' besagt dasselbe wie ein Behauptungssatz; denn durch sie wird der Gedanke als wahr hingestellt, der im Fragesatz schon vollständig enthalten ist. So kann man zu jedem Behauptungssatz eine Satzfrage bilden. [...]

das Denken	-	das Fassen des Gedankens
das Urteilen	-	die Anerkennung der Wahrheit des Gedankens
das Behaupten	-	die Kundgabe des Urteils

Indem wir eine Satzfrage bilden, haben wir die erste Tat schon vollbracht."[7]

Frege therefore distinguishes three different acts forming an assertion. First, the capturing of the idea (das Fassen des Gedankens) corresponds to the structure of a proposition, by being related to a y/n-question (Satzfrage).

Second, the acknowledgement of the truth (Anerkennung der Wahrheit des Gedankens) is built by committing oneself to the truth of the proposition. In terms of a

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[7] We expect to hear 'yes' or 'no'. The answer 'yes' means the same as the assertion, because it claims that the thought, which is entirely contained in the question, is true.Therefore it is possible to form a question from every assertion. [...]

the thinking	-	the capturing of the thought
the judgement	-	the acknowledgement of the truth of the thought
the claim	-	the announcement of the judgement

By forming a y/n-question, the first act is already achieved."

bipartitioned space of indices, 'committing oneself to the truth of the proposition' means to reduce the bipartitioned set of indices to that class in which the proposition is true.

Third, the announcement of the judgement (Kundgabe des Urteils) corresponds to the process of adding the reduced bipartition to the context of discourse. In order theoretically to reconstruct this process we can use a notion originally proposed by Stalnaker (1978) and elaborated more closely in discourse representation theory.[8] The basic operation we need here is modeled by an update function of the information state of a discourse.

Take CG to be the common ground in a discourse. CG is the set of all propositions the participants take for granted. This set defines the set A of all indices at which all propositions from CG are true. In order to add new information to the discourse new propositions have to be added to CG, thereby reducing the indices in A. By adding more information to CG the indices compatible with all these informations shrink. This means that if there is more information available the set of possible alternatives compatible with this information is smaller. Updating a given CG with some semantic object p to CG' is performed by the update function '⊕' which looks like in (15)(i). The set A of indices reduces through set theoretic intersection, because the indices in A' have to be compatible with the further proposition p. This is shown in (15)(ii).

(15) (i) $CG' = CG \oplus p = CG \cup \{ p \}$
(ii) $A' = A \cap p$

As is clear from the outset, the information state in a discourse is not only influenced by assertions (the usual case) but also by questions, imperatives, etc.

Returning now to the three acts Frege found in assertions, I want to show that the essential properties of these acts appear not only in assertions but that they are constitutive in forming *all* sentence moods.

As we have already seen the compositional process of forming a wh-question contains the proposition together with the wh-phrase. In order to *ask* a question, the question has to be added to the discourse. We therefore have the situation that the discourse is not updated with a single proposition, but with a set of alternatives given by the Boolean lattice. Each class of elements does allow for updating the information state of the discourse. For instance, if the question 'who stroke the cat' is added to the discourse, every class from (11)(ii) is a possible candidate for the update function. So, for instance, the discourse can be updated by the class 'Peter stroke the cat and Fritz and Clara did not stroke the cat'. Then the information state updates the discourse in another way, as if the class 'Peter did not stroke the cat and Fritz and Clara stroke the cat' would have been added to the CG. Discourses that do not reduce these alternatives properly do not have a proper structure, because too many possible continuations are left open. It follows from that, that questions need answers. As a result, questions in general allow for several possibilities by which to update the discourse. These updated alternatives are usually reduced by answers from other participants of the discourse.

Since the formation of a y/n-question does not need any other element than the propositionally induced bipartition, this semantic object is added to the discourse without reduction, differentiation or any other semantic operation to modify its structure. It discloses exactly two options of continuation.

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[8] See Haas-Spohn (1991) for a detailed summary.

To form a declarative sentence one has to combine a [-wh] phrase with the propositionally induced bipartition. This yields the reduction of the bipartition of the set of indices to the class of those at which the proposition is true. Asserting, then, means adding the reduced bipartition (the judgement in Frege's sense) to the CG.

The following table contains the relevant objects, features and operations, which are necessary to derive the respective semantic properties of y/n- and wh-questions as well as declaratives.

(16)

features	**[+/-wh]-objects**	**bipartition**	**operation**	**mood**
+wh	Peter, Fritz, Klara	p ¬ p	bipartion becomes differentiated	wh-interrogative
∅	∅	p ¬ p	bipartion remains unmodified	yes/no-interrogative
- wh	Peter	p ¬ p	bipartition becomes reduced	declarative

From the content of this table it can be seen which elements are necessary in order to derive the respective objects. Furthermore, it becomes clear that the variation in the mood specification depends on the difference of the involved [±wh]-phrases only. The sentence mood results as the outcome of the operation.

It is important to note that the compositional processes work if, and only if, the verbal mood is indicative or subjunctive II. They do not work if the verbal mood is imperative or subjunctive I as the following examples from German suggest.

(17) (i) indicative/subjunctive II

a. Wem gibt/gäbe Maria ein Buch?
(Whom gives/would give Mary a book?)

b. Gibt/gäbe Maria ihrer Freundin ein Buch?
(Does/would Mary give her girl friend a book?)

c. Ein Buch gibt/gäbe Maria ihrer Freundin.
(A book gives/would give Mary her girl friend.)

(ii) imperative/subjunctive I

a.	*Wem gibt/gebe Maria ein Buch?	*deiner Freundin
	(*Whom give a book?)	(*your girlfriend)
b.	Gib/Gebe Maria ein Buch?	*Ja/Nein
	(Give/give –subj I Mary a book?)	(*yes/ no)
c.	Deiner Freundin gib/gebe ein Buch.	*wahr/falsch
	(Your girlfriend give/give-subj I a book?)	(*true/ false)

The example in (17)(ii) (a) is ungrammatical because, as we have already seen, the [+wh]-phrase is incompatible with a proposition which is related to the factive domain.

Fronting of the finite verb in (17)(ii) (b) does not lead to a y/n question as in (17)(i) (b). Again, this is because the factive domain does not allow for a bipartition at all[9]. In (17)(ii) (c) no assertion derives by fronting a [-wh]-phrase as opposed to (17)(i)(c). Again the reason is that there is no partitioning possible on the factive domain. Although the construction is well formed no effects concerning the sentence mood are apparent.

[9] The reason for the impossibility of truth or falsity is therefore the same as for the impossibility of forming a y/n question.

Summing up so far, we have seen that propositions marked with indicative or subjunctive II can combine with a [+wh]-phrase to form a wh-question. The semantic composition thereby leads to a Boolean lattice representing the meaning of the wh-question. By the same operations the assertion is derived by substituting the [+wh]-phrase with the [-wh]-phrase. Therefore, the only difference between these two kinds of sentence formation rests with differences in the [± wh]-specification of the participating phrases, reducing the differences between these two sentence moods to properties of the participating lexical items. Y/N-questions are formed from the propositionally induced bipartition without the need of any further lexical material.

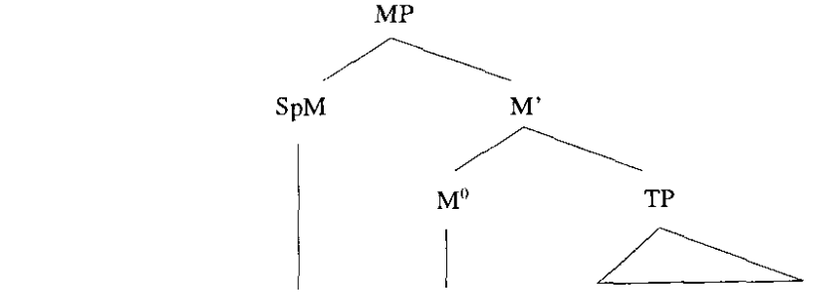
If we look to propositions marked with imperative or subjunctive I, these combinations fail to supply any of the first mentioned effects. The explanation for that is quite simple if one has noted that only epistemic contents can be true or false and therefore allow for a bipartition of the set of indices. Since this does not hold for the factive domain (facts cannot be true or false, they're just facts) no bipartition is possible. It follows that question formation with propositions from the factive domain is generally impossible, and that assertive clauses cannot be formed because there is no partition to reduce. Note that in all these constructions, the possibility of forming declarative or interrogative objects is blocked for the same reason.

4. On the interaction of syntax and semantics

Let us now relate the concepts of a compositional semantics for questions, declaratives and imperatives to the syntactic principles of sentence formation in German.

If we concentrate on independent root clauses for the moment we find the following general picture about the distribution of lexical and phrasal elements in the left periphery of German clauses according to effects on the sentence mood constitution.

(18)



indicative subjunctive II	Wem$_i$	gibt/gäbe$_j$	Maria t_i ein Buch t_j		wh-question
	ι	gibt/gäbe$_j$	Maria t_i ein Buch t_j		y/n-question
	Ihrer Freundin$_i$	gibt/gäbe$_j$	Maria t_i ein Buch t_j		declarative
imperative subjunctive I	*Wem$_i$	gib /gebe$_j$	t_i ein Buch t_j		ungrammatical
	ι	gib /gebe$_j$	deiner Freundin ein Buch t_j		not a y/n-question
	Deiner/(Ihrer) Freundin$_i$	gib /gebe$_j$	(Maria) t_i *ein Buch* t_j		not a declerative

The position SpM (the former SpecCP position) can be occupied by a [+wh]-phrase, a [-wh]-phrase or can remain empty. These kinds of occupation can take place for all verbal moods except an imperative that does not allow for a [+wh]-phrase in the SpM-position.

It is obvious, that only lexical or phrasal material in the SpM position is relevant for the determination of the resulting sentence mood in combination with the (temporally specified) proposition represented here as a TP. This means that A-bar-movement of a [±wh]-phrase serves the purpose of specifying the properties of the sentence mood if the verbal mood is indicative or subjunctive II. Although these structural options are available for all verbal moods (except imperative to which we return) the sentential mood effects arise for indicative and or subjunctive II only.

We now arrive at the point at which the syntactic structures can meet the semantic objects and we can see how the syntactic structure and the syntactic processes involved in sentence formation lead to the relevant objects of semantic interpretation.

Since, in German, two root operations have to be assumed to derive the various sentence types illustrated in (18), namely A-bar-Movement of a [±wh]-phrase into the position SpM and head movement of the finite verb into the position M^0, we can now relate the semantic operations to the moved constituents in a 1:1 fashion. The [±wh]-phrases are the phrasal elements which interact with the propositional bipartition to yield the wh-question or the declarative sentence respectively. If no phrase is moved to the SpM-position the unmodified bipartition remains, deriving the y/n-question as desired.

Again, we have to restrict these operations to indicative or subjunctive II verbal mood. In the other cases an ungrammatical structure results or no modal effect arises. But note that long extraction of a [+wh]-phrase into an imperative main clause is possible in German. See (6) repeated here as (19) for convenience.

(19) (i) [Wohin]$_j$ sag mir, t_j dass Du nie wieder t_j fährst!
([To which place]$_j$ tell me, that you will never go again t_j!)

(ii) Sag mir, wohin$_j$ du nie wieder t_j fährst!
(Tell me, [to which place]$_j$ you will never go again t_j!)

In (19)(i) the matrix clause is marked with imperative and is at the same time compatible with a [+wh]-phrase. The sentence mood does not change and the scope of the wh-Operator is restricted to the embedded clause. (19)(i) has the same interpretation as (19)(ii) according to sentence mood. We therefore have to conclude that the SpM-position in imperative clauses is available even for [+wh]-phrases and that the reason for the ungrammaticality of short wh-movement in imperative clauses is due to conditions of interpretation. Furthermore, there seems to be a last resort principle for the interpretation of wh-chains, which allows the chain to be interpreted at the position of the intermediate trace.

Let us now look more closely at the distribution of the finite verb and the act Fege called the announcement of the judgement (Kundgabe des Urteils). As can be seen from the examples in (20), all independent root clauses reveal the verb-second pattern, which means that the finite verb occupies the position M^0.[10] Contrasting these patterns with embedded clauses in German, we generally find the finite verb in the final position of the clause according to the OV-order of German.[11]

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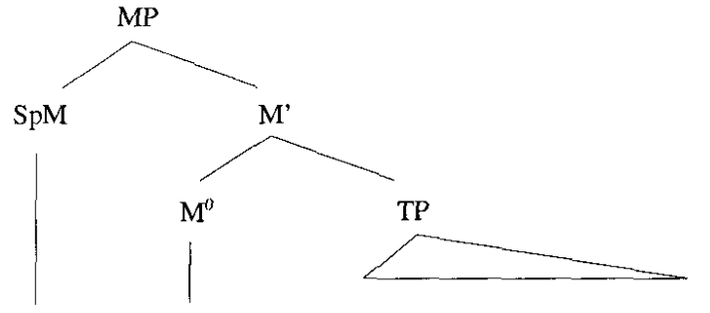
[10] See Vikner (1994, 1995) and Schwartz / Vikner (1996).

[11] An apparent exception are V/2-complement clauses which are assumed to exist in German. But, as Reis (1997) has pointed out, these constructions behave in nearly all counts entirely differently from 'that'-complement clauses. Furthermore, V/2-complement clauses appear only under bridge verbs, i.e verbs which allow for extraction out of their complement clause. These properties suggest that V/2-

The following structural description shows that embedded clauses in German are generally verb final.

(20)



Peter weiß, (Peter knows,)	wem (whom	ι	Maria ein Buch geschenkt hat. Mary a book given has)
Peter weiß, (Peter knows,)	ι	dass/ob (that/whether	Maria ihrer Freundin ein Buch geschenkt hat. Mary her girlfriend a book given has)
Das ist die Frau, (This is the woman,)	die (who	ι	Ihrer Freundin ein Buch geschenkt hat. her girlfriend a book given has)

This regularity suggests that the position of the finite verb marks the distinction between embedded vs. independent clauses. But what is the difference between these two kinds of clause structures from the sentence mood perspective?

First of all, the position M^0 seems to be the position relevant for marking the place of the modal anchoring of the respective proposition. This can either be the context of discourse or the grammatical context. Take modal anchoring to be a two place relation between a proposition and some kind of context. For every proposition the relevant context has to be specified by some regular grammatical means. Since propositions expressed by independent clauses are anchored in the context of discourse, and the propositions expressed by embedded clauses are anchored in the grammatical context, it appears to be the case that the position of the finite verb marks the anchoring place of the respective proposition.

Take that to be the case. Then, we can assume that if the finite verb occupies the position M^0, the modal anchoring of the proposition takes place in the context of discourse and otherwise (if it remains in its final position) the proposition is anchored in the grammatical context.

Note now, that anchoring of a proposition in the context of discourse is another formulation for Frege's announcement of the judgement (Kundgabe des Urteils). We therefore arrive at the hypothesis that the occupation of the head position M^0 by the finite verb is a device for the modal anchoring of the proposition in the discourse. This expresses that a proposition with declarative mood is announced, with interrogative mood it is asked, and with imperative mood it is requested.

According to the positioning of the finite verb we do not find differences with respect to distinctions in the verbal mood. All independent clauses have the finite verb in M^0 irrespective of the specification of the verbal mood. The restrictions necessary to block the occurrence of some verbal moods (for instance imperative) from embedded

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complement clauses in German have another status as completely integrated complementizer clauses and therefore, have not to be treated in the same way as usual verb final complement clauses.

clauses have to be formulated with respect to properties of the epistemic/factive domain. As pointed out in Bredel/Lohnstein (2001a) further properties of the verbal inflectional system of German allow us to account for some of these cases.

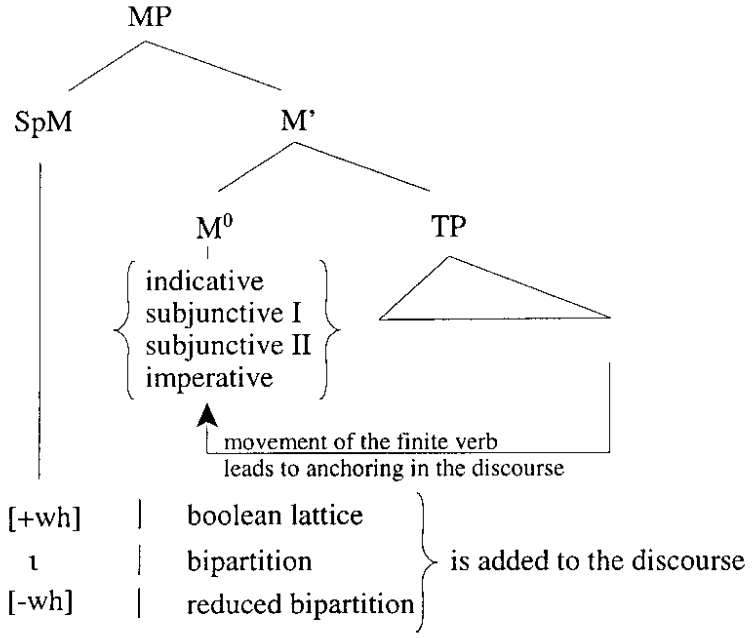
We end up with a theory of sentence mood that captures the three acts of Frege's Judgement (Urteil) and generalizes to the main sentence moods (declarative, interrogative, imperative) which seem to appear in all languages of the world.[12]

Especially for German (and with some minor modifications for the whole class of the Germanic V/2 languages) the theory allows for the derivation of the relevant sentence mood distinctions in a compositional fashion, not only with respect to the semantic objects but also according to the syntactic structures and the distribution of the elements which are relevant for the sentence mood constitution.

This happens in a uniform way in the single left peripheral system of the syntactic structure which is provided by the mood phrase MP.

We therefore arrive at a language specific parameterization for sentence mood constitution, as expressed in the following structure:

(21)



5. Indefinite noun phrases and sentence mood

In the preceding sections we have pointed out that the basic element of the sentence mood is a bipartition of the set of indices, which can become reduced, differentiated or can remain empty.

We now want to look at some data concerning sentence mood distinctions and indefinite noun phrases. As the data in (22) suggest, there seems to be a dependency between the mood of a sentence containing an indefinite noun phrase and the referential binding of this very noun phrase by a pronoun.

(22) A dog was in the garden.
(i) Peter has fed it.

[12] See Saddock/Zwicky (1985).

(23) Who has seen a dog?
  (i) *Peter has fed it.
  (ii) Peter was at the poodle show.
  (iii) Peter. He has fed it.
(24) Has there been a dog in the garden?
  (i) *Peter has fed it.
  (ii) The garden is hermetically locked, since it's entirely poisoned.
  (iii) Yes. Peter has fed it.

The crucial point with these data belongs to the fact that, irrespective whether the clause is a y/n- or a wh-question, the pronoun *it* can bind the indefinite *a dog* if the mood is declarative (22), but not if the mood is interrogative. This can be seen from the examples (23)(i) and (24)(i).

It is, of course, not problematic that (23)(i) and (24)(i) are only partial answers.[13] Other partial answers without a pronoun binding into the respective questions like (23)(ii) and (24)(ii) appear to be unproblematic. (23)(iii) and (24)(iii) show that referential access of the pronoun to the indefinite noun phrase is possible if a complete answer has been given before, thus reducing the space of answers to exactly one.

Let us explore the relevant properties of indefinites a bit further. In Egli (1991), von Heusinger (1996, 1997) noun phrases are translated into term building ε-expressions which are interpreted as choice functions. A choice function takes a set of individuals as argument and maps it onto a member of this set.

In the case of indefinite noun phrases the choice function takes the set of individuals given by the N-denotation and maps it onto an element of this set. This element, then, becomes the most salient individual of its kind. On the other hand, definite noun phrases that are on a par with pronouns are interpreted as choice functions that map the set of individuals given by the N-denotation onto the most salient individual of its kind. In short, with an indefinite noun phrase an individual of some kind is introduced into the discourse and becomes salient. With a definite noun phrase this very individual is selected.

In our example the choice function corresponding to the indefinite noun phrase *a dog* introduces one element out of the set of all dogs into the discourse and makes it the most salient dog. The choice function corresponding to the pronoun *it* picks up this very dog. This relation is called referential binding of an indefinite noun phrase.

Returning to our examples in (22) to (24), the expression *a dog* introduces a new dog into the discourse, making it the most salient one, and the choice function corresponding to the pronoun *it* has to select exactly this newly introduced dog, in order to derive the intuitive interpretations. This is possible in the example (22), because the indefinite noun phrase appears in a declarative sentence. It is impossible in the examples (23) and (24), because the indefinite noun phrase appears in a y/n- or wh-question respectively.

As the examples (23)(iii) and (24)(iii) show, pronominal binding is possible once the question has received a complete answer. How are these facts explained with respect to the proposed theory of sentence mood?

As we have seen, in the case of declaratives a one class object is added to the discourse, while in the case of interrogatives a multiple class object is added. An indefinite noun phrase inside a declarative is therefore uniquely introduced into the

[13] A partial answer does not reduce the space of all answers to exactly one, but reduces it some degree. Only complete answers yield only one possibility. See Higginbotham (1996) for details.

discourse. When placed in an interrogative sentence it is introduced with every class of the respective partition, and therefore in a multiple way. In this latter case, pronominal binding is blocked, as (23) and (24) show. However, if there is a complete answer, pronominal binding is possible.

These observations suggest that the following condition C for pronominal binding has to hold.

(C) Pronominal binding is possible only if the referent in the discourse is uniquely introduced.

With this condition at hand the data in (22) to (24) are entirely covered.

Let us now explore more closely the properties of choice functions and pronominal binding. Like every other function a choice function has a domain and a range.

(25) f: domain → range

The domain is given by the set of individuals denoted by the noun of the respective noun phrase. The article specifies whether a new individual is introduced or whether the most salient individual is being selected. The latter option is on a par with the behavior of pronouns.

Now, if the indefinite noun phrase is introduced into the discourse by being embedded in a question, it is represented in every class of the corresponding partition. Therefore, the range of the choice function corresponding to the pronoun is not uniquely given until the question is answered. In terms of choice functions the condition (C) can now be reduced to a general condition of functional evaluation, namely, that every function (especially every choice function) need a uniquely given range in order to be defined properly. This condition, together with the proposed theory of sentence mood, is sufficient to derive the binding differences in (22) to (24).

From these observations we can conclude that choice functions, in order to work properly, need a uniquely defined range. From this generalization it should follow that even pronominal binding into imperatives should work well, since imperatives do not allow for partitioning at all, since they are to be evaluated with respect to the factive domain. As the example in (26) shows, this is indeed the case.

(26) Feed a dog in the morning, Peter!
You will see it will follow you over the whole day.

To sum up, I have presented a theory of sentence mood which derives the main sentence mood and sentence type distinctions in German (and the other Germanic V/2-languages too) in a compositional fashion both with respect to their syntactic and semantic properties, and to their systematic interaction. This theory, along with the assumptions about choice functions, allows us to account for binding differences of indefinites in differently marked sentence types.

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Information Structure and the Referential Status of Bare Plurals*

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0. Starting Point

The goal of this paper is to study the influence of information structure in the referential status of linguistic expressions such as bare plurals and indefinite NPs in Spanish. In particular, we will argue for the following claims: (a) Spanish bare plurals can receive a generic interpretation in object position and (b) Spanish bare plurals in object position can be topics *in situ*. We will focus on object position because of the well known semantic and syntactic constraints that affect preverbal subject bare plurals in Spanish.[1]

There are two reasons why it is important to pay attention to the interaction between information structure and the interpretation of Bare Plurals in Spanish. First, it has been argued that Spanish bare plurals in object position can only be existentially interpreted (Laca 1990, 1996; Zubizarreta 1998). This interpretation arises in examples like (1). In these examples, the bare plurals are always *weak* NPs in Milsark's (1977) sense: [2]

(1) a. Eva trajo novelas a la reunión.
'Eva brought novels to the meeting'
$\exists_{s, x}$ [novel (x) $\wedge$ brought-to-the-meeting (s, E, x)]
b. Juan compró manzanas para su hermana.
'Juan bought apples for her sister'
$\exists_{s, x}$ [apple(x) $\wedge$ bought-for-her-sister (s, J, x)]

It is also important to note that Spanish bare plurals cannot denote kinds in the sense of Carlson (1977). Bare plurals in Spanish cannot be arguments of predicates selecting kind-denoting arguments, as the ungrammaticality of (2) shows (see Longobardi 1999, 2000 for Italian):

(2) a. Edison inventó *(las) bombillas.
Edison invented *(the) bulbs
'Edison invented bulbs'

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1 See Bosque (1996) and the references cited there.

2 We will use very simple logical forms, disregarding the semantic representation of Tense. Variable s ranges over situations; variable x ranges over individuals.

The topical status of bare plurals in these examples is made clear in question-answer contexts like (6) and (7). In these cases there is a previous mention of the bare plural in the question and the answers convey information about the relation between Pedro and the apples in (6), and about the Council's intentions concerning brick houses in (7):

(6) a. Pedro nunca come manzanas, ¿verdad?
'Pedro never eats apples, right?'
b. No, hombre, manzanas, Pedro las come todos los días.
'Not really, apples, Pedro eats them every day'

(7) a. Me han dicho que van a construir una barriada de casas de adobe para estudiantes.
'I have heard that they are planning to build a new urban area of brick houses for students'
b. No puede ser. Estoy segura de que, casas de adobe, el ayuntamiento no permite construirlas.
'It cannot be possible. I am sure that, brick houses, the Council does not permit building them'

In this paper, we will show that bare plurals in object position can have a generic interpretation in sentences with a generic operator (either explicit or implicit), and with a characteristic information structure. We will also show that exactly in those cases, bare plurals can be clause-internal argumental topics. To achieve this goal, we will explore the parallel semantic behavior of indefinites and bare plurals in object position.

The paper is structured as follows: In section 1, we present the semantic background we assume with respect to the denotation of bare plurals and indefinite NPs. In section 2, we deal with the role played by information structure in shaping the mapping from syntactic structure to logical form in Spanish, following the model put forth by Partee (1991) and Büring (1995). We will show how, in sentences with a special topic-focus articulation, bare plurals and indefinite NPs in object position can receive a generic interpretation. In section 3, we will defend the claim that generic bare plurals in object position are topics. We will explore some control properties of these NPs that support our claim. Finally, in section 4, we present some remaining problems.

1. The denotation of indefinite NPs and Bare Plurals: unselective binding and tripartite structures at LF

In this section we will present the theoretical background we assume with respect to the interpretation of indefinite NPs and bare plurals, and with respect to the mapping from syntactic structures to logical forms.

1.1. The denotation of Indefinite NPs and Bare Plural NPs

With respect to the semantic denotation of indefinite NPs and bare plurals, we will adopt Kamp's (1981) and Heim's (1982) framework in which indefinite NPs introduce an open formula (a variable with a predicate condition on it) into the logical representation of the sentence. Diesing (1992) and Longobardi (1999, 2000) extend the same kind of denotation to bare plurals:

(8) a. un gato: cat(x) [Heim 1982, Kamp 1981]
b. gatos: cat(x) [Longobardi 1999, 2000 for bare plurals in Romance languages]

Since this variable is not inherently quantified, it can be bound by an operator at LF. In the absence of any quantificational operator, Spanish indefinite NPs and bare plurals in object position can only receive an existential interpretation, since the variables with which they are associated are bound by the process of existential closure that applies at the sentence level:

(9) a. Eva ha criado un perro en casa.
'Eva has raised a dog at home'
b. $\exists_{s, x}$ [dog(x) $\wedge$ raise-at -home(s, E, x)]

(10) a. Eva ha leído novelas
'Eva has read novels'
b. $\exists_{s, x}$ [novel(x) $\wedge$ read(s, E, x)]

The existential interpretation of indefinite NPs and bare plurals licenses entailments of the following sort:

(11) a. Eva ha leído novelas. → Eva ha leído libros
'Eva read novels' 'Eva read books'
b. Eva ha criado un perro en su casa. → Eva ha criado un animal en su casa.
'Eva raised a dog at home' 'Eva raised a pet animal at home'

1.2. The Mapping Hypothesis

We follow Heim (1982) and Kamp and Reyle (1993) in assuming that, at LF, quantificational elements such as modals, adverbs of quantification, habitual aspect, and so on, trigger the partitioning of a sentence into three elements: an operator, a restrictive clause (the domain or range of quantification) and a nuclear scope (which contains the assertion), (12). The quantificational element is treated as an unselective quantifier that binds every free variable in the restrictive clause. Free variables in the nuclear scope are closed off by the process of existential closure:

(12) Operator $_x$ [Predicate-1 (x)] $\exists_y$ [Predicate-2 (x), Predicate-3 (y)]

RESTRICTIVE CLAUSE
domain of quantification

NUCLEAR SCOPE
assertion

The relevant question is, then, what pieces of syntactic structure are mapped onto the restrictive clause, and which ones are mapped onto the nuclear scope. We will tentatively adopt Diesing's Mapping Hypothesis (Diesing 1992) as an answer to this question, (13). Her proposal amounts to the claim that the nuclear scope of an operator in a tripartite structure is made up from the verb phrase:

(13) Diesing's Mapping Hypothesis (Diesing 1992):
a. Material from VP is mapped onto the nuclear scope.
b. Material from IP is mapped onto the restrictive clause.

According to these assumptions, the generic interpretation of subject indefinite NPs in sentences like (14a) can be obtained if we assign such sentences logical forms like (14c), in accordance with Diesing's hypothesis. The indefinite is mapped onto the restrictive clause in accordance with Diesing's Mapping hypothesis, since it occupies the subject (Spec IP) position:[4]

(14) a. Un gato siempre hace ruido por las mañanas
'A cat always makes noise in the morning'
b. [$_{IP}$ A cat always [$_{VP}$ makes noise in the morning]]
c. ALWAYS $_{s, x}$ [cat(x) $\wedge$ C(s,x)] [make-noise-in-the-morning(s,x)]

Indefinite NPs in object position can also receive a generic interpretation in sentences like (15), where there is a quantificational operator such as an adverb of quantification (15a,b) or a null generic operator (15c):

(15) a. Juan siempre aplaude a un buen músico.
'Juan always applauds a good musician'
b. Juan siempre agradece un regalo.
'John is always grateful for a gift'
c. Reconoces a un caballero por su forma de hablar. [Leonetti 1991]
'You identify a gentleman by his way of talking'

The logical form of (15a) is the one we have in (16):

(16) ALWAYS$_{s, x}$ [good-musician(x) $\wedge$ C(s, J, x)] [applaud(s, J, x)]

In this case, the indefinite NP is not existentially interpreted since it is mapped onto the restriction of the operator. Therefore, inferences of the following type are not licensed:

(17) Juan siempre aplaude a un buen músico -/-> Juan siempre aplaude a un artista
'Juan always applauds a good musician' 'Juan always applauds an artist'

It is important to note that, in the syntactic representation of the sentence, the indefinite NP is within the VP, but, at LF, is mapped into the restrictive clause, in apparent contradiction to Diesing's hypothesis.

[4] We introduce in the logical representation of sentences a predicate *C* that relates individuals to the eventualities in which they are participants. We will use this device to represent the implicit quantification over eventualities apparent in many sentences, as is the case in (14). Intuitively, the logical form in (14c) says that all the eventualities of the (pragmatic) appropriate type in which a cat is a participant are eventualities in which it makes noise in the morning.

2. Information Structure and Logical Form

Partee (1991), von Fintel (1994), Hajicova *et al.* (1998), among others, have pointed out that the information structure of a clause plays a crucial role in the process of deriving logical forms.

According to Partee (1991), topic-focus articulation (TFA) contributes to the formation of tripartite structure as follows:

(18) a. Focus Material projects onto the nuclear scope.
b. Non-focused (*focus-frame*) material projects onto the restrictive clause

We will show that the TFA is fundamental to deriving the generic interpretation of bare plurals in object position. But first let us consider the generic interpretation of Spanish indefinite NPs in object position. Leonetti (1990, 1991) noted that indefinite NPs which receive a generic interpretation in object position are usually part of the topical portion of the sentence. In the framework we are assuming, this amounts to saying that the indefinite generic NP is mapped onto the restriction of the generic operator, given its topical character. Note that for the indefinite object in a sentence like (19a) to have a generic interpretation, the sentence must have the intonational structure in (19b), where the verb is assigned prosodic prominence:

(19) a. Juan siempre aplaude a un buen músico.
b. Juan siempre **APLAUDE** a un buen músico
(20) a. [$_{\text{TOPIC}}$ Juan] siempre [$_{\text{FOCUS}}$ aplaude] [$_{\text{TOPIC}}$ a un buen músico]
b. $\text{ALWAYS}_{s,x}$ [good-musician(x) $\wedge$ C(s, J, x)] [applaud(s, J, x)]

The TFA will predict a LF such as (20b) if the information structure of the sentence is as in (20a).[5] The LF in (20b) gives the right truth conditions for the generic interpretation of the sentence.

If there is a parallelism in the denotation of indefinite NPs and bare plurals in Spanish, as we have assumed following Diesing (1992) and Longobardi (1999, 2000), we expect Spanish bare plurals in object position to have the possibility of being interpreted generically.

Consider the sentences in (21). In these sentences, generic interpretation of the bare plurals is triggered by an implicit generic operator (associated with nonperfective tense). In the sentences in (22), generic interpretation is related to the presence of the adverb of quantification, *siempre*:

(21) a. Ana veía *películas francesas* en el extranjero.
'Ana used to watch French movies in other countries'

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[5] In (20a) we want to represent that the indefinite object *a un buen músico* is topical. In principle, the topic-focus articulation in (20a) can represent a case of verb-focus. This kind of example can only be produced if the object is 'activated' in the discourse (in the sense of Lambrecht 1994). It is a debated question if Romance Languages allow topical elements within the focus domain in topic-focus articulations like the following:

(i) [$_{\text{TOPIC}}$ Juan] siempre [$_{\text{FOCUS}}$ aplaude [$_{\text{TOPIC}}$ a un buen músico]]

Since this is a controversial issue, we will only consider the possibility of verb focus in (20a). Nothing crucial in the argumentation hinges on this matter. (see Nikolaeva 2001 and the references cited therein)

b. María consigue *novelas japonesas* en las bibliotecas.
'Maria obtains Japanese novels at the libraries'
c. Correos admite *giros urgentes* hasta las ocho.
'The Post Office admits express postal orders until eight o'clock'

(22) a. Juan siempre aplaude a *músicos minusválidos.*
'John always applauds handicapped musicians'
b. Juan siempre compra *estatuillas africanas* en los Estados Unidos.
'Juan always buys African statues in the USA'

Note, however, that the generic interpretation of the bare plural in object position requires a particular intonational/information structure. In each of the sentences above, the focal domain cannot include the bare plural (where F means Focal Domain) as shown in the question-answer pairs in (22). The topic-focus articulation of these sentences is the argument-focus or narrow focus. The PP identified by the *wh*-word is the focus in each case. The bare plural is out of the focus domain:

(23) a. A. - ¿Dónde veía Ana una película francesa en aquella época de prohibiciones?
'Where did Ana use to watch a French movie in those years of censorship?
B. - Ana veía películas francesas [$_F$ en el extranjero]
'Ana used to watch French movies in other countries'
b. A. - ¿Dónde consigue María una novela japonesa hoy en día?
'Where does Maria obtain a Japanese novel in these days?'
B. - María consigue novelas japonesas [$_F$ en las bibliotecas]
c. A. - ¿Hasta qué hora admite Correos un giro urgente?
'Until what time does the Post Office admit an express postal order?
B. - Correos admite giros urgentes [$_F$ hasta las ocho]
'The Post Office admits express postal orders until eight o'clock'

In the following question-answer pairs, bare plurals are also non-focussed material. In (24a), we find a deaccented object to the right of the accented verb (Lambrecht 1994). In (24b), the bare plural can be considered a partial topic, in the sense of Büring (1995):[6]

(24) a. A. - Me han dicho que Juan insultó a un músico de la orquesta.
'They told me that Juan insulted a musician in the orchestra'
B. - No puede ser. Juan siempre [$_F$ aplaude] a músicos minusválidos.
'That, it can't be. Juan always applauds handicapped musicians'
b. A. - ¿Dónde suele comprar Juan arte africano?
'Where does Juan use to buy African art?'
B. - Juan siempre compra estatuillas africanas [$_F$ en Estados Unidos]
'Juan always buy African statues in the USA'

[6] It is important to note that in all of these examples, the bare plural is not the only topic in the sentence. It can be considered a secondary topic, in addition to the primary topic, which is usually the subject of the sentence. Secondary topics are topical elements (mainly objects) such that the utterance is construed to be ABOUT the relationship between it and the primary topic. For the notion of *secondary topic*, see Nikolaeva 2001.

From the TFA of these sentences, we can derive the following Logical Forms, in which the bare plurals have been mapped onto the restriction of the generic operator:

(25) a. $Gen_{s,x}$ [French movie(x) ∧ watch(s, A, x)] [abroad(s, A, x)] (LF for 21a)
b. $ALWAYS_{s,x}$ [handicapped-musicians (x) ∧ C(s, J, x)] [applaud(s, J, x)] (LF for 22a)

Since these bare plurals are generically interpreted, inferences such as the following are not licensed:

(26) a. Juan siempre aplaude a músicos minusválidos -/-> Juan siempre aplaude a artistas minusválidos
'Juan always applauds handicapped musicians' -/-> 'Juan always applauds handicapped artists'
b. Correos admite giros urgentes hasta las ocho -/-> Correos admite giros hasta las ocho.
'The Post Office admits express postal orders until eight o'clock' -/-> 'The Post Office admits postal orders until eight o'clock'

3. Generic Bare Plurals are Topics

We have just seen that for the bare plurals to receive a generic interpretation they must be within the non-focused part of the sentence (focus frame/background). Now we will explore the syntactic effects associated with these information structures. In particular, there are certain syntactic facts concerning control properties that suggest that generic bare plurals in object position may display topic-like behavior.

Katz (1993) notes that only presuppositional NPs can control the null subject of the extrasentential constructions known as *free adjuncts* (FA) (Stump 1985). These constructions are illustrated in (28a,b) for English, and in (29a,b) for Spanish. In these examples, a proper noun (a typical case of presuppositional NP) is the controller of the null subject of the free adjunct:

(27) Katz's Generalization (1993):
Only presuppositional NPs can control the null subject of Free Adjuncts
(28) a. *Wearing an ugly mask*, Sarah would frighten everyone.
[From Stump 1985]
b. Crossing the street, Jane went into the store.
c. *Alone*, John decided to read a book. [From Stump 1985]
(29) a. *Enfadado*, Juan no puede concentrarse.
'Angry, John cannot concentrate'.
b. *Cansado*, Juan decidió irse a dormir.
'Tired, John decided to go to sleep'.

Other presuppositional NPs controlling free adjuncts, such as definite NPs, bare plurals in the domain of a quantificational operator, or indefinite NPs with a specific use, are in (30).

(30) a. Being intelligent, your brother attended the conference.
b. Crossing the street, women usually enter the store.
c. Being intelligent, linguists go to conferences. [Katz 1993]
d. Desperate, a student cheated on the exam.

When a NP is not presuppositional, it cannot control the null subject of a free adjunct. For example, bare plurals in the following sentences can only be existentially interpreted. They are *weak* NPs in Milsark's sense. Therefore, they cannot act as controllers:

(31) a. * Crossing the street, women went into the store.
b. * Being intelligent, linguists attended conferences. [Katz 1993]

However, it seems that in addition to being presuppositional, controllers must be topics, as has been generally argued in the case of backwards pronominalization (Carden 1982, Kuno 1972, Reinhart 1982). Note that a presuppositional NP inside a focus domain cannot act as controller of a null subject of a free adjunct. This is shown in (32) and (33):

(32) a. * Cansado, se ha dormido [Juan] $_{\text{Focus Domain}}$
b. Cansado, Juan se ha dormido.
'Tired, Juan fell asleep'
(33) a. * Enfadado con su hermana, se fue al cine [Juan] $_{\text{Focus Domain}}$
b. Enfadado con su hermana, Juan se fue al cine.
'Angry with his sister, Juan went to the movies'

Postverbal subjects in Spanish are always focal.[7] This kind of sentence can be the answer to questions like the following:

(34) A. - *¿Quién* se ha dormido?
'Who fell asleep?'
B. - Se ha dormido [$_F$Juan]
'JUAN fell asleep'
A. - *¿Quién* se fue al cine?
'Who went to the movies?'
B. - Se fue al cine [$_F$Juan]
'JUAN went to the movies'

These data suggest that the right generalization must be stated in terms of topic-hood:

(36) Only topics can be controllers of the null subject of free adjuncts.

Consider the sentences under (37). (37a) shows that generic indefinite NPs can control free adjuncts as well as specific indefinites, (37b). Indefinite NPs with existential readings cannot be controllers, (37c):

[7] See Contreras (1983), Zubizarreta (1998).

(37) a. Desesperado ante la posibilidad de suspender, un alumno siempre copia.
'Desperate for the possibility of failing the exam, a student always cheats'
b. Comprado con cariño, Juan siempre agradece un regalo.
'Bought with love, Juan is always thankful for a gift'
c. * Desesperado ante la posibilidad de suspender, ha copiado un alumno.
'Desperate for the possibility of failing the exam, there is a student who cheated in the exam'

Spanish bare plurals in object position can act as controllers of null subjects of free adjuncts if they are interpreted generically, hence out of the focus domain, as shown in (38):

(38) a. [Prohibidas en su país pro$_i$], Ana veía [películas francesas]$_i$ [$_F$ en el extranjero]
'Forbidden in her own country, Ana used to watch French movies in other countries'
b. [Escasas en Europa pro$_i$], Juan siempre compra [estatuillas africanas]$_i$ [$_F$ en EE.UU.]
'Being uncommon in Europe, Juan always buys African statuettes in EEUU'
c. [Difíciles de encontrar en las librerías pro$_i$], María consigue [novelas japonesas]$_i$ [$_F$ en las bibliotecas]
'Being hard to find in the bookshops, María obtains Japanese novels from the libraries'
d. [Urgentes y de máxima importancia pro$_i$], Correos admite [giros]$_i$ [$_F$ hasta las ocho]
'Being urgent, the Post Office admits postal orders until eight o'clock'

What these examples show is that generic bare plurals in object position are topics. Note that when the bare plural is within the focus domain, it is not possible for the null subject of a free adjunct to be controlled by the bare plural:

(39) a. Ana leía [novelas japonesas]$_F$ con gusto/ Ana leía con gusto [novelas japonesas]$_F$
'Ana used to read Japanese novels with pleasure'
b. * Bien escritas, Ana leía [novelas japonesas]$_F$ con gusto
'Well written, Ana used to read Japanese novels with pleasure'

4. Conclusions and open questions

We have tried to show that many of the interpretative properties of Spanish bare plurals can be explained if we treat them semantically as open formulas that introduce a free variable into the logical representation of a sentence, as has been proposed by Longobardi (1999, 2000) for Italian. Concretely, we have shown that Spanish bare plurals' interpretation is affected by sentence-level genericity and therefore, bare plural NPs can receive a presuppositional generic-like interpretation if they are within the non-focussed part of a sentence. Being non-focussed material they are projected, in logical

form, onto the restriction of a generic-like operator present in the sentence. We have also suggested that, in those cases, bare plurals are topics. Their control properties seem to confirm our proposal.

Of course, some questions remain open. The most important one is the following: since we have assumed that bare plurals are open formulas from the semantic point of view, very much like indefinite NPs, we are forced to find an explanation for their differences concerning scope possibilities (noted by Carlson 1977). Unfortunately, we don't have an answer for that.

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Topicality and (Non-)Specificity in Mandarin*

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1. Overview: An idea about specificity

Current analyses of specificity are unable to provide an explanatory account for why specific and nonspecific uses of indefinites are available. While Abusch (1994), Reinhart (1997), and Kratzer (1998) provide successful mechanisms for deriving specific readings, they do not provide a fundamental explanation for the availability of this mechanism. This is due to the fact that specific indefinites are treated as involving an interpretive component or procedure unique to themselves: storage (Abusch) or choice function (Reinhart and Kratzer),[1] for example. It would be preferable if specific indefinites could be understood as deriving from the use of independently motivated meaning components and interpretive mechanisms.

Here I will pursue the idea, building on Portner & Yabushita (1998), that specificity has to do with the indefinite's interaction with a topical domain (note similarities with the proposals of Enç 1991, Cresti 1995, and Schwarzschild 2000). In this conception, specificity is a matter of degree: the narrower the topical domain, the more specific the indefinite. More precisely, sentences containing specific indefinites will be understood as involving ordinary existential quantification in combination with a topical domain function:

(1) [Top_i [Mary met a_i certain man]]
$\exists x[(f_i \cap \text{man})(x) \,\&\, \text{met}(m, x)]$

(2) [Top_i [Every professor rewarded every student who read some$_i$ book he had reviewed for the *New York Times*]] (Kratzer 1998)
$\forall x[\text{professor}(x) \supset \forall y[(\text{student}(y) \,\&\, \exists z[(\text{book} \cap f_i(x))(z) \,\&\, \text{read}(y,z)]) \supset \text{rewarded}(x,y)]]$

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[1] There are also analyses which treat all indefinites as choice functions (Winter 1997, von Heusinger 2000, for example), but of course in that case specific indefinites can't be analyzed as deriving from a "choice function reading". I'm not sure whether my ideas about topicality could be combined with this pure choice function view to give an explanation of the Chinese data parallel to mine.

This analysis is very similar to the choice function approach. The latter would have (2)' in place of (2):

(2)' $\forall x[\text{professor}(x) \supset \forall y[(\text{student}(y) \,\&\, \text{read}(y, f_i(x))) \supset \text{rewarded}(x,y)]]$

The two ideas are equivalent in the case where $f_i(x)$ in (2) is the characteristic function of a singleton set. If it represents a larger set, the indefinite will be "less specific"; it is hard to judge through intuition whether allowing this possibility is a good thing. Apart from this, the approach in (2) has the significant advantage of not needing to grant indefinites a novel type of meaning, one different from that which they exhibit in non-specific cases. Rather, specificity is the combination of the ordinary semantics for indefinites plus the independently needed pragmatic concept of topic.

2. Evidence from Mandarin Chinese

Mandarin Chinese provides evidence that this approach to specificity is correct. At the most straightforward level, Wu (1998) points out contrasts of the form in (3):

(3) a. You yi xie xuesheng chuxi.le huiyi. (Wu 1998, ex. (1))
exist one CL student attend meeting
'There are some students who attended the meeting.'

b. Xuesheng you yi xie chuxi.le huiyi.
student exist one CL attend meeting
'Some of the students have attended the meeting.'

The common noun in a quantificational structure may be overtly topicalized, and this leads to a reading involving a pre-established domain of quantification, "specific" in Enç's sense. (Portner & Yabushita 1998 discuss similar cases in Japanese.) However, this type of data provides only indirect evidence for the idea that specific indefinites without overt topicalization can be explained in a similar way. In this talk, I'll look for further support based on the interpretation of indefinites whose common noun part has not been overtly topicalized.

I will discuss two types of data involving a semantic interaction between indefinites and another quantificational element, the distributive operator *dou*.

Sec. 2.1. The interpretation of indefinites in the scalar *lian...dou* 'even...all' construction.

Sec. 2.2. Some interactions among *mei* 'every', *dou* 'all', and indefinites, and the effects of these interaction on specificity.

Some key properties of Mandarin:

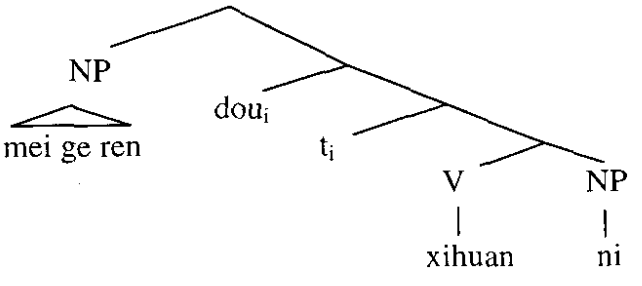
1. Mandarin commonly employs topics, both overtly and covertly.

2. Mandarin does not show scope ambiguity in ordinary active sentences (e.g., S. F. Huang 1981, C.-T. Huang 1982, Aoun & Li 1993, Liu 1997).
3. Cases of apparent scope ambiguity in such sentences actually involve specificity (C.-T. Huang 1993, Liu 1997; contra S.-Z. Huang 1996).

The type of specificity relevant to point 3 (labeled *G-specificity* by Liu) at first glance seems rather broad for our purposes, in that it also includes phrases like *mei*+NP 'every NP'. However, given their occurrence with the distributive marker *dou*, Lin (1998) shows that these are better treated as involving reference to (or in some cases indefinite quantification over) a group. For example, *mei* ('every')+NP refers to the supremum of the set denoted by the NP, SUP(‖ NP ‖).

(4) Mei ge ren / zhe xie ren dou xihuan ni.
every CL person this CL person DM like you
'Everyone likes you.'/'everyone in this group of people likes you.'

‖ *dou* ‖ = [λP . λG .∀y[(C(y) & G(y)) ⊃ P(y)]]



‖ [*dou*([λx . like(x, you)])](*mei*(person)) ‖ ≈ ∀y[(C(y) & SUP(person)(y)) ⊃ like(y, you)]

The ability to associate with the distributive marker *dou* can be seen as diagnostic for G-specificity, except for some complex cases which we'll discuss in section 2.1. In addition, *dou* has some other properties we'll need to keep in mind. The example in (5)-(12) below are from Liu (1997).

The associate of *dou* can be a sentence-initial topic:

(5) Quanbu de laoshi wo dou yujian.le.
all DE teacher I DM meet.ASP
'I met all of the teachers.'

Contrasting with (5), *dou* must follow its associate:

(6) *Wo dou yujian.le quanbude laoshi.
I DM meet.ASP all DE teacher

Dou is obligatory with certain determiners (with an exception to be discussed in section 2.2):

(7) Mei ge ren *(dou) xihuan Laowang.
every CL person DM like Laowang
'Everybody likes Laowang.'

Dou's associate can be a referential noun phrase:

(8) Women dou mai.le yi zhang hua.
We DM buy.ASP one CL picture
'We all bought a picture.'

Dou's associate must be plural (with certain exceptions discussed in section 2.1 below):

(9) *Wo dou mai.le yi zhang hua.
I DM buy.ASP one CL picture

With a few interesting exceptions to be discussed below, *dou*'s associate must be what Liu calls "G-specific". This explains the facts in (10)-(12). First, *liang ge xuesheng* ('two CL student') can only be interpreted as 'both students':

(10) Liang ge xuesheng dou pao.le.
two CL student DM run.ASP
'Both students ran.'

Second, a bare noun is interpreted as a definite:

(11) Xuesheng dou zou.le.
student DM leave.asp
'The students all left.'

And third, appoximative quantifiers are impossible, as they are plausibly incompatible with a specific interpretation:

(12) *San dao wu ge xuesheng dou pao.le
three to five CL studentDM run.ASP

2.1 The *lian...dou* Construction

Though in general *dou* doesn't associate with singular NPs, in a few cases in may. The scalar *lian...dou/ye* construction in (13) is one example; also possible are similar sentences without *lian*, as in (14).

(13) Lian wo dou/ye zhidao.le, ta dangran zhidao.(Liu 1997:96)
even I DM/also know.ASP he of course know
'Even I have come to know it, of course he knows it too'

(14) Wo yi ge ren dou bu jie dai.
I one CL person DM NEG host
'I didn't host a single person.'

These indefinite+*dou* constructions show that the domain of quantification for indefinites may be represented via a possibly covert topic, thus supporting the proposed analysis.

In these examples, *dou* can be seen as having its ordinary meaning, but contributing this meaning to the sentence's implicature, rather than its truth-conditional semantics. We'll focus on the examples with *lian* here.

Example (15a) shows an instance in which *dou*, in a *lian...dou* structure, appears to associate with, and quantify over, the sentence's topic. (15b) is a similar case in which the topic is, according to Liu (1997), covert:

(15) a. Wo de pengyou lian yi ge dou mei lai.
I DE friend even one CL DM NEG come
'As for my friends, not even one has come.'
b. (Wo) lian yi ge ren dou bu jian. (Liu 1997: 97)
I even one CL person DM NEG see
'I don't even see a single person.'

Notice that *lian*+indefinite is an NPI:[2]

(15) c. *Wo lian yi ge ren dou jian.
I even one CL person DM see

(15c) shows that it won't quite do to say simply that *dou* in (15a) quantifies over the set of friends. If we simply say that (15a) means 'all of my friends haven't come', there is no reason why (15c) couldn't be interpreted in a similar way as 'I see everyone'. Instead, we need to take into account the scalar nature of *lian*, making clear that the NP marked by *lian* is ranked at as 'least likely' of all of the elements quantified over by *dou*. This works out in a reasonably straightforward fashion with (13), where the element marked by *lian* is referential, but in the *lian*+indefinite cases like (15a), it's unclear how to place the quantifier *yi ge (ren)* ('a person') into a scale with the set of individuals (or property of individuals) denoted by *wo de pengyou* ('my friends'). Thus, a more sophisticated account is called for.

[2] As pointed out to me by Jingqi Fu (p.c.), example (15c) can occur on an modalized reading like 'I am willing to see even one person.' In such a case, the implicit modal would presumably license *lian yi ge ren*. A slight modification of (15c) which disallows such an interpretation is (i):

(i) Lian yi ge ren dou kan *(bu) jian. / even one CL person DM look NEG see

(16) outlines a basic semantic analysis for *lian...dou*, based on the idea that, when *lian* marks an indefinite, *dou* quantifies over a set of alternative domains of quantification for this indefinite:

(16) D_i *[[lian X] [$_{PRED}$ ....dou_i...]]*, D an implicit topical set of alternatives to X and X at the extreme end of a contextually given scale on D:
(i) asserts PRED(X).
(ii) implicates $\forall x \in D$[Pred(x)].

Here, the topical set consists of alternative domains of quantification for *yi ge ren*. Via *lian*'s scalar implicature, each of these is wider than the original domain *person*$\cap$*C*. Then, *dou* quantifies over this set, as illustrated in the following analysis of (15b):

(17) Assertion: $\sim\exists y$[person$\cap$C(y) & see(I, y)]
Implicature: $\forall X \in D[\sim\exists y[y \in X_i$ & see(I, y)]],
where $D \subseteq$ {X : X is a group of people} and the elements of D are ranked as in:
⟨person$\cap$C < ...< {x : x is a person of whatever sort}⟩.

Notice that *yi ge ren* ('one person') is interpreted under the scopes of negation and *dou*, so that *dou* quantifies over the set X of alternative domain sets. Though *dou* is not quantifying over the object's denotation || *yi ge ren* ||, this noun phrase must nevertheless precede it. I propose that this is so for syntactic reasons: in general, *dou* must follow a noun phrase associated with what it quantifies over. On *dou*'s ordinary usage, this noun phrase directly denotes the set which *dou* quantifies over, as in (4)-(12). But in the pragmatic *lian...dou* case, *dou* quantifies over a set of contextually given alternatives based on the focus structure of this "associate" noun phrase. And when this associate is an indefinite, the alternatives are sets or properties which function as alternative domains of quantification.

The semantic analysis outlined above is supported by the ungrammaticality the corresponding non-negative sentence (15c). If non-negative, the sentence's implicature would be entailed by what it asserts, since if I see a person relative to some small domain D_1 (the assertion), I necessarily see a person relative to any wider domain D_2 (the implicature). This explains *lian yi ge ren*'s status as an NPI.

2.2. A Constraint on Specific Readings

S.-Z. Huang (1996) points out that *mei* 'every' may occur without *dou* if an indefinite occurs in its scope:

(18) Mei yi ge haizi dou mi yi ge gexing. (Huang 1996: 48-9)
every one CL child DM take-fancy one CL singing-star
'Every child takes a fancy to a singing star.'

(19) Mei yi ge haizi mi yi ge gexing.
every one CL child take-fancy one CL singing-star
'Every child takes a fancy to a singing star.'

Moreover, while (18) allows *yi ge gexing* 'a singing star' to have a specific interpretation, (19) does not. Thus, it appears that a non-specific indefinite can (but a specific indefinite cannot) serve whatever need of *mei* that *dou* otherwise does.

The fact that only non-specific indefinites license *mei* can be explained in terms of the idea that this licensing sets up a dependency between the *mei* NP and the indefinite. This dependency can be represented using the notion of domain function. This in turn supports the analysis of specificity in terms of the properties of such a domain function.

Huang takes this pattern as evidence that specific readings in Mandarin are actually cases of wide scope indefinites. She proposes that *mei* 'every' must have an indefinite in its scope and assumes that *dou* is a type of temporal indefinite. Her idea runs counter to the arguments that Mandarin SVO sentences do not, in general, exhibit scope ambiguity.[3]

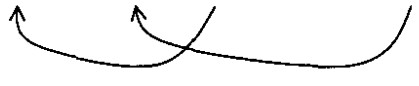
Supporting evidence comes from *ba* sentences. Using *ba* allows an object to be positioned before the verb, and requires that this object receive a specific or definite interpretation:

(20) Mei yi ge xuesheng *(dou) ba yi/zhe ge laoshi dezui.guo.
every one CL student DM BA one/this CL teacher upset.ASP
'Every student upset a/this teacher.'

Yi ge laoshi is always specific in this structure, as confirmed by the fact that *dou* is obligatory. Yet it is able to vary with the subject, and on this reading the sentence implies that each student has upset a particular teacher, e.g. just one in her/his life. This shows that the sense of specificity for the object associated with the presence of *dou* is not wide scope, but rather is better analyzed in terms of a functional relationship, as in the present theory or the choice-function approach.

In terms of the idea that *dou* is typically needed in conjunction with *mei* because *mei* requires a distributor, we would interpret (18)-(19) as showing that non-specific indefinites can introduce a distributive operator parallel to *dou*. This might be something like a null version of *each* in *The girls met a boy each.*

(21) [Mei yi ge haizi]$_i$ [DM_i [t_i mi [yi t_i ge gexing]]]



every one CL child *DM* *t* fancy one *t* CL singer

[3] See Liu (1997: 54-63) for a clear discussion. A compelling point is that if we replace *yi ge gexing* with an NP that doesn't support specificity (non-G-specific in Liu's terms), the result is not ambiguous in the way (18) is:

(i) Mei ge xuesheng dou dadui.le suiduodao ti. (Liu 1997: 63)
every CL student DM answer-correctly.ASP ten:more:CL question
'Every student answered about ten or more questions correctly.'

Here, the movement of *dou* and its coindexation with the subject represents the dependency between universally quantified subject and indefinite object which licenses the subject and simultaneously renders the specific reading unavailable. Note that the derivation in (21) leads to a structure in which the subject in coindexed with a trace inside the indefinite (as well as its own trace inside the verb phrase)[4]. I propose that such a trace is interpreted as an argument of the indefinite's domain function (roughly, "a singer particular to t_i"). Thus, if the indefinite is associated with a topical domain function, we have the following:

(22) TOP_j [Mei.yi.ge haizi]$_i$ [DM_i [t_i mi [yi$_j$ t_i ge gexing]]]
DM([λx . ∃y[(f_j(x)∩singer)(y) & fancy(x, y)]])(*mei*(child)) =
∀x[(C(x) & SUP(child)(x)) ⊃ ∃y[(f_j(x)∩singer)(y) & fancy(x, y)]]

The fact that the topical domain function takes as an argument the variable *x* universally bound by the DM pragmatically implicates that the function varies with *x*. That is, it is strongly preferred that f_j provides different singers for different choices of children. But this means that the various children do not all fancy the same singer; that is, the indefinite cannot be specific in the strong sense.[5]

One problematic issue has to do with cases parallel to (19) but with a referential subject instead of a universally quantified one:

(23) Zhe xie haizi xihuan yi ge laoshi.
this CL child likes one CL teacher
'These children like a teacher.'

Given the analysis above, one might expect that a covert distributive marker inside *yi ge laoshi* could raise to the VP and provide the subject with a distributive interpretation. However, such a reading is not available. I propose that this is because the necessary movement of the distributive marker would not be syntactically licensed; more precisely, since *zhe xie haizi* ('this CL child'), in contrast to a universally quantified subject like *mei yi ge haizi* ('every one CL child') in (19)/(21), does not syntactically require a distributive marker, there is no syntactic motivation for such a movement in (23). Under a minimalist conception of movement, if a movement operation is not necessary, it is impossible. Thus, in a case of "merge over move", the only way to get a distributive reading of the subject in (23) would be to have the distributive marker *dou* directly generated on VP.

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[4] Aoun & Li (1993) argue, based on the lack of scope ambiguity in SVO sentences, that Chinese subjects originate in the IP domain. If this is correct, a slightly more complex interpretation for the distributive marker in (21) would be needed. The opposite position with regard to VP internal subject in Chinese has been argued as well.

I would also point out that treating the relationship between the indefinite and DM in terms of movement is only a matter of convenience. We could express the same analysis in terms of the idea (Choe 1987) that when distributivity is marked (here on the "distributed share", in Choe's terminology), this simply signals that a distributive operator is to be introduced in the semantics.

[5] It could, however, be intermediate-scope specific like (2)

3. Conclusion

We have seen evidence that (i) an overtly topical domain for an indefinite leads to specificity, (ii) the co-occurrence of *dou* with indefinites can be understood in terms of a covert alternative-set of domains, and (iii) the fact that specific indefinites cannot license *mei* 'every' can be explained in terms of introducing a dependency between the *mei* NP and the indefinite's domain function. Together these three points lend support to the hypothesis that a topical domain function is often present with indefinite NPs in Mandarin, and that specificity or non-specificity results from its properties.

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Question/Answer Congruence and the Semantics of wh-Phrases*

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Abstract

This paper is about the semantics of *wh*-phrases. It is argued that *wh*-phrases should not be analyzed as indefinites as, for example, Karttunen (1977) and many others have done, but as functional expressions with an indefinite core —their function being to restrict possible focus/background structures in direct or congruent answers. This will be argued for on the basis of observations made with respect to the distribution of term answers in well-formed question/answer sequences. This claim having been established, it will be integrated in a categorial variant of Schwarzschild's (1999) information-theoretic approach to F-marking and accent placement, and —second— its consequences with respect to the focus/background structure of *wh*-questions will be outlined.

1. Answers, Focus, and Background Deletion

Since the work of Hermann Paul (1920) and M.A.K. Halliday (1967) it has been commonly assumed that in well-formed, i.e., congruent, question/answer sequences (Q/A-sequences) there is a rather systematic correlation between the *wh*-question *Q* and the focus/background structure (F/B-structure) of its direct (sentential) answers *A*, cf. (1).

(1) *A* is a direct/congruent answer to *Q*, only if every constituent in *A* that corresponds to a *wh*-phrase in *Q* is focussed (i.e., F-marked).

This generalization can be illustrated by the Q/A-sequences given in (2).[1]

(2) a. Who likes John? $[\text{MARY}]_F$ likes John, ...
b. Who likes whom? $[\text{MARY}]_F$ likes $[\text{JOHN}]_F$, ...
c. What did Sandra say? Sandra said [that Mary kissed $[\text{JOHN}]_F]_F$, ...

In (2a) the constituent *Mary* corresponds to the *wh*-phrase *who*, and *Mary* has to be focussed; in (2b) *Mary* corresponds to *who*, *John* corresponds to *whom*, and both have to be focussed. Given that the generalization in (1) is in fact basically correct, then (2c) shows that the property of being focussed does not coincide with the property of being accented in a strict sense, but that a focussed and accented constituent may license an abstract focus (F-marking) on a larger constituent containing it. Dynamically speaking,

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[1] As usual, accents are indicated by capitals.

the focus on *John* (the 'focus exponent') in (2c) 'projects up to the *that*-clause' in a way to be specified.

Although tempting, the generalization given in (1) cannot be strengthened from 'only if' to 'if and only if,' since one always has to reckon with the presence of so-called 'contrastive topics,' cf. (3). In the following, however, the possibility of contrastive topics will be almost completely ignored.[2]

(3) a. Whom do John and Mary like?
b. $[\text{MARY}]_F$ likes $[\text{JOHN}]_F$ and $[\text{JOHN}]_F$ likes $[\text{SANDRA}]_F$.

Another property of (1) worth mentioning is that it is a generalization about sentential answers. Typically, however, questions are not answered by sentential answers, but by 'short' or so-called 'term answers,' cf. (4) and (5).

(4) a. Who likes John? Mary.
b. Who likes whom? Mary, John; ...
c. What did Sandra say? That Mary kissed John.

(5) a. Whom do John and Mary like?
b. Mary, John and John, Sandra.

This immediately raises the question of whether, and —if so— in what way, sentential answers and term answers are related to each other. Apart from the obvious parallel between the F/B-structures of sentential answers in (2) and (3) and the term sequences in (4) and (5), there are good reasons to assume that the latter are derived from the former by some kind of elliptical process. To mention just two arguments, term answers and the respective *wh*-phrases have to agree in case, cf. (6), and term answers may occur in the form of reciprocals, cf. (7). Both phenomena, however, are known to be strictly local, confined more or less to the minimal clause they are contained in.[3,4]

(6) Wen traf Hans? *Ein Mann. / *Eines Mannes. / *Einem Mann. / Einen Mann.
Who met Hans? *[A man]-nom / *[A man]-gen / *[A man]-dat / [A man]-acc
'Who did Hans meet? A man.'

(7) Wem vertrauen Schröder und Blair? Einander.
Whom trust Schröder and Blair? Each other.
'Who do Schröder and Blair trust? Each other.'

The way term answers are derived from sentential ones seems to be quite straightforward: starting from a well-formed sentential answer everything is phonologically reduced that is not embedded in an F-marked node. Thus, this kind of elliptical process has to be conceived of as an instance of background deletion, and can be stated in a maximally theory neutral (and descriptive) manner as indicated in (8).

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[2] But cf. e.g. the discussion in Büring (1997), Krifka (1998), Reich (2001).

[3] For further evidence, cf. e.g. Schwabe (1994), Reich (2001).

[4] In the following, I will always switch to German data, if the point to be made can be better illustrated using German examples, or if the data is rather subtle.

(8) *Background deletion in Q/A-sequences* (optional)
Let $\langle Q, A \rangle$ be a well-formed Q/A-sequence and let the F/B-structure of (sentential) A be of the form $\alpha_0 [\beta_0]_F \alpha_1 [\beta_1]_F \alpha_2 \ldots [\beta_{n-1}]_F \alpha_n$ (where $n \geq 1$, α_i, $0 \leq i \leq n$, possibly null), then p-reduce α_i for $0 \leq i \leq n$: ~~α_0~~ $[\beta_0]_F$ ~~α_1~~ $[\beta_1]_F$ ~~α_2~~ $\ldots$ $[\beta_{n-1}]_F$ ~~α_n~~.

As recent research on ellipsis has shown, background deletion plays a crucial role in presumably all kinds of elliptical processes, and may thus be considered as a general strategy underlying elliptical phenomena in general.[5] Typically, this process is further restricted by additional syntactic and/or semantic requirements like, for example, 'directionality requirements' in RNR-Constructions (cf. e.g. Klein 1993, Hartmann 1999) or 'correspondence requirements' in VP-ellipsis phenomena (cf. e.g. Fiengo & May 1994, Merchant 1999). However, apart from the implemented maximality condition, background deletion in Q/A-sequences seems to be rather —but not completely— unrestricted (cf. Kuno 1982).[6]

2. The Problem

Keeping this in mind, consider the discourse given in (9) (cf. Schwarzschild 1999:161).

(9) (John drove Mary's red conVERtible.)
a. What did he drive before that?
b. He drove her [BLUE]$_F$ convertible.

As I will show below in some detail, 'standard' projection theories on F-marking like, for example, that in Selkirk (1996), as well as information-theoretic approaches like that developed in Schwarzschild (1999), predict —first— that the prenominal adjective *blue* in (9b) is F-marked, and —second— that no other constituent is. However, given that the assumptions about the derivation of term answers made above are basically correct, the F/B-structure of the answer in (9b) together with the generalization in (8) predict that (10b) is a well-formed term answer in the context of (10a). But in fact it is not. The correct term answer is that given in (10c) —it is the whole constituent corresponding to the *wh*-phrase.

(10) a. What did he drive before that?
b. *[BLUE]$_F$.
c. Her [BLUE]$_F$ convertible.

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[5] Cf. e.g. Rooth (1992b), Klein (1993), Romero (1998), and Schwabe & Zhang (2000).

[6] Term answers of category VP need to contain the uninflected part of the verbal predicate:

(i) Was machte Peter? *~~Peter kaufte~~$_i$ [Anna ein FAHRrad t_i]$_F$
What did Peter? *~~Peter bought~~$_i$ [Anna a bike t_i]$_F$
'What did Peter do? Peter bought a bike for Anna.'

(ii) Was hat Peter gemacht? ~~Peter hat~~ [Anna ein FAHRrad gekauft]$_F$
What has Peter done? ~~Peter has~~ [Anna a bike bought]$_F$
'What has Peter *done*? Peter has bought a bike for Anna.'

As a consequence, term answers of category VP are confined to the perfective forms of tense in German.

Actually, it turns out that this contrast is not restricted to the nominal domain, but can be observed with respect to the sentential and the verbal domain, too, cf. (11) and (12).

(11) (John said that he likes to drive conVERtibles.)
  a. What else did he say?
  b. *[OLDtimers]$_F$.
  c. That he likes to drive [OLDtimers]$_F$.

(12) (Peter hat Anna ein CAbrio gekauft
'Peter bought a conVERtible for Anna')
  a. Und was hat er sonst noch gemacht?
  and what has he else Part done
  'And what else did he do?'
  b. Er hat [SANdra]$_F$ ein Cabrio gekauft.
  he has Sandra a convertible bought
  'He bought a convertible for SANdra'
  c. *SANdra.
  d. SANdra ein Cabrio gekauft.

Again, it is the constituent corresponding to the *wh*-phrase that constitutes the term answer and not the constituent in focus. Thus, this data together with the generalization about the derivation of term answers stated in (8) strongly suggests that it is not only the prenominal adjective that is F-marked, but in fact the whole constituent corresponding to the *wh*-phrase.[7] Moreover, it suggests that this effect is due to some property of the *wh*-phrases involved. This is what I will call the functional character of *wh*-phrases. The major claim I want to argue for in this paper is that this property has to be located in the semantics of *wh*-phrases.

Obviously, it may be immediately objected that this data just shows that the assumptions about the derivation of term answers made above are too simplistic and have to be revised or restricted in one way or another. The crucial point is, however, that I see no straightforward way of doing so without merely stating the facts;[8] and even if someone came up with a proposal, (8) still seems to be the null hypothesis and is, therefore, the theoretically preferred option. Hence, I will assume from now on that the constituents corresponding to a *wh*-phrase are in fact F-marked. Then, obviously, the question emerges, why 'standard approaches' to F-marking do not permit this F-marker, and whether there is any straightforward and natural way of modifying (one of) them in such a way that they do.

[7] Following a different line of argumentation, Drubig (1994) draws similar (although not identical) conclusions with respect to the F/B-structure of so-called 'negative contrastive constructions' like *not ..., but ...* in English or *nicht ..., sondern ...* in German. For further discussion, cf. Reich (2001).

[8] Examples like (10) suggest that the derivation of term answers has to respect the '*minimal functional complex*' containing the focus. This restriction may in fact lead to correct results in examples like (10), but it won't do so in more complex cases like (11) —cf. **Her BLUE convertible.* vs. *That he likes to drive her BLUE convertible.*— or in cases where the term answer is constituted by a lexical projection, cf. (12).

2.1. The Problem within Projection Approaches

First of all, let's have a look at so-called 'projection theories,' the most prominent representative of which is presumably Selkirk (1984, 1996). Selkirk (1996) assumes that F-marking is controlled by the set of rules given in (13) and (14).

(13) Basic Focus Rule
An accented word is F-marked.

(14) Focus Projection
a. F-marking of the head of a phrase licenses the F-marking of the phrase.
b. F-marking of an internal argument of a head licenses the F-marking of the head.

Now, reconsider Schwarzschild's example (9) in the light of (13) and (14). The prenominal adjective *blue* is accented; hence it is F-marked by the Basic Focus Rule (13). However, being an adjunct, it cannot license F-marking of the non-accented head of the DP, cf. (14b). Since there is no other candidate that could license F-marking of the head, it has to be concluded that the head is not F-marked. But since the head is not F-marked, F-marking of the DP isn't licensed either.

Is there a straightforward way of modifying this approach? As far as I can see, no. The crucial problem is that any mechanism that allows F-markers to project from prenominal adjectives to the DP containing them cannot prevent the F-marker from projecting to VP if the DP is an internal argument of the verbal head; i.e., the Q/A-sequence in (15) would be predicted to be well formed in general, especially in an out of the blue utterance.

(15) a. What did John do?
b. *He [drove Mary's [RED] convertible].

2.2. The Problem within Information-Theoretic Approaches

The other prominent approach that can be traced back to the work of Arnim von Stechow (cf. von Stechow 1981), but became well known with the work of Schwarzschild (1999), assumes a more direct connection between the information-theoretic notion of being 'given' and F-marking. Schwarzschild (1999) provides us with two basic information-theoretic principles, the first stating that non-F-marked constituents must be GIVEN, cf. (16), the second being an instruction to F-mark as little as possible, cf. (17).

(16) GIVENness
If a constituent is not F-marked, it must be GIVEN.

(17) AVOIDF
Do not F-mark.

Contrary to Selkirk's conception, the existence of an F-marker is not due to a constituent being accented, but rather accenting is a consequence of F-marking. This is ensured by a constraint called FOC, cf. (18). The distinction between Foc-marked and F-marked phrases, however, is not important for our purposes, since in all the relevant examples discussed so far each F-marked constituent is at the same time a Foc-marked constituent.

(18) FOC
A Foc-marked phrase contains an accent.

There are two more things to say. First, it has to be determined precisely what it means for a constituent to be GIVEN, cf. (19).

(19) Definition of GIVEN (partial, informal version)
a. An utterance U counts as GIVEN iff it has a salient antecedent A and modulo existential type-shifting, A entails the existential F-Closure of U.
b. Existential F-Closure of U := the result of replacing F-marked phrases in U with variables and existentially closing the result, modulo existential type shifting.

Second, it has to be emphasized that the constraints GIVENness, AVOIDF and FOC are organized in an optimality theoretic manner, i.e., one is allowed to violate constraints according to the partial order given in (20).

(20) Ranking '>>' ('overrules') of Constraints
a. GIVENness >> AVOIDF
b. FOC >> AVOIDF

Having introduced the most basic assumptions of Schwarzschild's approach to F-marking, I can now show why in the convertible example (9) the DP *her [BLUE]$_F$ convertible* mustn't be F-marked: As Schwarzschild (1999:161) shows himself, the DP in question is GIVEN in the sense specified in (19), cf. (21), hence F-marking of the DP is optional; since F-marking is optional, it is ruled out by AVOIDF.

(21) John drove Mary's red convertible ENTAILS
a. $\exists X \exists P[P(\text{her } X \text{ convertible})]$ $\Rightarrow$ DP is given.
b. $\exists X \exists y[y \text{ drove her } X \text{ convertible})]$ $\Rightarrow$ VP is given.
c. $\exists X[\text{He drove her } X \text{ convertible}]$ $\Rightarrow$ S is given.

Again, the question to be answered is whether there is a straightforward way to modify this approach. This time the answer is 'yes, in principle.' The only reason why the DP mustn't be F-marked is a violation of AVOIDF.[9] However, as is clear from (20), the constraint AVOIDF can be violated if there is another constraint that is ranked higher. Since neither GIVENness nor FOC will force F-marking on the DP, there must exist another, independently needed constraint that allows for violation of AVOIDF. In the following two sections it will be argued that there is in fact good evidence for the existence of a constraint with this property, a constraint that allows for the presence of (focus-sensitive) rhetorical relations.

[9] Note that the assumption that the whole DP is F-marked does not influence the realization of the accent within the DP. This is simply, because this assumption results in embedding one Foc-phrase within another.

3. A Slightly Modified Hamblin Approach: Functional *wh*-Phrases

3.1. Questions and Answers

Since it will turn out that one of the rhetorical relations to be licensed by this constraint is the Q/A-relation, the semantics of focus and the semantics of *wh*-interrogatives I am assuming need to be outlined. To this effect, consider the well-formed Q/A-sequence in (22).

(22) a. What did John drive?
b. John drove [Mary's red conVERtible]$_F$.

Without any argument, I will adopt the structured meaning approach to F/B-structures as developed in von Stechow (1981) and Cresswell & von Stechow (1982), i.e., the F/B-structure in (22b), repeated as (23a), is represented as the structured proposition consisting of the focus 'Mary's red convertible' and the property 'being driven by John,' cf. (23b).

(23) a. John drove [Mary's red conVERtible]$_F$
b. ⟨Mary's red convertible, λx.John drove x⟩

Following Hamblin's (1973) dictum that "a question sets up a choice-situation between a set of propositions, namely, those propositions that count as answers to it" and taking the insight into account that F/B-structures are at the heart of the Q/A-relation, it is absolutely straightforward to construe a question like (22a), repeated here as (24a), as denoting a set of *structured* propositions, cf. (24b) and more precisely (24c).

(24) a. What did John drive?
b. {⟨Mary's red convertible, λx.John drove x⟩,
⟨Peter's Porsche, λx.John drove x⟩, ... }
c. $\lambda p \exists x[thing'(x) \,\&\, p = \langle x, \lambda y.\text{John drove } y\rangle]$

Thus, *wh*-interrogatives are still taken to denote sets of possible answers; the notion of being a possible answer, however, is now relativized to possible F/B-structures.

3.2. Wh-Phrases as Functional Expressions

Of course, the propositions contained in the denotation of a *wh*-interrogative have to be structured independently. This is exactly what I take to be the task of *wh*-phrases. Concretely, I propose to analyze *wh*-phrases not as a (type-shifted) variant of indefinites like *something*, cf. (25a), but as primarily functional expressions with an indefinite core that shape the F/B-structure of possible answers, cf. (25b).

(25) a. 'Traditional': $(what)' = \lambda Q \lambda p \exists x[thing'(x) \,\&\, Q(x)(p)]$
b. Proposal: $(what)' = \lambda Q \lambda p \exists P \exists x[thing'(x) \,\&\, Q(P) \,\&\, p = \langle x, P\rangle]$

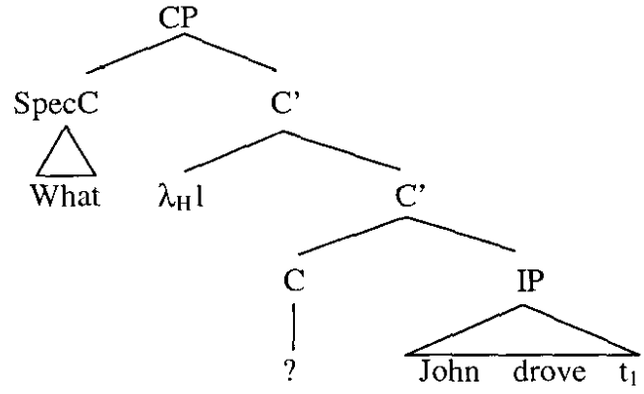
Given this, the well-formedness condition imposed on Q/A-sequences, as stated in (1) above, can be reduced to the simplest condition one can think of, namely the $\in$-relation, cf. (26).[10]

[10] Of course, modulo the treatment of contrastive topics.

(26) *A* is a congruent answer to *Q* iff $[\![A]\!] \in [\![Q]\!]$.

As far as the logical form and the interpretation of *wh*-interrogatives are concerned, the functional view on *wh*-phrases is in essence consistent with the 'traditional analysis' of *wh*-interrogatives within the generative framework (cf. e.g. von Stechow 1993), i.e., a *wh*-interrogative like (27a) will be analyzed on the level of Logical Form as indicated in (27b).

(27) a. What did John drive?



The *wh*-phrase *what* undergoes (overt) *wh*-movement (or an analogous set of operations like e.g. 'copy and delete,' cf. Chomsky 1995) and leaves a coindexed trace behind. Abstracting away from the role of variable assignments, the interpretation of the IP *John drove* t_1 results in the proposition *that John drove* x_1. This proposition, then, is shifted by an 'interrogativator' '?' —located in C and interpreted as the function $\lambda q \lambda p[p = q]$— to the singleton set {*that John drove* x_1}. Up to this point the interpretation of the logical form (27b) follows completely the 'traditional analysis;' contrary to the 'traditional analysis,' however, adjunction of the index 1 is not interpreted as 'common λ-abstraction' resulting in the function $\lambda x_1.\{$*that John drove* $x_1\}$ from individuals to sets of propositions (cf. Heim & Kratzer 1998), but as what I'd like to call 'Hamblin-abstraction,' λ_H, resulting in the function $\lambda_H x_1.\{$*that John drove* $x_1\}$ from properties to truth values, i.e., in a set of properties. Informally speaking, the process of Hamblin-abstraction λ_H is equivalent to 'common λ-abstraction' *within* the set of propositions {*that John drove* x_1}, i.e., $\lambda_H x_1.\{$*that John drove* $x_1\}$ is basically equivalent to the set $\{\lambda x_1.$*that John drove* $x_1\}$.[11] The *wh*-phrase *what*, finally, singles out from this set the property 'being driven by John,' $\lambda x_1.$*that John drove* x_1, and builds the set of structured propositions consisting of all and only those structured propositions ⟨*u*, λ*y*.John drove *y*⟩, where *u* is an individual that satisfies the restriction of the *wh*-phrase involved. This is exactly the intended result.

[11] As far as I know, Hamblin (1973) was the first to make crucial use of what I call 'Hamblin-abstraction' within his set-based model for natural language interpretation. Rooth (1985) and others following him, referred to Hamblin-abstraction in modeling the semantics of 'association with focus,' although on a different level of interpretation. It should be mentioned that the use of Hamblin-abstraction presupposes a formal language that allows for expressions that denote functions from variable assignments to 'common denotations,' i.e., a language like the one developed in Montague (1970). For a similar model as well as a precise definition of Hamblin-abstraction, the reader is referred to Reich (2001).

4. Integration into an Information-Theoretic Approach

4.1. Rhetorical Relations and the Restriction RHET-REL

4.1.1. The Rhetorical Relation answer

Actually, my claim above that the answer (23a) denotes a structured proposition, was a bit too simplifying. The structured meaning approach —at least in its standard formulation— is a focus movement approach and the movement of the focus has to be triggered somehow.[12] In the spirit of Jacobs (1984), I assume therefore that focus movement is always triggered by an operator, in case of so-called 'free foci' by a rhetorical relation, and in the special case of answers by a rhetorical relation that I'd like to dub answer. The rhetorical relation answer is a two-place relation that first binds the focus (the foci) in the answer and thus triggers the generation of a structured proposition, cf. (28),[13] second introduces a variable Γ ranging over sets of structured propositions and referring anaphorically to the contextually salient question, cf. (28b),

(28) a, answer [F [John drove [Mary's red conVERtible]$_F$]]
b. answer(Γ,⟨Mary's red convertible, λx.John drove x⟩)

and, third, checks whether this structured proposition is a possible answer to the question, i.e., whether it is an element of the question's denotation, cf. (29).

(29) $[\![\text{answer}(Q, A)]\!] = 1$ iff $[\![A]\!] \in [\![Q]\!]$.

Now, everything is available to systematically coerce F-marking of the constituents corresponding to *wh*-phrases. One just has to introduce an additional constraint on F-marking that allows for the presence of the focus-sensitive rhetorical relation answer —I call it RHET-REL (RHETorical-RELation), cf. (30a)— and to give it priority over the constraint AVOIDF introduced by Schwarzschild (1999), cf. (30b).

(30) a. RHET-REL
F-mark, if required to fulfill a rhetorical relation.
b. RHET-REL >> AVOIDF

The well-formedness condition of Q/A-sequences thus turns out to follow directly from the interplay of the semantics of focus, the semantics of *wh*-constructions, and the semantics/pragmatics of the rhetorical relation answer, licensed by the constraint RHET-REL overruling AVOIDF.

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[12] It is a well-known problem that, in general, focus movement leads to the violation of island constraints, cf. e.g. the discussion in von Stechow (1991). In Reich (2001), however, it is argued that there is an independently justified variant of the structured meaning approach that substitutes focus binding for focus movement, and thus avoids the problem of violating island constraints. However, to keep things simple, I will stick to the movement approach for the remainder of the paper.

[13] In fact, I am assuming that any rhetorical relation has to behave focus-sensitively. It may turn out that this requirement is too strict, but nevertheless it seems to constitute a reasonable methodological guideline.

4.1.2. The Rhetorical Relation `contrast`

It should be emphasized that the assumption of an additional constraint RHET-REL is in fact independently motivated by examples involving so-called 'contrastive focus,' cf. e.g. the German data in (31).

(31) a. Anna wird Alex zur Party einladen.
Anna will Alex to the party invite
'Anna will invite Alex to the party'

b. Ja, sie wird [ALEX]$_F$ einladen. Aber leider nicht [PEter]$_F$.
Yes, she will [ALEX]$_F$ invite. But unfortunately not [PEter]$_F$.
'Yes, she will invite ALEX. But unfortunately, she won't invite PEter.'

According to the definition of GIVEN above, every constituent of *sie wird Alex einladen* in (31b) is GIVEN in the context of (31a). Since they are all GIVEN, none of them has to be F-marked (GIVENness); since none of them has to be F-marked, F-marking is forbidden by AVOIDF. The constituent *Alex*, however, does carry an accent, and, therefore, has to be F-marked.[14] This, again, raises the question of what it is that overrules the constraint AVOIDF and licenses F-marking of the constituent *Alex*.

The answer I want to argue for is that the possibility of F-marking the constituent *Alex* is due to the presence of a rhetorical relation `contrast` binding 'contrastive foci.' This in turn raises the question of how to define such a rhetorical relation. To see this, consider, the following examples typically being discussed under the notion 'contrastive focus' (cf. e.g. Rochemont 1986, Rooth 1992a):

(32) a. [An [AMERican]$_F$ farmer] met [a [CaNAdian]$_F$ farmer].

b. John is neither [[EAger]$_F$ to please], nor [[EAsy]$_F$ to please],
nor [[CERtain]$_F$ to please].

c. [[JOHN]$_F$ hit [BILL]$_F$] and then [[HE]$_F$ hit [HIM]$_F$]

Structurally, the examples cited in (32) all have one property in common: each of them contains at least two (maximal) constituents of the same category (DP, VP, or S) that differ in focus, but are identical in background. In (32a), for example, the DP *an [AMERican]$_F$ farmer* is contrasted with the DP *a [CaNAdian]$_F$ farmer* and vice versa, the focus simply serving the purpose of ensuring comparability on the one hand and distinctiveness in denotation on the other hand. I conclude from this data that the rhetorical relation `contrast` may adjoin at LF at any constituent (quite similar to Rooth's 1992a operator ~Γ), but needs to bind at least one focus in its scope. (32a), for example, is represented at the level of LF as (33a), and interpreted as (33b).

(33) a. [`contrast` [F [an [AMERican]$_F$ farmer]]] met
[`contrast` [F [a [CaNAdian]$_F$ farmer]]]

b. *met'*(`contrast`(⟨American, λ*X*.an *X* farmer⟩),
`contrast`(⟨Canadian, λ*X*.an *X* farmer⟩))

[14] The accent observed is definitely not a default accent in all-given utterances, for in German the default accent in all-given utterances is typically realized on the inflected part of the predicate, cf. Reis (1989).

As far as truth-conditions are concerned, `contrast` is simply vacuous, cf. (34b); `contrast` presupposes, however, the presence of a contextually salient LF-constituent that differs in focus, but matches the background of the structured meaning in its scope, cf. (34b).[15]

(34) a. `contrast`$(\langle \alpha, \beta \rangle) = \beta(\alpha)$;
b. `contrast`$(\langle \alpha, \beta \rangle)$ is defined iff there exists a contextually salient LF-constituent $\gamma, [\![\gamma]\!] = \langle \alpha', \beta' \rangle$, such that $\alpha \neq \alpha'$, but $\beta = \beta'$.

Definition (34) together with the constraint RHET-REL on F-marking thus does not only account for the specifics of the F/B-structures in examples like (31) and (40), but also for the specific interpretational effect —contrastiveness— triggered by their use.

Having defined the rhetorical relation `contrast`, we are now in the position to give a fully explicit account of Schwarzschild's convertible example (9), repeated here as (35) for convenience.

(35) (John drove Mary's RED convertible.)
a. What did he drive (before that)?
b. (Before that,) He drove [her [BLUE]$_F$ convertible]$_F$.
c. ~~(Before that,) He drove~~ [her [BLUE]$_F$ *convertible*]$_F$.

In section 3 it has been argued that the *wh*-interrogative (35a) denotes the set $\{\langle u, \lambda x.$ *that John drove* $x\rangle$; u is a driveable object$\}$ of structured propositions. Consequently, any declarative that is meant to answer the question (35a) necessarily needs to be F-marked on the constituent corresponding to the *wh*-phrase *what* in (35a). Although this constituent is GIVEN in the relevant sense, and thus F-marking should be suppressed by AVOIDF, the F-marker is licensed by the constraint RHET-REL, when it is bound by the rhetorical relation `answer`; the focus on the constituent *blue* constitutes a symmetric (or asymmetric) contrastive focus that is bound by the rhetorical relation `contrast`. Altogether, both the sentential answer in (35b) and the term answer in (35c) are represented as (36a) on the level of Logical Form, and they are interpreted as indicated in (36b).

(36) a. `answer`[F [He drove [`contrast` [F [her [blue]$_F$ convertible]]]$_F$]]
b. `answer` (Γ, ⟨`contrast`(⟨blue, λX.her X convertible⟩), λx. he drove x⟩)

On the basis of the definitions of the rhetorical relations `answer` and `contrast`, as well as the generalization about the derivation of term answers, (35b) and (35c) are correctly predicted to be well-formed answers in the context of (35a).

4.2. Functional expressions and the restriction FUNCE

Finally, I'd like to outline an important consequence of the functional view on *wh*-phrases for the F/B-structure of *wh*-interrogatives. It is well known that *wh*-phrases in

[15] It should be noted that the definition of `contrast` in (34) does not directly capture the existence of asymmetric contrastive foci. As far as I can see, however, there is in principle no problem to generalize (34) in such a way that asymmetric contrastive foci can be accounted for, too.

German (at least in simple *wh*-interrogatives) are typically unaccented, cf. (37a) vs. (37b), although they do not constitute GIVEN information in a strict sense.

(37) (out of the blue)
a. Wer hat (eigentlich) SANdra eingeladen?
Who has (anyway) SANdra invited?
'Who invited SANdra, anyway?'
b. *WER hat (eigentlich) SANdra eingeladen?
WHO has (anyway) SANdra invited?
'WHO invited SANdra anyway?'

This does not mean, however, that they *never* carry any accent. But if they do, this has —in general— an additional pragmatic effect: either the question becomes more emphatic, cf. (38a) and (38b), or accenting triggers a 'disputational' implicature (the existential implicature is called into question), cf. (38a) and (38c), or it correlates with an echo-reading, cf. (39).

(38) a. Heute koche ich mal wieder.
Today cook I Particle again
'I'll do the cooking again today.'
b. Schön. Und WAS kochst du?
Good. And WHAT cook you
'Good. And WHAT are you going to cook?'
c. Und WAS willst du kochen?
And WHAT want you cook
'And WHAT do you want to cook?'

(39) a. Peter hat gestern Sushi gegessen.
Peter has yesterday Sushi ate
'Yesterday, Peter ate Sushi.'
b. WAS hat Peter gestern gegessen?
WHAT has Peter yesterday ate
'WHAT did Peter eat yesterday?'

As Reis (1989) points out the most straightforward way to account for this data is to assume that, in general, *wh*-phrases in German are simply not F-marked. This fully accords with the observation made in Rosengren (1991) that, in German, the F/B-structures of *wh*-interrogatives seem to be subject to exactly the same regularities as the F/B-structures in declaratives.

However, when having a look at comparative evidence this assumption is rather surprising; in Hungarian, for example, *wh*-phrases have to move into a distinguished focus position, cf. (40).[16]

(40) Nem tudtuk hogy Mari mit tett *az asztalra*
not know-1.Pl. that Mary what-Acc laid Art table-on
'We don't know, what Mary laid on the table.'

[16] This has been argued for extensively in Horvath (1986).

Moreover, Ladd (1996:171) reports that in Turkish, a wh-in-situ language, *wh*-phrases even need to be accented, cf. (41).

(41) Halil'e NE verdiniz
Halil WHAT you-gave
'What did you give to Halil?'

Obviously, this data rather suggests that *wh*-phrases are focussed than that they are not. But given that the functional view on *wh*-phrases is basically correct, this data may be accounted for in a rather natural way: whereas the property of structuring propositions is part of the lexical semantics of *wh*-phrases in German (and English) —and thus *wh*-phrases in German (and English) have to be conceived of as functional elements— *wh*-phrases in Turkish seem to lack exactly this property —and thus have to be considered as non-functional in this respect—; since, however, for reasons of Q/A-congruence, the propositions in the question's denotation need to be structured, this task is taken over by a genuine syntactic mechanism, namely focussing.

Actually, in German and English *wh*-phrases are not the only expressions that behave in such a way. Similar observations can be made i.a. with respect to focus particles, negation, or sentential adverbials, cf. (42).

(42) a. John only introduced BILL to Mary.
b. John did not introduce BILL to Mary, but JOHN.
c. Unfortunately, John introduced BILL to Mary.

This parallel behavior shows that the prima facie peculiar behavior of *wh*-phrases simply mirrors their membership in the class of functional expressions: functional expressions are always considered to be given, for their primary function is not to add new information to a context, but to systematically operate on 'old information.' Within Schwarzschild's approach to F-marking this behavior can be captured by introducing a further constraint, FUNCE (FUNCtional Expressions), that rules out F-marking of functional expressions, cf. (43a).[17] Obviously, FUNCE must be able to overrule GIVENness, cf. (43b).

(43) a. FUNCE
Do not F-mark functional expressions.
b. FUNCE >> GIVENness
c. RHET-REL >> FUNCE

Furthermore, giving the constraint RHET-REL priority over the constraint FUNCE, cf. (43c), allows the pragmatic effects triggered by focussing functional expressions to be derived from the presence of covert rhetorical relations, e.g. the rhetorical relation `contrast`.

[17] Note that FUNCE allows for F-marking *wh*-phrases in Turkish, cf. the discussion above.

5. Summary

On the basis of the assumption that term answers are derived from sentential ones by eliding their background, I argued that *wh*-phrases should be considered as functional expressions that shape the F/B-structure of possible answers. I therefore proposed to treat *wh*-interrogatives as denoting sets of structured propositions and to derive the well-formedness conditions on Q/A-sequences from the interaction of the semantics of *wh*-questions, the semantics of F/B-structures and the semantics/pragmatics of rhetorical relations. To coerce F-marking of the constituents corresponding to a *wh*-phrase, I proposed to extend Schwarzschild's approach to F-marking by an additional constraint called RHET-REL that allows for violations of AVOIDF. Finally, I showed that the assumption that *wh*-phrases are functional expressions allows to consider their peculiar behavior with respect to accenting as an instance of a more general phenomenon that can be captured by an independently needed constraint FUNCE. The proposed extension of Schwarzschild's approach can be summarized as follows:

(44) a. RHET-REL
F-mark, if required to fulfill a rhetorical relation.
b. FUNCE
Do not F-mark functional expressions.
c. Extending '>>':
(i) RHET-REL >> AVOIDF
(ii) FuncE >> GIVENness
(iii) RHET-REL >> FUNCE.

Finally, it should be pointed out that the mechanics introduced so far need to be generalized to complex *wh*-phrases like *whose mother* or *how many apples*; this, however, is another —complex— story (cf. Reich 2001).

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Indefiniteness and Specificity in Old Italian Texts*

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0. Introduction: Indefiniteness and grammaticalization of determiners: the corpus

Object of this study is the marking of nominal indefiniteness in Old Italian, more precisely Old Tuscan texts, in three collections of novellas.

In this period of early Romance literacy, nominal Phrases[1] can appear as bare singulars or bare plurals, but also with one or more functional elements preceding the noun. The elements discussed here will be these semantically indefinite[2] determiners that can appear alone with a bare noun in a NP (_N), excluding hereby indefinite elements which are only able to appear in the second (or later) position of a NP (Det_N), like *certo* ('certain') in Modern Standard Italian (*un certo uomo*, **certo uomo*).

The choice of the three corpus texts has been guided by the relative homogeneity of text types, i.e. the thematic and formal continuity as testified in the anonymous *Novellino* (written by 1280-1300) and the ever since canonical *Decameròn* by Giovanni

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1 We will not discuss here the status of the examined determiners as the head of a maximal projection, i.e. the DP-hypothesis according to Abney 1987, or the existence of a functional projection inside the DP, namely QP, cf. Löbel, E. (1989): Q as a functional category. In: Bhatt , Chr. (ed.): *Syntactic Phrase Structure Phenomena in Noun Phrases and Sentences*, Amsterdam/Philadelphia, 133-157. For the sake of simplicity, we will call every expression containing a noun or a pronoun a NP. We will furthermore not discuss whether the indefinite elements preceding a noun are part of the same or different syntactic categories, cf. Vater 1982 or Krifka 1989. It is highly probable that we have to distinguish elements able to be postponed or to appear separate from the noun in certain partitive constructions ("quantifier floating", for example *alcuno*) from elements whose position is relatively fixed (for example *uno; certo* is certainly on its way to an adjective-like element, being already able to cooccur with *uno* in our texts, though still actualizing nouns also alone. All the other elements cannot cooccur). To be able to compare their textual distribution, we only analyze the actual prenominal realizations of these elements, regardless of the fact that they can probably also appear in other positions.

2 Semantic indefinitness is to be understood in the Heimian sense as 'novelty of discourse referents' at the semantic level of 'file cards', irrespective of the actual reference of certain NPs in the text. The most important interpretation rule in 'file-change semantics' is the "Extended–Novelty-Familiarity-Condition":

"For p to be felicitous w.r.t. F it is required for every NP_i in p that

(i) if NP_i is [-definite], then $i \notin$ Dom (F);

(ii) if NP_i is [+definite], then

a) $i \in$ Dom (F), and

b) if NP_i is a formula, F entails NP_i."

(Heim 1988:369f.). In short: [+definite] means 'familiar with respect to the file', [-definite] 'novel with respect to the file'.

Boccaccio (the major part of the novella is written in the second half of the 14th century) and, finally, the slightly epigonic *Novellino* by Masuccio Salernitano (written from 1450 to 1475/76).

The anonymous *Novellino* is one of the earliest Italo-Romance narrative texts. The late 13th century marks the relatively late beginning (in the context of Romance languages) of the Italo-Romance writing tradition and therefore represents an important turning point in the emancipation of Romance languages from Latin domination. Boccaccios *Decameròn* has served as a model for prose literature for centuries, in particular since Pietro Bembo in his influential *Prose della volgar lingua* (1525) established him, together with Petrarca for poetry, as the summit of artistic linguistic perfection in literature and marks the language variety used by Boccaccio as the obligatory variety to choose for any work of high literature in the Italo-Romance world. Even before this, Masuccio had imitated content and style of Boccaccio, although his southern Italian origins (Salerno) and a certain portion of narrative originality allow to consider his *Novellino* an independent work of Italian narrative.

In view of the fact that the overwhelming part of written texts in the centuries central to our study, i.e. the late 13th, the 14th and the 15th century, is in Latin, a language without any nominal determiners, and that Modern Italian like every Modern Romance language has definite and indefinite articles and a great variety of indefinite quantifiers and pronouns[3], the main question of this discussion will be: What is the textual function of indefinite determiners in these early texts? Where do they appear at the beginning of their "grammaticalization path"[4] to obligatory articles? What are the relevant semantic properties of nominal indefinite elements that determine their further development into articles, positive and negative quantifiers or "negative polarity items"[5]? How can modern dynamic model-theoretic semantics like DRT or "file change semantics"[6] deal with these properties and the diachronic facts, in view of the fact that the basic unit of meaning in these models is not the sentence but the (entire) discourse – the central entity when it comes to the grammaticalization of determiners (see below)? This becomes even more problematic as the semantic models in question work with a basically dichotomic conception of the semantic potential of determiners[7] and consider also bare NPs (at least those containing a count noun) simply as indefinite.

1. Emergence and Function of Nominal Determiners in Germanic and Romance Languages

In a recent study on the development of Germanic article systems, Elisabeth Leiss (2000) considers both articles and verbal aspect markers as 'grammatical synonyms' in that they indicate 'boundedness' of objects and events, which become thereby 'percepts', 'tokens', whereas bare noun phrases or non-finite verbs tend to indicate mere concepts, 'types'[8]. The common function of aspect systems and articles is, according to

[3] Cf. Longobardi [3]1991, Renzi [3]1991.

[4] Cf. Hopper/Traugott 1993 und Heine/Claudi/Hünnemeyer 1991.

[5] Cf. Hoeksema 1983, Ladusaw 1993, Ramat 1997 for Italian *veruno*.

[6] Cf. Heim 1988, Kamp & Reyle 1993.

[7] Cf. for example the "Extended–Novelty-Familiarity-Condition" of Heim 1988 cited above.

[8] Cf. the early sketch of the principal article functions in Coseriu 1955.

Leiss, the indication of referentiality[9], i.e. they indicate the reference of the internal verb-argument. Languages with the aspectual opposition 'perfective' – 'imperfective' can do without articles, because the mere value of 'perfective' action or event allows to conclude to the existence of a specific, determined object involved in this action or event (cf. approximately in the English example *Peter has eaten an apple.*), while 'imperfective' aspect favors the 'concept-status' of the intended referent (generic or non-specific: *Peter used to eat an apple every day in his youth*). Loss of aspectual marking is, according to Leiss, often accompanied by the gradual obligatorification[10] of nominal determiners, which in the beginning cooccur preferably with count nouns in the focus of information, marking their important and new referential status as percepts (in so-called 'hypodetermining languages'). Later, (definite) articles turn to mark anaphorically known referents, i.e. given information in the background of the textual information structure ('hyperdetermining languages'). Only with real 'percepts', identifiability becomes an important property of the intended referents. In this scenario, we can notice a strong correlation between (in-)definiteness and information structure, in that nominal determiners first mark foregrounded information and in a second step acquire the textual value of 'given' – vs. 'new' information (definite vs. indefinite in a textual approach to (in-)definiteness like the one in Heim 1988, for example). Leiss is able to show this correlation for Gothic and Old High German, but its adequacy for Romance languages, all of which preserve an aspectual differentiation at least in the past tenses (simple past as perfective and 'aorist', imperfect tense as imperfective or iterative/edurative/habitual) remains to be shown.

The beginning of a systematic use of nominal determiners in late Latin texts is analyzed in detail in the seminal work by Selig 1992. Latin demonstratives, *ipse* and later almost exclusively *ille*, occur first with non-continuous discourse referents of considerable importance (protagonists, important details like objects, times, places), so that we can in a first step see a certain correspondence between the findings of Leiss and Selig: nominal determiners seem to systematically mark foregrounded information, often with postverbal internal arguments, before they spread to continuous discourse referents, changing their textual potential. Selig points out, however, that on the way to systematic grammaticalization of definite determiners as anaphoric devices and – always later and neither functionally nor distributionally symmetrical to them[11] – indefinite determiners as cataphoric, referent-introducing signals, we have to accept an intermediate period of systematic marking of each important, individualized discourse referent, i.e. of marking of specific and highly "persistent"[12] textual elements[13]. In this period, non-specific and generic reference may still remain unmarked, a characteristic of Leiss' 'hypodetermining languages'. From this intermediate period to the obligatory marking of each continuous discourse referent (at least in argument position[14]) by the

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[9] Cf. the main idea of von Heusinger 1997: the epsilon-operator as the common semantic element of definite and indefinite article serves to determine a 'representative' of a set, to form a term out of a non-fixed element of a set.

[10] One characteristics of grammaticalization processes, cf. Lehmann 1985.

[11] Cf. Christophersen 1939, Coseriu 1955, Moravcsik 1969, Hawkins 1978, Chesterman 1991 etc.

[12] Cf. Givón, T. (1983): Topic Continuity in Discourse: An Introduction. In: Givón, T. (ed.): *Topic Continuity in Discourse: A Quantitative Cross Language Study*. Amsterdam/Philadelphia, 1-41.

[13] Stage II in Greenbergs 1978 scheme of different stages in definiteness marking and article grammaticalization.

[14] For a typological language classification according to the possibility of admitting bare noun phrases in argument position cf. Chierchia 1998.

definite and, also, of each new (singular) discourse referent by the indefinite article, the earlier apparently fundamental distinction between specific and non-specific reference seems to get lost.

2. Specificity and textual information structure

The notion of specificity is fundamental to the following speaker-oriented distinction: "An indefinite [15] singular noun phrase may be used to denote a particular entity, or to speak of any arbitrary member of the class described by the noun phrase."[16] In the former case, the respective noun phrase can be interpreted specifically, whereas in the latter, it is to be interpreted non-specifically.

Regardless of the debate whether definite and/or indefinite descriptions involve reference or not, and whether reference is better to be described as a semantic or purely pragmatic phenomenon, recent accounts, both theoretical and empirical, show the relevance of specificity at a discourse pragmatic level: in modern languages possessing definite and indefinite articles[17], the early stages of determiner grammaticalization systematically demonstrate a high preference to mark specific, i.e. particular important discourse elements in texts[18]. Speakers and writers highlight specific referents, first by certain indefinite elements, later in the text by definite determiners, searching to lend a certain profile ('foreground vs. background of the story') to their texts. Recent semantic accounts of specificity have attempted to explain the often mentioned existential presupposition of specific indefinites by '(textual) givenness' in a broad sense as the central semantic element of specific noun phrases and thereby a certain affinity of specific and definite noun phrases[19]. As there are special contexts which provoke a specific and others which provoke a non-specific interpretation of indefinite noun phrases[20] (sometimes there are also pragmatic reasons excluding one or the other interpretation), Haspelmath 1997 analyzes the occurrences of different series of indefinite pronouns in contexts which favor specific interpretation (concerning especially arguments of predicates aspectually marked as perfective) and in contexts which favor non-specific interpretation (especially "negative polarity contexts" like questions, the protasis in conditionals, scope of negation, "irrealis" contexts like imperatives, futures etc)[21].

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[15] Specificity-distinctions exist also for definite noun phrases, see for further discussion Lyons 1999, 165-178.

[16] Lyons 1999, 165.

[17] See also Lyons 1999, 177f., who mentions a great variety of languages (for example of the Austronesian family) indicating both specificity and definiteness (i.e. their common feature of 'familiarity' to the speaker) by only one article.

[18] Cf. the results in Skrélina /Čebelis 1972, Blazer 1979, Givón 1981, Heinz 1982, Selig 1992, Elvira 1994, Rosén 1994.

[19] Cf. the short discussion of specificity in Heim 1988, 220-226; see further Enç 1991, who shows a partitive "inclusion-relation" between specific referents and a prementioned group ("weak antecedents", cf. Enç 1991, 7ff.), Delfitto/Corver 1998 who attribute a "familiarity presupposition" to specific referents which causes certain syntactic phenomena, Van Geenhoven 1998 etc.

[20] Cf. for example Heim 1988, 220ff., following Fodor/Sag 1982.

[21] Note that Eva Lavric, following Kleiber, shows in her publications the necessity to differentiate between 'hypothetic' (like the scope of negation, arguments of world-creating predicates etc) vs. 'factive contexts' and the opposition of 'referent known' vs. 'referent unknown' to the speaker, which

To sum up: Besides the obvious correlation between (in-)definiteness and information structure accounted for in each textual concept of (in-)definiteness as, roughly speaking, 'given' vs. 'new information' (the basic distinction also in DRT and "file-change semantics", see above), the speaker-oriented category of specificity is also to be considered whenever one analyzes information packaging in texts. Particularly in the early stages of grammaticalization like the one discussed here with Old Italian texts, specificity seems to be a decisive factor which provokes the marking of noun phrases by determiners in general and it seems to be a feature that can be explicitly marked by lexical differentiation in the paradigm of indefinite elements (cf. Haspelmath 1997, Lyons 1999, 174ff.). The guiding question of the following account will be if a simple dichotomy 'definite' vs. 'indefinite' in the sense 'given' vs. 'new information' (or "file card", for example) is sufficient to understand the functioning of the most frequent indefinite determiners in the texts, and also if the category of "introducing discourse referents" is adequate at all, at least at a discourse-pragmatic level, to describe certain indefinites or if it could not be precisely the signaling of 'non-introduction' that is the textual contribution of some of the analyzed indefinites. Interestingly enough, Hans Kamp (this volume) discusses precisely this problem in his proposal of a "use-oriented approach to specificity and related notions", when he asks, from the speaker's point of view, "what indefinite NP to choose" (6), if the hearer of a discourse element does not have "a representation in his entity library for the entity [...] which the speaker [...] represents" (4) by a noun phrase. Kamp mentions some contexts (for example trans-sentential anaphora to an indefinite) which incite a non-existential interpretation, and asks whether it could be "*part of the semantics* of such discourses that the indefinite gets a non-existential interpretation" (8f.). In this case, we could probably go a step further in investigating indefinite elements and show that sometimes not only their context elements, but their lexical semantics itself incites specific or non-specific interpretation.

The above mentioned correlations of (in-)definiteness and information structure lead to a detailed analysis of the following distributional characteristics of indefinite determiners: If nominal determination serves to highlight 'rhematic', foregrounded discourse referents in 'hypodetermining languages' and to mark the 'given' vs. 'new' status of the respective discourse referents in 'hyperdetermining languages' (Leiss 2000), we have to examine the sentential distribution of the occurrences of indefinites, i.e. their occurrences in pre- or postverbal position (in the main syntactic functions subject and object) and their occurrences in main vs. subordinate clauses with finite or non-finite verbs, together with their cooccurences with perfective vs. imperfective aspect (in the Romance languages in the past: *passato remoto* vs. *imperfetto*). If specificity is furthermore the main feature admitting anaphoric reference to the new referent introduced by the indefinite noun phrase in question[22], and if it is in general the main motivation to mark a discourse referent (see above, especially Selig 1992), we have to discuss the cataphoric potential of the indefinite noun phrases and their ability to introduce a central discourse referent. Finally, we will search for a pattern of lexical differentiation inside the group of the discussed indefinite determiners according to

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are both understood as revealing the opposition of 'specific' vs. 'non-specific'. Haspelmath provides linguistic evidence for this distinction by showing that some languages have a different series of indefinite pronouns for specific indefinites denoting referents known and those unknown to the speaker, for example in Russian, cf. Haspelmath 1997, 45-48.

[22] Cf. Karttunen 1976.

specificity vs. non-specificity and will therefore study the distribution of indefinite NPs in highly 'specific' vs. 'non-specific' contexts according to Haspelmath 1997.

3. Properties of indefinites in Old Italian

To understand the lexical differentiation in Old Italian indefinite determiners, we have to shed a light on Modern Standard Italian, a clearly 'hyperdetermining language' (Leiss 2000). In Modern Italian, there is a textual opposition of definite (neutrally marked by the definite article *il* and its allomorphs) and indefinite noun phrases, the former being either marked by the indefinite article derived from the numeral *uno*[23] for singular count nouns in argument position, a partitive article (*del*)[24] for singular mass nouns in certain syntactic positions, especially in preverbal subject and in object position, and with zero or a plural partitive (*dei*) or *alcuni* ('some') or *certi* ('certain') with plural count nouns. Zero is in these cases always interpreted non-specifically and extremely restricted in preverbal position[25].

We will in the following concentrate on the correspondences or differences between the major indefinite nominal markers in Old and Modern Standard Italian, i.e. the distribution of *uno*, *alcuno*[26] (in Modern Italian only under scope of negation in the singular meaning 'nobody', with specific indefinite interpretation 'some' only in the plural), *certo* ('a certain'), being an often mentioned indicator of specific interpretation and occurring (interestingly enough) also alone as a nominal determiner in Old Italian, and zero, since bare noun phrases are usually interpreted as indefinite in the above mentioned semantic theories (DRT, FCS). We have analyzed up to 200 occurrences of each of the three indefinite determiners and will discuss only the singular occurrences here, and, additionally, by a random selection of 100 occurrences of bare singular noun phrases.

Before we will have a closer look at the correlations between distributional properties of *uno*, *alcuno*, *certo* and zero and textual information structure, the

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[23] Cf. Givón 1978 and Renzi 1976.

[24] Probably inherited of Gallo-Romance languages and appearing relatively late, so that it has not been considered in this study.

[25] For details see Renzi [3]1991. Besides this general sketch of indefinite descriptions, Modern Italian possesses a great variety of quantifiers and indefinite pronouns, which form, according to Haspelmath 1997, three major groups: *qualche* ('some' or 'any') for specific and to a large extend non-specific uses (occurring in contexts of specificity and in irrealis contexts, in questions, conditionals, under indirect negation, i.e. in complement sentences of negated matrix predicates, and direct negation), *nessuno* ('nobody') for negative contexts and questions, and a series of *–unque* (*chiunque*, *qualunque*, engl.: 'whoever', 'whatever' and so on) in comparatives and free-choice contexts. We will not discuss here the distribution of pronominal indefinites and further quantifiers.

[26] The most frequent occurring indefinite determiner and pronoun in Old Italian texts after *uno*:

	Il Novellino *(anonymous) (27029 words, 4599 different* ***Lemmata*** *(?))*	Decameròn *(Boccaccio) (269588 words, 17646 different* ***Lemmata*** *(?))*	Il Novellino *(Masuccio) (135102 words, 14100 different* ***Lemmata*** *(?))*
uno **det**	**193** (out of 200 analyzed occurrences of totally 538)	**187** (out of 200 analyzed occurrences of totally 3116)	**197** (out of 200 analyzed occurrences of totally 1388)
alcuno **det**	**8** (out of totally 10 occurrences)	**153** (out of 200 analyzed occurrences of totally 1114)	**156** (out of 200 analyzed occurrences of totally 439)

etymology of *uno* and *alcuno* has to be summarized. Classical Latin had a rather clear-cut distribution of indefinite nominal markers[27], in that *quidam* (not continued in the Romance languages) was predominantly used with indefinite NPs with specific interpretation, especially in subject position, while *aliquis*, the first part of the compositional and nowadays negative *alc-uno*, accompanied non-specifically interpreted indefinite noun phrases, and *uno* was neutral in this regard.

3.1. Distribution of indefinite determiners in the sentence

Discussing only the two major argumental positions in the sentence, i.e. subject and object position, and more precisely the occurrences of indefinites in preverbal position and special topicalization structures like left dislocations or hanging topics[28], we can observe a rather clear distribution of the two syntactic functions:

all texts	*uno*		*alcuno*		*certo*		zero	
subject	118	20,45%	32	11,64%	3	12,50%	11	3,67%
preverb.	162	28,08%	123	44,73%	8	33,33%	111	37,00%
prevSub	**41**	**34,75%**	**14**	**43,75%**	**1**	**33,33%**	**3**	**27,27%**
object	166	28,77%	110	40,00%	6	25,00%	55	18,33%
prevObj.	**14**	**8,43%**	**28**	**25,45%**	**0**	**0,00%**	**14**	**25,45%**
Topic.	0	0,00%	0	0,00%	0	0,00%	0	0,00%

Table 1

The two lines in bold in table 1 show the percentage of preverbal subjects and objects of all preverbal occurrences with indefinite determiners. Up to a half of all preverbal occurrences of *uno*, *alcuno* and *certo* (34,75%; 43,75%; 33,33%) are subjects, while only 8,43% of preverbal *uno*, 25,45% of preverbal *alcuno* and 0,00% of preverbal *certo* are objects. Only zero shows almost no difference between subjects and objects occurring preverbally, being much more freely admitted in these positions with non-specific or generic referents. Interestingly, zero is already quite rare with subjects in general (3,67% of the totally 300 zero occurrences in all the three texts). None of the indefinites occurs in special topicalization structures.

These data suggests that we already deal with a 'hyperdetermining language' (Leiss 2000), since the great majority of indefinite subjects appears in preverbal position in our texts, and since a clear majority of indefinite objects appears in postverbal position, regardless of the informational status of 'new' of all the discourse referents concerned. Constituent order is thus no longer able to indicate information structure, indefinite determiners mark 'new' referents by their semantic potential.

3.2. Specificity as a feature of the singular determiners

3.2.1. Specificity and 'zero'

Concerning the textual information organization, Old Italian *uno* already seems to be especially used for the introduction of specific and important discourse referents:

[27] Cf. Orlandini 1983, Mellet 1994.

[28] Cf., among others, Cinque 1977 and 1979, Lambrecht 1994.

all texts	*uno*		*alcuno*		*certo*		zero	
main cl.	353	61,18%	91	33,09%	12	50,00%	175	58,33%
finite	442	76,60%	159	57,82%	16	66,67%	211	70,33%
perf. asp.	245	42,46%	35	12,73%	10	41,67%	99	33,00%
cata.pot.	**306**	**53,03%**	**30**	**10,91%**	**4**	**16,67%**	**76**	**25,33%**
cent.ref.	**146**	**25,30%**	**3**	**1,09%**	**1**	**4,17%**	**9**	**3,00%**

Table 2

If we look only at the two last lines of table 2, more than half of the occurrences of *uno* introduce highly persistent referents, and about a quarter introduce protagonists, central objects, places and so on, whereas the other determiners are relatively rare in these functions. The only slight exception is represented by zero, which accompanies discourse referents with a certain cataphoric potential (25,33%) – a fact that is partly explained by its generic value:

	uno		*alcuno*		*certo*		zero	
Nov.	193		8		4		100	
gen.							39	39,00%
	uno		*alcuno*		*certo*		zero	
Dec.	187		139		10		100	
gen.							7	7,00%
	uno		*alcuno*		*certo*		zero	
Mas.	197		128		10		100	
gen.							3	3,00%

Table 3

Besides these clearly generic cases, there are many other occurrences of bare noun phrases which cannot be grouped without problems under the heading of 'generic', even sometimes not under 'indefinite':

(1) *Marato standosi sopra la poppa e* ***verso il mare*** *riguardando, di niuna cosa da lor guardandosi, di concordia andarono e, lui prestamente di dietro preso, il gittarono* ***in mare****; e prima per ispazio di più d' un miglio dilungati furono, che alcuno si fosse pure avveduto Marato esser caduto* ***in mare****.*
'While Marato was standing at the stern and looking towards the sea, not bothering about them, they all went together towards him and, after quickly having seized him from behind, they threw him into the sea, and they were more than one mile away when somebody realized that Marato had fallen in the sea.'
(Boccaccio, *Decameron*: 127)

Mare in the prepositional phrase *in mare* refers not only to a uniquely identifiable discourse referent in this context, but also to an already mentioned, i.e. textually given one. It refers back to a definite noun phrase (*e verso il mare riguardando*) and forward to another bare noun phrase (*in mare*). Zero in locative PPs is a rather common feature of early stages of article grammaticalization and is still preserved in Modern Standard Italian, especially with the preposition[29] *in*. Contrary to the normally non-referential or better 'non-actualized'[30] or generic use of noun phrases in Modern Standard Italian, our

[29] Cf. Renzi [3]1991, 412. Renzi classifies these cases under 'non-referential', which becomes problematical in sentences with clear perfective aspect: *Poi andarono in teatro* ('Then they went to the theatre').

[30] Cf. Coseriu 1955.

texts show a rather systematic differentiation between PPs with important locations for the ongoing story (normally with indefinite or definite determiners) and peripherical ones[31] like in example (1), where the fact of Marato's being thrown in the water is sufficient regardless of the identification of the concerned sea. This is an example of the difficulties in analyzing bare noun phrases simply as indefinite (or generic): it is neither the mere concept of 'seahood' nor a new discourse referent in the above passage, but an unimportant one.

3.2.2. *Certo* vs. *alcuno* – From non-specificity to negativity

Analyzing the presumed specificity of *certo* and the possible non-specificity of *alcuno*, given its etymology (see above), we can observe a gradual specialization of these two elements on 'specific' vs. 'non-specific contexts' from the 15th century (*Decameròn*) to the 16th century (*Novellino* of Masuccio):

	uno		*alcuno*		*certo*		zero	
Dec.	187		139		10		100	
main cl.	**96**	**51,34%**	**58**	**41,73%**	**3**	**30,00%**	**58**	**58,00%**
finite	**128**	**68,45%**	**80**	**57,55%**	**4**	**40,00%**	**68**	**68,00%**
perf. asp.	**66**	**35,29%**	**28**	**20,14%**	**3**	**30,00%**	**33**	**33,00%**
cata.pot.	105	56,15%	12	8,63%	3	30,00%	23	23,00%
cent.ref.	62	33,16%	2	1,44%	0	0,00%	1	1,00%

Table 4

	uno		*alcuno*		*certo*		zero	
Mas.	197		128		10		100	
main cl.	**99**	**50,25%**	**29**	**22,66%**	**7**	**70,00%**	**48**	**48,00%**
finite	**135**	**68,53%**	**71**	**55,47%**	**8**	**80,00%**	**63**	**63,00%**
perf. asp.	**63**	**31,98%**	**7**	**5,47%**	**5**	**50,00%**	**27**	**27,00%**
cata.pot.	99	50,25%	16	12,50%	1	10,00%	14	14,00%
cent.ref.	44	22,34%	1	0,78%	1	10,00%	1	1,00%

Table 5

In the *Decameròn* (table 4), *uno* and zero appear with more than half of their occurrences in main clauses, as arguments or adjuncts of finite verb phrases and slightly more often in the scope of a perfectively marked verb. *Alcuno* and *certo* (with very few occurrences in all the three texts, so that the statistics have mere indicative value), however, do not differ very much from this behavior, except perhaps in the interesting detail that *alcuno* cooccurs only in 20,14 % of its singular occurrences with perfective aspect.

While all indefinites analyzed still mainly occur with finite verbs, we find a clearer picture in Masuccio (table 5) when it comes to the distribution according to textual fore- or backgrounding. *Uno* and *certo* are now by far the most important referent-introducing devices in main clauses, while only a fifth of *alcuno*'s occurrences (22,66%) is found in these contexts. Together with the finding that perfective aspect in the past marks the main 'story line' in (Romance) narrative texts, *alcuno*'s 5,47% of occurrences with perfectively marked verbs indicate its specialization on background information.

[31] Cf. Stark (in press).

If we have now a closer look at the 'non-specific contexts' (see above), we can observe a continuous loss of the initial non-hypothetical, but non-specific interpretations of *alcuno*[32] and its drift towards negative contexts – modern *alcuno* in the singular almost exclusively occurs in the scope of sentential negation[33]:

	uno		*alcuno*		*certo*		zero	
Nov.	193		8		4		100	
neg.	**1**	**0,52%**	**0**	**0,00%**	**0**	**0,00%**	**0**	**0,00%**
question	1	0,52%	0	0,00%	0	0,00%	2	2,00%
protasis	4	2,07%	2	25,00%	1	0,00%	3	3,00%
irr. con.	11	5,70%	2	25,00%	1	25,00%	6	6,00%
perf.	**116**	**60,10%**	**0**	**0,00%**	**2**	**50,00%**	**40**	**40,00%**

Table 6

	uno		*alcuno*		*certo*		zero	
Dec.	187		139		10		100	
neg.	**4**	**2,14%**	**34**	**24,46%**	**0**	**0,00%**	**17**	**17,00%**
question	2	1,07%	10	7,19%	0	0,00%	2	2,00%
protasis	3	1,60%	5	3,60%	0	0,00%	0	0,00%
irr. con.	21	11,23%	28	20,14%	0	0,00%	12	12,00%
perf.	**66**	**35,29%**	**27**	**19,42%**	**3**	**30,00%**	**33**	**33,00%**

Table 7

	uno		*alcuno*		*certo*		zero	
Mas.	197		128		10		100	
neg.	**4**	**2,03%**	**46**	**35,94%**	**0**	**0,00%**	**4**	**4,00%**
question	0	0,00%	5	3,91%	0	0,00%	2	2,00%
protasis	1	0,51%	8	6,25%	0	0,00%	0	0,00%
irr. con.	31	15,74%	25	19,53%	1	10,00%	11	11,00%
perf.	**63**	**31,98%**	**7**	**5,47%**	**5**	**50,00%**	**27**	**27,00%**

Table 8

Considering only two criteria, cooccurrence with sentential negation on the one hand and perfective aspect on the other, we can see an important development from the almost archaic anonymous *Novellino* in the late 13th century (table 6) with generally very little lexical variation in the field of nominal indefiniteness and a systematic marking of highly important specific discourse referents by *uno* in the foreground of the single novellas, regardless of negation. Boccaccio's *Decameròn* (table 7) shows one of the most varied paradigms of indefinite determiners (and pronouns) in our corpus. It demonstrates the obvious 'specificity opposition' of *uno* vs. *alcuno*, the former appearing rarely in negative or negative polarity contexts (and occurring with important discourse referents, as demonstrated above), the latter still appearing in foregrounded portions of the text (with perfective aspect), but occurring already more often particularly in negative contexts. The latest text, Masuccios *Novellino* (table 8), shows a strengthening of this development towards Modern Standard Italian, with more than a third of the *alcuno*-occurrences in negative contexts.

[32] See above, footnote 21, for the distinction between hypothetical and non-specific, i.e. not known to the speaker.

[33] Cf. Ramat 1997 for the parallel, but earlier development of *veruno*.

3.2.3. Lexical differentiation

A synopsis of all the three texts shows that *uno* and *certo* are definitely the Old Italian determiners in the textual foreground (compare also the findings for textual persistency of discourse referents introduced by *uno* and *certo* in table 2), *uno* having almost lost the etymological potential of being neutral with respect to specificity oppositions:

all texts	*uno*		*alcuno*		*certo*		zero	
negation	9	1,56%	80	29,09%	0	0,00%	21	7,00%
question	3	0,52%	15	5,45%	0	0,00%	6	2,00%
protasis	8	1,39%	15	5,45%	1	4,17%	3	1,00%
irr. con.	63	10,92%	55	20,00%	2	8,33%	29	9,67%
perf.	**245**	**42,46%**	**34**	**12,36%**	**10**	**41,67%**	**100**	**33,33%**
gen.							49	16,33%

Table 9

For an impressive example of the almost complementary distribution of *uno* and *alcuno* with respect to 'specificity' contexts, see the following example:

(2) *I due fratelli, come che molta speranza non prendessono di questo, nondimeno se n' andarono a una religione di frati e domandarono* ***alcuno*** *santo e savio uomo che udisse la confessione d' un lombardo che in casa loro era infermo; e fu lor dato* ***un*** *frate antico di santa e di buona vita e gran maestro in Iscrittura e molto venerabile uomo, nel quale tutti i cittadini grandissima e speziale divozione aveano, e lui menarono.*
'The two brothers, although they did not have much hope from this, went to a monastery and asked for a holy and wise man who could hear the confession of a Lombardian who was in their house, sick, and they were given an old monk of holy and good life and a great master of the Holy Bible and a very venerable man, who was devotionally honored by all the citizens, and they took him with them.'
(Boccaccio, *Decameron*: 30)

The internal argument of the 'world-creating predicate' *domandare* ('to ask for') without existential presupposition is introduced by *alcuno*, indicating clearly the non-factual status of this discourse referent. Only when the semantics of the main predicate (*fu lor dato* – 'they were given') implies the existence of its internal argument (still postverbal in our example and with very similar lexical material) and when the noun phrase in question introduces an important discourse referent (in this case one of the protagonists), the 'real' referent-introduction is done by *uno*. Even if this example provides further evidence for the variable-analysis of indefinites, bound by (existential) operators (here inside the VP[34]), we want to point out that in Old Italian texts there is very little ambiguity as to the opposition between specific or non-specific interpretation of indefinite noun phrases – Old Italian writers knew "what indefinite to choose" (see the quotation from Kamp, above).

[34] Cf. among others Carlson 1977, Heim 1988, Van Geenhoven 1998.

4. Conclusion

A close examination of the textual distribution of the four main Old Italian indefinite determiners *uno*, *alcuno*, *certo* and zero in singular noun phrases in three collections of novellas with respect to 'specific' vs. 'non-specific' contexts and sentential and textual information organization, revealed a rather clear-cut lexical differentiation in Old Italian. *Uno* and *certo* occur preferably with important text referents, while *alcuno* is non-specific (hypothetical) and only slowly acquiring its modern negative value. The function of zero resists any simple classification as 'indefinite', i.e. referent-introducing, being much more common also in the singular than in Modern Italian and having several values (generic, non-referential, non-specific etc.).

Finally, the most astonishing finding is the loss of 'neutrality' of Latin *unus* according to the specific - non-specific opposition in Old Italian. Here, the whole paradigm of the main indefinite determiners allows to treat specificity or non-specificity as a lexical feature of elements. From there on, however, we assist a gradual spread of *uno* also to non-specific contexts from the 14th century to contemporary Standard Italian (cf. tables 6 to 8; simultaneously, *alcuno* is restricted to negative contexts, zero to non-referential ones, and *certo* loses its status as a determiner), where the two possible interpretations of *uno* in ambiguous, particularly in opaque contexts, can be indeed discussed as a matter of syntax[35] or even pragmatics[36].

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[35] Cf. for example Diesing 1992.

[36] Cf. for example Groenendijk/Stokhof 1981, Ludlow/Neale 1991.

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Correction by contrastive focus*

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1. Introduction

'Correction' is the name of a sentence with contrastive focus[1] the phonological/phonetic realization of which is a single contrastive pitch accent. These sentences predominantly appear in (fictional) dialogues. The first speaker uses grammatical entities against which the next speaker protests with a sentence nearly identical except that it contains a prosodically marked corrective element. This paper makes contrastive focus visible by means of 'KF' (contrastive focus). The focus domain is bracketed: [...]KF. Arabic numbers of sample sentences index first sentences. Capital letters index the focussed syllable of the corresponding correction by the next speaker. Using (1A) the next speaker corrects the time when the treasure was found.

(1) [Kinder fanden im Mai in einem vogtländischen Bergwerk einen wertvollen SILberschatz.] F

(1A) [Am 20. APRIL]KF fanden die Kinder den Schatz. Im Mai wurde er schon AUSgestellt.[2]

When discourse analysts say that meaning is brought about interactively, tuples of sentences followed by one or more sentences with contrastive focus make use of this principle of communication. Interaction ends when no further protest follows. In that case, speakers have tacitly agreed upon the last entity mentioned in the given sentential context, and they have accepted what was expressed as part of their common ground[3]. The sentential context that never was protested against becomes part of common ground, too. So far sentences with contrastive focus follow pragmatic principles. Although they are representative speech acts they interrupt the flow of texts of any type. Only when the correction has been accepted the communicative partners go back to the original type of text and continue the text pattern. This paper, however, is more interested in the internal structure of a correction sentence and in the relation between the pairs of sentences serving as utterances of first and of next speakers. This paper also aims at pointing out the difference in information structure between categorical sentences and next sentences with contrastive focus as their only focus marking which are intended and/or interpreted as corrections.

To interpret a sentence as a correction you need a context which supports this interpretation. There are clear cases and there are borderline cases. Let us compare

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[1] The phonological realization of contrastive focus, contrastive stress embedded in a characteristic prosodic contour, gets a very short characterization in 3.2.

[2] F indexes presentational focus with its bracketed focus domain: [...]F.

[3] In this paper common ground comprises grammatical knowledge, too.

several examples. Sentence 1A undoubtedly is a correction. Sentences (2A) and (3A), on the other hand, must be regarded as borderline cases. Sentence (2A) without the bracketed context might just as well be interpreted as new information which was added by the next speaker in continuation of the information given in sentence (2). (2A) might even have been produced by the first speaker himself. In that case [*In der Eingangszone*] does not replace the information on the locality mentioned in (2) by an alternative but may be regarded as a specification of the place [*in einem Bergwerk*]. The speaker indicates his ability to specify the information hitherto given.

(2) [Kinder fanden am 20. April in einem vogtländischen Bergwerk einen wertvollen SILberschatz.]F
(2A) [In der EINgangszone]KF/F entdeckten sie ihn.
(Die Eingangszone gehört der GeMEINde, die Stollenanlagen den früheren BeTREIbern. Die Unterscheidung hat rechtliche KonseQUENzen.)

Sentence (3A) is an even weaker example for a correction. The lexical entry "finden / to find" expresses an unintended event. But it is open to an interpretation with a preceding action causally linked to the event of "finding". Using / understanding (3A) as a correction fixes the interpretation of *to find* as an event of finding by chance.

(3) [Kinder fanden am 20. April in einem vogtländischen Bergwerk einen wertvollen SILberschatz]F.
(3A) [AUSgebuddelt]KF/F haben sie ihn, [unter GeRÖLL hervorgeholt]KF, nicht einfach so geFUNden.

When Kai Alter and Ina Mleinek in our project "Intonation and Meaning" of the DFG-research group 349 conducted production experiments with sentences in unclear contexts many of the subjects did not produce the prosodic contours of corrections. In their interpretation tests the subjects even failed to hear contrastive focus when the contexts did not correspond. Both kinds of tests convinced us that the interpretation of contrastive focus depends on context.

When examples (1) to (3) are interpreted as corrections they protest against the untrue or incorrect representation of a situation. But not all the corrections are directed to the semantic level of their structural description. There are protests against the morphological structure of entities, against their phonological structure or even against the phonetic realization of single elements (cf. (4)),

(4.1) [Anna hat sich mit ihrem NACHbar gestritten]F
(4.1A) Sie hat sich mit ihrem [NachBARN]KF gestritten.

(4.2) [Anna hat sich mit ihrem NACHbarn gestritten.]F
(4.2A) Sie hat sich mit ihrem Nachbarn [ZERstritten]KF.

(4.3) [Das ist aber eine tolle MaCHIne]F.
(4.3A) Eine tolle [MaSCHIne]KF.

or even against all kinds of incorrect quotations (cf. (5)).

(5) [In einem vogtländischen Bergwerk fanden Kinder beim Spielen einen mittelalterlichen SILberschatz.]F

(5A) [In einem STEINbruch]KF fanden Kinder beim Spielen einen mittelalterlichen Silberschatz.

(5A) is a sentence by Pasch (1983). Correction (5A) restores the quote. In such a case of metalinguistic correction the next speaker is forbidden to change anything but the deviant part(s) for extralinguistic reasons.

The whole variety of examples has to be taken care of when a theory of corrections is to be constructed. In this paper we will first compare the grammatical properties of pairs of first and next sentences (i.e., corrections), and then draw conclusions with respect to their corresponding information structures and finally suggest a model for correction-sentences.

2. The information structure of categorical sentences

In order to be able to compare corrections with so-called categorical sentences, we would like to repeat the well-known grammatical properties of the latter:

- The information structure of categorial sentences is divided up into background and focus. For each sentence, the division is made on the basis of the given linguistic and extralinguistic context.
- Background information of German categorical sentences is characterized by scrambled DPs and by the placement of anaphoric pronouns in the so-called Wackernagel-Position.
- DPs expressing background information normally are characterized by definite articles or possessive pronouns. In the rare cases when indefinite articles characterize background information, they are interpreted generally or specifically. Definite articles in the background part of the sentence may have all the interpretations possible: definite, indefinite, general. But when definite articles are to express focus information, they have to refer not only specifically but uniquely.
- The focus domain may be either medium or minimum. Focus accent is realized by the phrasal- or word accent of the deepest embedded verbal complement or verbal adjunct.
- In assertive main clauses, focus is expressed by a characteristic falling prosodic contour.
- The defocused DPs and PPs expressing background information are moved to the left of the focus domain, i.e., outside maximal VP, to be even more precise: to the left of the so-called attitudinal adverbials and particles. There is good reason for attitudinal adverbials and particles to form the right border between background and focus in a sentence. Background information is known or at least accessible to all the communicative partners. But attitudes do not belong to propositional meaning and therefore can never become the mental possession of next speakers.
- The movement of finite German verbs is syntactically motivated. In assertive German main clauses finite verbs are head-moved to C° independent of their status in the information structure of the sentence.
- The so-called topic position in Spec CP can be filled by background as well as focus material.

- Therefore, background constituents in assertive clauses always are either placed in Spec CP and /or between the finite verb to the left and attitudinal adverbials to the right. Their order is defined by the movement rules for either pronominals or scrambled elements: pronouns precede definite DPs with the exception that the definite subject-DP may precede pronouns or that a pronoun may follow a subject-DP even if it is within the focus domain. Besides, the inner sequence of pronouns and of definite DPs is regulated by cases, and pronominal adverbials normally follow other pronouns, PPs with definite articles normally follow definite DPs.
- Focus information in the topic position can be expressed by either presentational or contrastive focus. Contrastive focus may be the only focus accent in the clause, or it may be part of a so-called Bridge Contour.
- Preferably, the topic position is filled by topics (referring background constituents) or by frame adverbials (which often are counted among topics). But other non-topic constituents are allowed in Spec CP as well. There are speculations that either topics or even a larger class of sentence-initial constituents are thematically connected to the topic of the text and help to organize the inner structure of texts and even characterize types of texts. As far as journalistic reports are concerned, they tend to put focus information in sentence-initial position and thereby put it in the foreground of attention. When more sentences of that kind follow each other, the reader / hearer gets the impression of a rhythmic sequence of important news, and he or she seems to read at a higher speed hurrying from one focussed beginning to the next.

Sentences (6.1) and (6.2) are categorical sentences. The answers (6.1.1) and (6.1.2) repeat the defocused constituents verbally. The focussed constituent can be topicalized (cf.(6.1.2)). The alternative answers in (6.2) are constructed as parts of a continuous text as far as information structure is concerned, i.e. the speaker uses the defocused constituents as expressions of background information realized by means of definite articles or pronouns. The focussed constituents can be topicalized again (cf. (6.2.3), (6.2.4)).

(6.) Wo fanden Kinder einen mittelalterlichen Silberschatz?
(6.1.1) Kinder fanden einen mittelalterlichen Silberschatz [in einem vogtländischen BERGwerk]F.
(6.1.2) [In einem vogtländischen BERGwerk]F fanden Kinder einen mittelalterlichen Silberschatz.

(6.) Wo fanden Kinder einen mittelalterlichen Silberschatz?
(6.2.1) Die Kinder fanden den Schatz [in einem vogtländischen BERGwerk]F.
(6.2.2.) Sie fanden ihn [in einem vogtländischen BERGwerk]F.
(6.2.3.) [In einem vogtländischen BERGwerk]F fanden die Kinder den Schatz.
(6.2.4.) [In einem vogtländischen BERGwerk]F fanden sie ihn.

In question-answer pairs sensu stricto (6.1.1), (6.1.2) the next speaker should not use the definite article or the pronoun with specific reference, for then he would give more information than he was asked for in (6.) Sentences in (6.2) are not answers sensu stricto.

But many of the characteristics of categorical sentences do not hold in corrections, for corrections have their own information structure, which will be explained next.

3. The information structure of corrections

3.1. Articles and movement

Normally, corrections react to first sentences and therefore are backward-referring utterances. They may either keep the syntactic structure of first sentences or change it.

(5) [In einem vogtländischen Bergwerk fanden Kinder beim Spielen einen mittelalterlichen SILberschatz.]F
(5A) In einem vogtländischen Bergwerk fanden Kinder beim Spielen [Beutestücke aus dem zweiten WELTkrieg]KF.

(5A) keeps the constituent order of (5). But very often, the contrasted constituents are moved into Spec CP:

(5B) [Beutestücke aus dem zweiten WELTkrieg]KF fanden Kinder beim Spielen in einem vogtländischen Bergwerk.

Putting contrasted constituents into Spec CP follows the principle mentioned above when focussed constituents in the topic position of categorical sentences were explained. Second speakers begin increasing their speaking rate when they reach the non-corrected part identical with the first speaker's construction. Besides, it is normal that the non-corrected parts of the first sentence are pronominalized or left out, so that in the extreme case the ellipsis only consists of the domain of the contrastive focus. What was called the extreme case is normal usage in dialogs. [4]

(5B') [Beutestücke aus dem zweiten WELTkrieg]KF fanden Kinder / ... fanden sie dort / wurden gefunden.
(5C) [Beutestücke aus dem zweiten WELTkrieg]KF (waren es). / Es waren [Beutestücke aus dem zweiten WELTkrieg]KF.
(5B'') (Nein,) [Beutestücke aus dem zweiten WELTkrieg]KF.

(6) Die Kinder fanden beim Spielen [einen mittelalterlichen Silberschatz in einem vogtländischen BERGwerk]F.
(6A) Die Kinder fanden beim Spielen einen mittelalterlichen Silberschatz [in einem STEINbruch]KF.
(6B) Die Kinder fanden [in einem STEINbruch]KF beim Spielen einen mittelalterlichen Silberschatz.

In (6A) constituents with indefinite articles follow those with definite articles just like in categorical sentences. But (6B) violates several principles of information structure of German categorical sentences. Not only has the contrasted constituent been moved between background constituents, there is a definite DP following it, too. (6B), however, is a grammatically and information-structurally correct sentence. It proves that corrections have their own information structure. The constituent indexed by [...]KF constitutes focus. The rest of the sentence automatically constitutes the background of the correction. Therefore the grammatical rules helping to divide categorial sentences into background and focus do not hold in corrections.

[4] cf. Schwabe (2000): Coordinate Ellipsis and Information Structure.

Besides, there are different reasons to change the articles in corrections. First, next speakers who correct may know the situation with all its participants. Therefore they can change articles for better knowledge of the referents of the DPs. In (6C), the DPs refer specifically. This is the kind of change of reference we forbade in question-answer pairs sensu stricto. The corrected constituent "im Kirchdorfer STEINbruch" in (6C) refers specifically as well.

(6C) Die Kinder fanden beim Spielen den mittelalterlichen Silberschatz [im Kirchdorfer STEINbruch]KF.

But the next speaker may also refer unspecifically with the constituent *den mittelalterlichen Siberschatz* when he uses (6C) as a sentence in a continuous text with (6C) following (6), and "the medieval treasure" being accepted as a discourse referent which had already been introduced by (6). This kind of change of articles which does not change reference was allowed in question-answer pairs sensu stricto above.

The Grammar of German forbids certain kinds of movements in categorical sentences or fully focussed sentences but allows them in corrections. The corrections in (7A) show the otherwise immovable entities as contrastively focussed constituents in Spec CP:

So-called unseparable prefixes:
(7.1A) [AN]KF hat er das Licht gemacht, nicht aus.

infinite verb forms separated from their otherwise unseparable directional argument:
(7.2A) [GeSETZT]KF hat er den Stuhl auf die Terrasse, nicht geworfen.

infinite verb forms separated from their unseparable predicatives:
(7.3A) [GeWESen]KF ist er Lehrer, nicht geworden.

What is interesting but so far has not been explained is that the (parts of) constituents which may appear in Spec CP when contrastively focussed, are not allowed in the topic position of dependent clauses, i.e., directly behind C° (cf. (7.3.1)), whereas their counterparts in doubly focussed constructions with the so-called Bridge Contour are allowed there, too, (cf. (7.4)).

(7.3.1A) Ich weiß, *daß geWEsen er Lehrer ist.
(7.4) /StuDIERT hat er \LinGUIstik, /geWORden ist er dann \LEHrer.
(7.4.1) Ich weiß, dass /stuDIERT er LingUIstik hat, aber geWORden dann \LEHrer ist.

Summary:
Examples (6B) through (6C) exemplify that what is new information in a correction need not conform to focus in categorical sentences, and what is background information in corrections does not correspond to background information in categorical sentences. In corrections, all the constituents of the first sentence which have not been protested against are accepted as 'background'. As far as corrections are concerned, we better put focus and background in inverted commas because they are defined by other grammatical means than focus and background in categorical sentences. 'Focus' is

defined by the focus domain of contrastive focus. It is neither restricted to the focusable (sub-) constituents of a categorical sentence nor to their positions in categorical sentences. But the articles in 'focus' constituents do conform to the restrictions of focus constituents: definite articles in 'focus' refer uniquely only.

3.2. The prosodic realization of contrastive focus

The prosodic realization of contrastive focus deserves a paper of its own. But at least a few characteristics of contrastive pitch accent must be mentioned here in order to complete the model of correction presented in chapter 4.: There is a marked increase in frequency on the contrastively focussed syllable. It is true that the absolute value of frequency need not be much above that of presentational focus peaks; but this is compensated for by the often lower onsets of contours with contrastive focus relative to contours with presentational focus. Speakers seem to produce the clearest possible marking by means of least effort. Increase of frequency must be understood as relative not absolute increase. What else is remarkable is that the frequency peak is on the contrastively focussed syllable rather than before as is often the case with presentational focus. The prosodic marking is clearly audible and visible in its context. It is the formal representation of the linguistic sign 'contrastive focus'.

3.3. The focus domain of contrastive focus

3.3.1 Focus induced by context only

The next speaker can protest against a whole sentence. The sentence protested against and the next sentence must fit into the same context. Lang (1976) called this kind of context CI (common integrator) or in German GEI (gemeinsame Einordnungsinstanz).

(8.1) Warum redet denn Anna nicht mit ihren Kindern?
[Weil Peter nicht EINgekauft hat]F.
(8.1A) Nein, [weil die Tochter trotz ihres Hausarrests AUSgegangen ist]KF

In these examples, CI is a class of reproachable activities of Anna's children.

(8.2) Wo bleiben denn die Kinder?
Anna [ist im KIno]F
(8.2A) Sie [kauft für Oma EIN]KF

CI are the activities keeping a child from returning home in time.

The next speaker can also protest against any part of form and meaning of the sentence, against phrases, words, constituents of word formation or even against affixes or single sounds of words. The few German words like the impersonal pronoun *man* which cannot be stressed cannot express contrastive focus either except when their phonological form is protested against as in (8.3A).

(8.3) Men sitzt AUFrecht!
(8.3A) MAN!

If the notion of CI is to be applied to examples like 8.3, it can only refer to a class of phonetic realizations of the vowel in the one-syllable word *man*. The kind of CI will be different once more in (8.4), where it comprises a class of dialectal variations of the impersonal pronoun *man*.

(8.4) Mer sitzt AUFrecht!
(8.4A) MAN!

To find out how large the respective focus domain is we have to compare the next sentence with the first sentence and define the focus domain subtractively:

(9) Warum wurde Anna nicht zum Nachbarschaftsfest eingeladen?
Es gibt Spannungen; denn sie [hat sich mit ihrem NACHbarn gestritten]F
(9A) sie hat ihren Nachbarn [SCHLECHT gemacht]KF
(9B) sie hat sich mit [ALlen]KF Nachbarn gestritten.
(9C) Anna hat sich mit ihrem Nachbar [ZERstritten]KF.
(9D) sie hat sich mit ihrem [NachBARN]KF zerstritten.

(9A) through (9D) form a series of corrections. (9A) protests against the meaning expressed by the predicate, (9B) against the quantification in the modifying PP, (9C) protests against a derived lexical entry, and (9D) corrects the morphological form of a word. Although in (9D) only one sound is concerned, the pitch accent is placed on a syllable, of course, and the minimal focus domain is a word or word form. To add emphasis to the correction, several contrastive foci may be used.

(9D') [NACH-BARN]KF.
(8A') Nein, weil [ihre Tochter – TROTZ – ihres HAUSarrests – AUSgegangen ist]KF.

What these examples show, too, is, that tuples of foci need not alter the focus domain.

Depending on context, a functionally or structurally ambiguous phrase may express more than one correction and even have different focus domains: Finite verbs, eg., express several kinds of meaning: the lexical meaning of the verb stem, temporal meaning, and sentence mood, and each of them can be protested against. Protest against sentence mood is called Verumfokus. Höhle (1982) showed how the corresponding contrastive foci are realized when synthetically or analytically constructed verb forms are used. When there is only one syllable available, contrastive focus is context dependent in three ways.

(10A) Peter hat [geSAGT]KF - protest against lexical meaning
Peter [HAT]KF gesagt – protest against tense
Peter [HAT]KF gesagt – Verumfokus = protest against sentence mood.

(11A) Peter [SAGte]KF – protest against lexical meaning, or protest against sentence mood
Peter [sagTE]KF – protest against tense.

(12A) Peter [SAGT]KF – protest against lexical meaning, or against tense, or against sentence mood.

Finding out which kind of protest is relevant can only be found out by means of context.

Let us move to another obvious kind of context dependence of the focus domain: correction of coordinated constituents:

(13) Warum wurde Anna nicht zum Nachbarschaftsfest eingeladen? Es gibt Spannungen; denn Anna hat sich mit Klaus, Peter und Bert gestritten.
(13A) Sie hat sich mit Klaus, Peter und [OTTO]KF gestritten.
(13B1) Sie hat sich mit [Hans, Siegfried und OTTO]KF gestritten.

For (13B1) you might again find several contrastive foci in one focus domain.

(13B2) Sie hat sich mit [HANS, SIEGfried und OTTO]KF gestritten.

3.3.2. Context-sensitive focus versus focus associated with operators

It is well known that there is a class of focussing particles. The associated focus may be presentational focus (cf. (14)) as well as contrastive focus (cf. (14.1A)):

(14) Zu unserem 20. Hochzeitstag hatten wir wieder unsere Kinder eingeladen. Ursprünglich wollten auch alle kommen. Aber es kommen nur [die SÖHne]F.
(14.1) Zum 20. Hochzeitstag hatten die Müllers wieder ihre Kinder eingeladen. Es wollten auch alle kommen.
(14.1A) Nur [die SÖHne]KF. Hast Du denn noch nicht von dem enttäuschenden Brief ihrer Tochter Anja gehört?

Different from the examples with context-sensitive contrastive focus, example (14.1A) has its focus domain fixed by "nur", but its corrective meaning is context-dependent. When the focus-sensitive particle itself is protested against only contrastive focus is realized, and the correction is context-dependent. Cf. (14.2A).

(14.2) Habe ich das richtig verstanden, ... auch [die SÖHne]F?
(14.2A) [NUR]KF die Söhne.

The sentence pairs in (14) deserve a detailed description and there are several in structured meaning semantics (cf. among others Jacobs (1982), Krifka (1998)) as well as in alternative semantics (cf. among others Rooth (1985), Rooth (1996)). This paper only wants to remind that they are associated with presentational as well as with contrastive focus. A second class of elements associated with focus which are of greater relevance for our subject are the focus-sensitive German operators *nicht* and *sondern*. But before we can discuss these we have to set up an explanatory frame: All the corrections hitherto spoken about are backward-referring corrections. The next speaker protests against an entity already given, and he proposes a marked replacement, whereby the negator *nein* is optional.

(15.1) Peter [ist geKOMmen]F.
(15.1A) (Nein.) [PAUL]KF ist gekommen.

A similar interpretation is achieved by a forward-referring correction by means of the focus sensitive operator *nicht* in the second conjunct of a coordination.

(15.2A') [PAUL]KF ist gekommen, und nicht [PEter]F .
(15.2A'') [PAUL]KF ist gekommen, und [NICHT]F Peter.[5]

Some more examples:
(16A) Petra Meier hat in dieser Saison im Eislaufen gute Chancen. Den [DREIfachen]KF Rittberger hat sie gestern gezeigt, nicht den doppelten aus ihrem normalen Kürprogramm.
(17A) Peter scheint recht egozentrisch zu sein. [AUFgestanden]KF ist er, [RAUSgerannt]KF, er [konnte die Aussprache nicht tollerieren]F.

A third variant are backward-referring corrections which have the German focus-sensitive operator *sondern* in the second conjunct and the focus-sensitive operator *nicht* in the first conjunct.

(15.3A) Peter ist [NICHT]KF gekommen, sondern [Paul]F ist gekommen.[6]

Some more examples:
(18A) Nicht [in einem vogtländischen BERGwerk]KF fanden die Kinder den mittelalterlichen Silberschatz, sondern [in einem Steinbruch]F.
(19A) Peter [konnte nicht länger ruhig SITzen bleiben]KF, sondern [ist AUFgestanden und RAUSgerannt]F
(20A) Es ist nicht, dass Peter die Aussprache nicht [AKzeptieren]KF konnte , sondern er konnte sie nicht [DURCHhalten]F. Er hat schlechte Nerven.
(21A) Nicht [den DOPpelten Rittberger]KF aus ihrem normalen Kürprogramm hat Petra Meier gestern gezeigt, sondern [den DREIfachen]F.

Examples with backward-referring context-sensitive corrections are often described in frameworks of information structure. Examples with focus-sensitive operators are a typical subject of semantics.
The three types of constructions have similar semantic interpretations but differ in certain structural as well as pragmatic respects. Let us begin with the latter:
- The sentences with focus-sensitive operators overtly negate the untrue or incorrect (part of a) sentence. Context-sensitive backward-referring corrections don't. They only consist of an overt replacement. But it is possible to add *nein / nein, das stimmt nicht / nein, das ist nicht wahr / nein, das ist nicht korrekt* (cf. (15.1A)). These are sentential utterances with *das* refering to the first sentence. *Nicht*, on the contrary, is an operator with a propositional domain and a focus of negation. What is in the scope of negation need not always be the focus of the sentence in terms of information structure.[7] Because of the context-dependent interpretation of contrastive focus not every focusing *nicht* affects contrastive focus[8]. But any contrastive focus associated with *nicht* is its focus, of course. When *nicht* is in the first conjunct and the sentence has a *sondern*-clause as its

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[5] The second conjunct mostly is an elliptic construction.

[6] The underlined words may be deleted when the second conjunct is an elliptic construction.

[7] Cf. *Wen kennt Luise nicht? [PEter]F kennt Luise nicht.*

Semantic paraphrase: There is an individual x_i with the name of Peter for whom it is not true that Luise knows him_i.

[8] Cf. *Wann kommt denn Peter? Ich weiß nur soviel, er kommt nicht [im MAI]F.*

Nach dem letzen Anruf kommt er nicht [im MAI]KF, sondern [im JUni]F.

second conjunct, the focus of *nicht* always is contrastive focus. This follows from the lexical meaning of *nicht ..., sondern* and can be used as a general test for contrastive focus which may be applied implicitly even to backward-referring context-sensitive corrections.
- The focus-sensitive operator *nicht* is not a truth functional operator. As Horn[9] formulated it, *nicht* can be used as a so-called metalinguistic negation correcting not only semantic (and among those not only the ones fulfilling the definition of classical negation) but all the other properties of sentences - just like corrections.
- "sondern" fixes its focus domain and – indirectly – the focus domain of the contrastive focus in the preceding main clause, too, because what is in the domain of presentational focus of "sondern" is the (part of the) constituent to replace the contrastively marked (part of the) constituent in the first conjunct.[10] In context-sensitive backward-referring corrections as well as in forward-referring constructions with focus–sensitive *nicht* in the first conjunct on the contrary, the focus domain can be fixed only by means of the context by subtracting the identical 'background' constituents and comparing the 'foci'. Therefore, when context-sensitive backward-referring corrections cannot be uttered immediately after the corresponding first sentence it is useful for the second speaker to overtly refer back and remind the communicative partners of the form and content of the first sentence to be corrected by him.

(22) Du hast vorhin gesagt, PEter sei gekommen. (Das stimmt nicht.) [PAUL]KF ist gekommen.

- Form and usage of the different correction-constructions coincide. Whereas backward-referring corrections normally appear in dialogs, forward-referring corrections and "nicht ... sondern"-constructions are preferably used in monological speech. The speaker contrastively announces a) what he considers more correct than the corresponding entity in the following negative clause (forward correction) or b) what he himself will correct afterwards (by means of "sondern"). The speaker may either overtly refer to an utterance of a first speaker which he intends to correct, or he may increase attention by negating certain possibilities and arguing in favor of the other. Backward-referring context-sensitive corrections correct utterances of partners as soon as it is the next speakers turn.
- Just as focus-sensitive particles and *nicht* can be associated with contrastive focus "sondern" can, too. (cf. (23) and (23A)).

(23) Nicht [den DOPpelten Rittberger]KF aus ihrem normalen Kürprogramm hat Petra Meier gestern gezeigt, sondern [den DREIfachen]F.
(23A) sondern [den dreieinHALBfachen]KF.

- How is it possible for backward-referring context-sensitive corrections to do without overt negation? The explanation partly depends on the meaning of contrastive focus and partly is pragmatically based and depends on knowledge about the sequencing of sentences in different types of texts which will be explained in chapter 4. In this chapter we only want to show that there is a difference in meaning between sequences of sentences with presentational and with contrastive focus.

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[9] Cf. Horn (1985): Metalinguistic Negation and Pragmatic Ambiguity.

[10] Cf. Lang (1984): The Semantics of Coordination.

(23) Speaker A: [Peter hat sich eine GaRAge gekauft]F.
Speaker B: [Seine Frau hat sich ein AUto gekauft]F.

Normally, the communicative partners interpret this sequence of sentences in a way that both statements are true. In their common ground, the garage as well as the car belong to the property of the couple.

(23A) Speaker A: Peter [hat sich eine GaRAge gekauft]F.
Speaker B: [Seine Frau hat sich ein AUto gekauft]KF.

Normally, the communicative partners interpret the sentence of speaker B as a correction of the utterance of speaker A. It is not true, that a garage was bought by Peter. What holds is that his wife bought a car. As both sequences of sentences only differ in the prosodic contour, the difference in meaning must depend on contrastive focus. In 3.4 we will explain, that contrastive focus is a linguistic sign with a characteristic prosodic realization and a systematic meaning. Its meaning will be characterized as an existentially bound proposition: there is an element in the grammatical representation of the first sentence not identical with the contextually marked one in the next sentence, but both fit in the same CI and belong to equivalent focus domains. Correspondingly, contrastive focus cannot be reduced to a prosodically deviant placement of word stress or phrasal stress. Cf. (24).

(24) I'll tell you a joke.: [An AMErican farmer met a CaNAdian farmer]F. Said the AMErican farmer to the CaNAdian farmer: ...

In a fully focused sentence at the beginning of a text, presentational focus is not realized in the Determiner Phrase constituting the subject of the sentence, and it is not realized on the adjective either. But we know, too, that a sentence can contain multiple foci. The reasons are manifold. In (24) we are confronted with two presentational foci affected by grammatical parallelism. It is a kind of constructively determined focus. In conformity with context, we find constructively determined contrastive focus, too.

(24A) No, it happened in the old world: [A DAnish farmer met an ENGlish farmer]KF.

(24) contains a syntactic construction parallel to that of (24A). But only (24A) can be interpreted as a correction. This supports the conclusion that contrastive focus is a linguistic sign which correlates a characteristic form with a characteristic meaning. Its formal semantic description will be explained below.

3.4. Semantic Form of corrections

In this chapter we will only speak about context-sensitive backward-referring corrections. Different semantic theories treat the phenomenon of meaning differently. In this paper, meaning is understood as being separable into Semantic Form (part of linguistic knowledge) and context (conceptual structures).[11] The Semantic Form (SF) of a sentence is compositionally constructed out of the underspecified SFs of words and affixes on the basis of syntactic surface structure. The SFs of sentences are interpreted

[11] cf. M. Bierwisch, E. Lang (eds) 1987: Grammatische und konzeptuelle Aspekte von Dimensionsadjektiven.
D. Wunderlich: Cause and the structure of verbs.

in context. We leave it open here whether it is possible to compose fully underspecified meanings of sentences or whether semantic composition and interpretation necessarily intersect.[12] In this chapter the meaning of a sentence represented with contrastive focus is exemplified by the simple example [*HANS*]KF *kommt* in dialogue (25) – (25A).

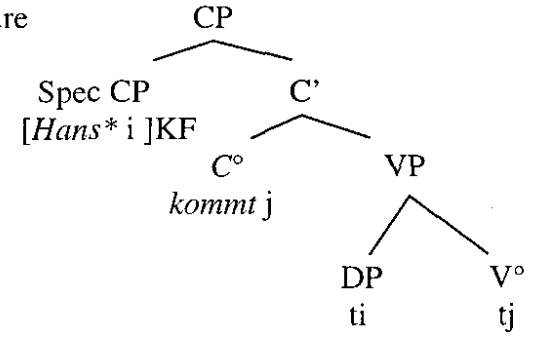
(25) Wer hat sich denn nun tatsächlich alles angemeldet?
Peter [KOMMT]F.
(25A) [HANS]KF kommt. Von Peter haben$_i$ wir [noch keine NACHricht t_{i+F}]F [13]

The SF of [*HANS*]KF *kommt* consists of an assertive proposition plus an existentially bound proposition, the meaning of contrastive focus. The assertive part is compositionally constructed out of the SFs of the lexical entries of words and affixes[14]. Therefore, we may consider this framework a variant of structured meaning semantics the different authors of which used different means to compose the assertive meaning of the sentence.

(i) *Hans*: εx [[[Person, x] : [MALE, x]] : [Name, x, Hans]]
The SF of the sentence has to reflect the information structure of the sentence. Being contrasted, *Hans* is not the topic of the sentence. Its SF is constructed by means of the epsilon operator and becomes a semantic argument of *komm-*.[15]
(ii) *komm-*: λx λT λs [s INST [KOMM, x, T]]
(iii) *Future Tense*: λP [P [ε T': [T' NACH T°]]]
(iv) *Assertive Mood*: λP ∃ s [P, s]

When information structure is paid attention to in the SF of the sentence it has to be mapped on the syntactic surface structure. This affords several type shifts for the LEs to be properly composed.[16]

(v) S-Structure



[12] The latter is practiced by J. Dölling in several papers. Cf. e.g., Dölling (1997): Semantic Form and Abductive Fixation of Parameters.

[13] German verbs are moved for syntactic reasons independent of whether they are focus or background constituents. Traces in the focus domain indexed by +F indicate that their antecedents are part of the focus of the sentence.

[14] Affixes are lexical entries. Cf. Chapter 4.

[15] Cf. Steube (2000): Ein kognitionswissenschaftlich basiertes Modell für die Informationsstrukturierung (in Anwendung auf das Deutsche).

Späth (in preparation): Satzbedeutung und Informationsstruktur. Zur Semantischen Komposition prosodisch unmarkierter Satzstrukturen.

[16] cf. Partee (1986): Noun Phrase Interpretation and Type-Shifting Principles.

The SF of the assertive part of the sentence is:

(vi) ∃ s [s INST [KOMM, εx [[[Person, x] : [MALE, x]] : [Name, x, Hans]], ε T': [T' NACH T°]]])

Realizing contrastive pitch accent *Hans* is in the focus domain. And the meaning of *Hans* is the 'content' of contrastive focus. The meaning of contrastive focus is considered to be the SF of a separate LE which is conjunctively added to the SF of the assertive part of the meaning of the sentence. It has a general format with a variable which can be replaced by any contrasted element in the grammatical description of a correction. In (25A) the SF of *Hans* replaces the variable in the SF of contrastive focus.

(vii) $\lambda p\,[p] \wedge \exists!y, s_1\,[s_1$ represented by $S_1 = (s \ldots [\textit{HANS}/y\,]_{\text{focus domain}} \ldots)\,]$[17]

to be read: a proposition p and exactly one y, exactly one situation s_1 so that s_1 is represented by the first sentence S_1 which equals the next sentence S except that *Hans* replaces y, and *Hans*, y constitute identical focus domains. In example (25) : y = *Peter*. After replacing p in the meaning of contrastive focus by the SF of the assertive part of the next sentence, we get:

(viii) ∃ s [s INST [KOMM, εx [[[Person, x] : [MALE, x]] : [Name, x, Hans]], ε T': [T' NACH T°]]] ∧ $\exists!y, s_1\,[s_1$ represented by $S_1 = (s \ldots [\,\textit{Hans}/y\,]_{\text{focus domain}} \ldots)]$

The SF of the contrastively focused sentence is underspecified very much. The communicative partners have to make out what is the first sentence and what is the next sentence by noticing which parts of the two sentences are equal and which part of the first sentence is intended to be replaced by which one of the next sentence, both constituting (part of) an identical focus domain. This way, the meaning of contrastive focus brings about textual coherence between the contrastively marked sentence and the first sentence. But even this interpretation is underspecified as far as the underlying negation of the first sentence is concerned. This pragmatic problem will be solved in chapter 4.

4. A model for sentences with contrastive focus as their only focus marking

In his book "Speaking: From Intention to Articulation" (1989), Levelt introduced two cognitive levels. Cognition 1 is responsible for the planning of the whole text, of its type, of the way it can be presented to the relevant communicative partners. Likewise, Cognition 1 is responsible for the general principles of textual coherence. As far as our question is concerned, Cognition 1 is responsible for the sequencing of information and for the interaction of first and next speakers in a broad sense.

[17] There is a discussion on what the semantic relation between the assertive part of the compositionally constructed meaning of a sentence and the meaning of contrastive focus is. For Dölling (1988) and in this paper the meaning of contrastive focus is an integral part of the meaning of the whole sentence and belongs to SF. Because of the examples with metalinguistic negation, Jacobs (1982) argued that it is an implication and not a presupposition. Rooth (1996) argues against the status of existential presuppositions, too because presuppositions should project what they don't do in all contexts. And in chapter 1 the interpretation of corrections was explained as fundamentally context-dependent. Our theory must further argue against presuppositions because they are doubtful SF constituents.

Cognition 2 constitutes the interface to the level of formulation (= grammar). According to Levelt, in Cognition 2 the information is represented in a propositional format, and it is prestructured by information structural categories. Cognition 2 marks the pieces of information which will become the topic and the comment, the background and the focus of the following sentence dependent on its backward context. There is a pragmatic principle that no proposition to be verbalized by grammar is without new information. Therefore each proposition to be verbalized in a sequence will enlarge common ground as long as it is not explicitly blocked. Corrections do so and propose explicit replacements. If a corrections is not protested against in its turn its 'focus' will become part of common ground, too. On the basis of this principle backward-directed corrections need not explicitly negate the corrected part of information. But forward-directed corrections produced by the same speaker must do so. This pragmatic principle includes the pragmatic explanation for the difference between backward-directed corrections and *nicht ... sondern* constructions. *Nicht ... sondern* constructions explicitly express what context-sensitive background-referring corrections only imply.

The cognitive categories are mapped onto the grammatical categories of the different levels of grammar which will realize them. The mapping of cognitive structures onto grammatical structures is achieved via the lexicon, since meanings (Semantic Forms) are underspecified constructions of cognitive primitives. The SFs of words and affixes contain all the entries necessary for their combination into Semantic Forms of sentences. As mentioned above, information structure is part of the object of semantics since it has an influence on the truth conditions and on the conditions of use of sentences[18]. The SFs of sentences are mapped onto syntactic surface structures. The latter follow the principles of information structure, too because the relevant cognitive markings like topic, comment, background, and focus which have been transmitted from Cognition 2 to all the grammatical levels passed so far will partly be realized by syntactic means as well. From syntax, these cognitive categories will be further transmitted to the levels of morphology and phonology to be formally realized there, too, whenever these formal means are relevant and, therefore, marked on those levels.

Dealing with sentences in which contrastive focus is the only focus marking, we noticed that the only cognitive categories relevant for corrections are topic and focus: therefore contrastive focus and its focus domain are marked (the rest is automatically interpreted as belonging to background); and it is necessary to mark topics because they have an influence on the structuring and on the type of a text. The rest is automatically interpreted as comment. Let us exemplify the model of sentences with contrastive focus by (26) and (26A) and begin with the cognitive level of Cognition 2:

(26) Wer hat sich denn nun tatsächlich alles angemeldet?
Peter [KOMMT]F.
(26A) [HANS]KF kommt. Von Peter [haben wir noch keine NACHricht.]F

Cognition 2:
(26) Peter [KOMMT]F:
(ix) Discourse referents: x, s, T
Cognitive representation: PETER = x $\wedge$ [KOMM (x, Future, s)]F
+T

[18] Cf. footnote 14.

(26A) [HANS]KF kommt.
(x) Discourse referents: x, s, T
Cognitive representation: ([HANS]KF = x ∧ KOMM (x, Future, s))*

On the level of Cognition 2, the Topic- and Focus-parts of the proposition to be verbalized are marked, and the entire proposition is marked by an asterisc as a correction. The correction mark on the level of Cognition 2 merely expresses that the marked proposition interrupts the sequence of presentation of information and protests against a verbalized information already given.

The mark has to be realized grammatically and is transmitted to the relevant levels of grammar. As the correction-mark has a formal and a semantic realization, there must be several places where grammar has to take notice of it:

1.1 by the context-dependent fixation of the focus domain on all levels of grammar
1.2 by the phonological realization of the prosodic contour, especially on the contrastively marked syllable in the focus domain
2. by marking the syntactic or semantic, morphological or phonological 'content' of the lexical entry (or its projection) which is protested against
3. by adding the SF of contrastive focus to the SF of the sentence.

We will exemplify the grammatically relevant properties of example (26A).
Each lexical entry has its SF, GF (grammatical form), and PF (phonological form).
1. *Hans* will be represented as follows:

(xi) **GF**: [+N, -V]
[+ specific]
[proper name]

(xii) **SF**: εx [[[Person, x] : [MALE, x]] : [Name, x, Hans]] *

Correction (26A) protests against the SF of *Peter,* and therefore the SF of *Hans* must be marked as (part of) the 'content' of the SF of contrastive focus.

(xiii) **PF of the sentence** : [/hans/]KF /kommt/

In the prosodic contour of the sentence contrastive focus is realized on *Hans.* Therefore the mark KF. The focus domain has been indicated by angled brackets.

2. *Hans* is the subject of *komm. Komm-* is an intransitive verb; its noun phrase in subject position has nominative case and bears theta role 1 (the role of agent).

(xiv) **GF:** [+V, -N]
[DP - -]
[nominative]
[Θ 1]

These grammatical features must correspond to those in the theta grid of the SF of *komm-*.

(xv) **SF** : λx λT λs [s INST [KOMM, x, T, s]]
[nominative]
[Θ 1]

In 3.4 we exemplified how the meanings of the lexical entries are compositionally constructed to form the SF of the sentence and how the SF of contrastive focus is added to the assertive part of the meaning of the correction. We need not repeat that here.

Next we would like to give an example with a correction directed to a formal feature of a word:

(27) Sieh mal, [Anna grüßt den NACHbar wieder]F.
(27A) Anna grüßt den [NachBARN]KF wieder.

To find out what the second speaker protests against, let us first look at the SF of *grüß-*:

(xvi) **SF:** λy λx λT λs [s INST [GRÜSS- x, y, T]]
[Acc] [Nom]
[Θ 2] [Θ 1]

The oblique argument is characterized by the theta role THEME and by accusative case. DPs replacing the variable y must fulfill these conditions. Declension class i in the GF of *Nachbar* [+N, -V, masculine, declension class i] is responsible for the way the lexical entry of the ending [accusative case, singular] of *Nachbar* is phonologically realized. Like the other oblique cases and the nominative plural of *Nachbar* it has to be realized by */-n /* and not by zero as in (27).

Our lexicon contains entries of the endings, too. The characteristics of the ending and of the stem must agree.

(xvii) **GF** *of ending*: [Acc]
[sg]
[declension class i]
[masculine]

(xviii) **PF** of that ending: */- n /**.

The PF of the corresponding ending is marked by *. This ending has an empty SF. Therefore, the correction is directed to the formal representation of the wordform. Example (27A) shows that the variable in the SF of contrastive focus may be replaced by a grammatical element represented on a level other than SF. In view of examples like this, the SF of contrastive focus was formulated by means of the relation "sentence$_1$ is represented by S_1" and not by means of the relation "the situation s_1 is an instance of the proposition ..." often used in two-level semantics (cf. the SF of *komm-*).

We have to generalize the correction [HANS]KF and build up a correction format containing a variable to be replaced by any grammatically categorized element. The categorical structure of the SF of contrastive focus and the way it is combined with the SF of the affirmative part of next sentence, however, remain as before.

Generalized SF of contrastive focus (version 1):

(xix) $\lambda p\,[p] \wedge \exists!\Phi, s_1\,[s_1$ represented by $S_1 = (s \ldots [\Psi/\Phi]_{\text{focus domain}} \ldots)]$[19] Whereby:

S_1 = first sentence

S = next sentence

s_1 = the situation spoken about by the first sentence

Ψ the entity in the next sentence realizing contrastive pitch accent

Ψ, Φ have the same CI.

p = compositionally constructed assertive SF of next sentence.

Gerhild Zybatow made me aware of the fact that corrections, however, react not only on utterances but even on implicit information the next speaker has reason to assume that it is part of the incorrect common ground of his partners. In cases like these the formalization by means of "the situation is an instance of the proposition ..." would be best. Therefore, dependent on the respective context, the SF of contrastive focus should either contain the predication "represented by S_1" or the predication "is an instance of a proposition". The variable for both predications is P:

Generalized SF of contrastive focus (version 2):

(xx) $\lambda p\,[p] \wedge \exists!\Phi, s_1\,[[P, s_1] = (\Sigma \ldots [\Psi/\Phi]_{\text{focus domain}} \ldots)]$, whereby :

dependent on P, Σ either is S or the proposition p of the next sentence.

Finally, we will sum up the different ways of markings which are necessary for corrections:

- On the level of cognition 2 the whole proposition to be verbalized is marked, because corrections do not constitute normal representative speech acts in so far as they do not obey the rules for continuous presentation of information.
- The extension of the focus domain is fixed by context and discovered by comparing the identical parts of the first and the next sentence and subtracting the focus domain from these. The focus domain is marked by angled brackets and by the sign KF. The minimum focus domain is a word or wordform. That means that the next speaker does not protest against e.g., an isolated bound morpheme but against the way a special LE has its affix realized. The next speaker does not protest against a connotation either, but he protests against a connotatively incorrect wordform or its projection.
- The marked syllable by which contrastive focus is prosodically realized need not agree with the position of word accent or phrasal accent. If the contrasted word had been *Peter*, a disyllabic word, its PF would normally realize KF on the accentuated first syllable but keep the whole word within the focus domain.

(xxi) **PF**: [/ PE – ter /]
KF

Only when the second syllable had to be corrected by contrastive focus – i.e. in order to protest against a form like *Pedro* - word accent would not become contrastive focus:
cf. [/ pe – TER /] KF/.

[*The AMErican soldier*]KF is an example for the possible disagreement between the actual position of KF and the normal position of phrasal accent. When KF is expressed in the normal focus position of the phrase *the American SOLdier*, contrastive focus

[19] Neither in this nor in any other representation of this paper does the existential operator express existential force.

alone is not able to fix the focus domain. *The American SOLdier* is ambiguous between narrow focus on [*SOLdier*]KF and phrasal focus [*the American SOLdier*]KF .
- Beside the formal properties of the correction sign, the 'content' of the SF of contrastive focus must be marked. It is found in the SF, GF or PF of a lexical entry or of its projection. The 'content' replaces the variable Φ in the SF of contrastive focus.
The formal side of the LE of contrastive focus is a relatively constant prosodic contour, and its SF has a generalized format the variables P, Φ and Ψ of which are replaced in accord with the corrected element and the cognitive or grammatical level of its description.

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(De)accenting Definite Descriptions*

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1. Introduction

It has been argued by various authors that there is no general correspondence between focus and new information, and background and old information, respectively (cf. e.g. Rochemont 1986, Schwarzschild 1999). On the other hand, with respect to noun phrases there are results indicating that (de)accenting does have an influence on the NP's reference. Bosch (1988), for example, points out the role of markedness in noun phrase interpretation. Van Deemter (1994) discusses the role of accenting to indicate a subsectional anaphor. Jäger (1998) shows that weak quantifiers are interpreted existentially or as partitives depending on the type and the position of the accent. Krifka (1999) argues for a class of "non-novel" indefinites, which presuppose their discourse referents and have to be deaccented.

Consider the definite *the shed* in (1). Depending on whether it is accented, the interpretation of the noun phrase is radically different. With an accent on *shed* we will conclude that there is exactly one shed belonging to John's cottage. Without the accent, on the other hand, we have to interpret *the shed* as referring to the cottage itself, the speaker obviously making a disapproving comment. With the accent on the descriptive content the definite refers to an object distinct from John's cottage thus introducing a novel discourse referent. Without an accent, the definite is identified with a previously given discourse referent.

(1) (John has an old cottage.)
   a. Last summer he reconstructed the SHED.
   b. Last summer he RECONSTRUCTED the shed.

This paper focuses on definite descriptions. It will be shown that a definite description refers to a given discourse referent if the descriptive content is completely deaccented. But if there is a focussed element within the descriptive content it introduces a novel referent. This amounts to allowing two readings for definite descriptions without, however, allowing two readings for the definite article.

This approach is, of course, based on a uniqueness view on definiteness. In particular, I will employ the account in Farkas (2000) and (2001, in this volume). Farkas presents a notion of uniqueness subsuming familiarity: Definites have to be "no-choice" either by being identical to a given referent or by means of their description. According to Farkas proper names and pronouns contribute an identifying condition whereas definite descriptions have to be determined by their descriptive content. Farkas argues that this difference in interpretation accounts for the different positions of proper names

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and pronouns, on the one hand, and (full) definite descriptions, on the other, in the definiteness hierarchy discussed in the functional literature:

Definiteness hierarchy:[1]
personal pronoun/proper name > definite description > specific indefinite > non-specific indefinite

I will follow Farkas with respect to interpreting definites as being "no-choice" NPs either via identity to another referent or via description. I will, however, argue that her account of definite descriptions is too coarse grained. Taking the difference induced by accenting into account a shift in the division between identifying definites and description based definites into the region of definites descriptions suggests itself: Deaccented definite descriptions referring to a given referent achieve uniqueness via an identity condition, but if there is an accent on the descriptive content, the definite achieves uniqueness by making use of its description, thus establishing a novel discourse referent.

pronoun/proper name	>	**given DD** (identifying, deaccented)	> **non-given DD** (description based, accented)	> specific indefinit > non-specific indefinit

This paper is organized as follows: In the next section I will briefly discuss the uniqueness view of definites comparing Hawkins and Löbner, then present Farkas' notion of "no choice" NPs and discuss why Farkas' story can't be all there is. In the third section the correspondence between (de)accenting and (non)givenness will be shown, and the different uses will be spelled out within the DRT framework. Moreover, the non-given/given distinction will be related to the well-known attributive/referential distinction. Subsequently, in section four, I will sketch the semantics of focus in complex definite noun phrases pointing out the role of the bridging antecedent in establishing the set of alternatives. Finally, we will come back to the scale of noun phrases in the definiteness hierarchy and have a brief look at pronouns and indefinites. Throughout this paper only singular definite descriptions *(the shed, the old shed, the shed of John's cottage)* in argument position will be considered.

2. The uniqueness view of definiteness

Definiteness is semantically associated either with familiarity or with uniqueness. According to familiarity theories of definites, e.g. Heim (1982), the referent of a definite noun phrase is an entity which is given because it has been mentioned previously in the discourse (or because it is prominent in the utterance situation). Uniqueness theories, on the other hand, regard definiteness as indicating that the noun phrase's referent is unique with respect to some pragmatically given domain. A review of the pros and cons of the two perspectives goes beyond the scope of this paper (cf. e.g. Hauenschild 1989). Distinguishing between given and non-given definite descriptions I will, of course, employ a uniqueness account of definiteness.

[1] cf. Farkas (2000)

2.1. Hawkins (1978), (1991)

A particular prominent account of the uniqueness perspective is Hawkins (1978) and (1991). Hawkins takes the anaphoric and deictic uses of definites as his starting point. The basic idea is that the use of a definite is felicitous if, within a pragmatically determined domain, there is exactly one entity satisfying the description (for plurals: there is unique maximal set within the domain). Pragmatic domains, called P-sets, are sets of entities structuring the universe of discourse, and are provided by either the previous discourse, the utterance situation, or general knowledge about relations between entities. The meaning of the definite article is defined relative to a P-set: "The conventionally implicates that there is some subset of entities, {P}, in the universe of discourse which is mutually manifest to Speaker and Hearer on-line, and within which definite referents exist and are unique." (Hawkins, 1991, p.414). Indefinites, as opposed to definites, conversationally implicate non-uniqueness.

For example, the noun phrase *the professor* may be felicitously uttered if there is a unique professor within the P-set established by the previous discourse. But it may as well be felicitously used if the situation or general world knowledge provide an appropriate P-set. E.g. if students arrive for a new class, they may ask *Who is the professor?* because there is a unique professor given by the situation. Or, if a university class has been mentioned in the previous discourse class, the use of *the professor* is felicitous because we know that classes at a university usually have a unique professor. Moreover, the appropriate P-set may be inferred from information within the definite NP itself, e.g. *the professor of my linguistics class.* Information within the definite NP may even re-establish a previous discourse set: *the professor we have just been talking about.*

Unlike definite descriptions, demonstrative expressions and pronouns, according to Hawkins, do not achieve uniqueness by making use of a P-set. They "will require a form of uniqueness relative to entities that are physically identifiable or textually introduced, without regard to P-sets" (Hawkins 1991 p. 416). The latter form of uniqueness, however, is not spelled out in the paper.

2.2. Löbner (1985)

Löbner (1985) presents a uniqueness theory of definites taking the opposite starting point, the paradigmatic cases being those where the definite article is required by the semantics of the neon. Nouns are classified into sortal nouns, which denote sets (e.g. *table*) and relational nouns, which involve an internal argument (e.g. *daughter* of somebody). Within the class of relational nouns there are special cases of functional nouns which have a unique value, e.g. *mother.*[2]

According to Löbner the definite article in all its uses indicates that the descriptive content has to be interpreted as a functional concept yielding a unique value.[3] He distinguishes between "semantic definites" and "pragmatic definites". Semantic definites are given by functional nouns, whose internal argument is mainly provided by the utterance situation. Being a functional noun *a mother* e.g. is not acceptable (unless

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[2] Sortal nouns may also be used in a functional way, e.g. *table* is used functionally if someone points to an orange box and says: *The table is laid.* Moreover, functional nouns may be used in a sortal way, e.g. if a caretaker in a kindergarten informs her colleague: *A mother has complained about the food.*

[3] Löbner uses the term "functional concept" instead of "function" to stress the procedural aspect and indicate effective computability.

mother is used in a sortal way). For pragmatic definites the functional concept has to be established by the context, either by a modifying expression or by an implicit link to a node representing another discourse referent (Löbner assumes a semantic network representation). For example, in *"Bill went out with a woman last night. The woman was nasty to him."* the definite the woman has to be linked to the node representing the woman Bill went out with last night which renders a functional concept paraphrased by *the woman Bill went out with last night.*

2.3. Farkas (2000), (2001)

Farkas (2000)/(2001 in this volume) starts from the so-called definiteness hierarchy which stems from cross-linguistic observations on the markedness of direct objects.[4] Different types of nouns phrases form a scale with respect to whether they tend to be case-marked if in direct object position: Personal pronouns are on top of the scale, being most likely to be marked as a direct object, followed by proper names, definite noun phrases, specific indefinite and non-specific indefinites. Farkas rearranges the linear scale into a partial order, including demonstratives and partitives:

> [personal pronouns, proper names] > [definite descriptions, demonstrative descriptions] > [partitives, specific indefinites] > non-specifics

Given that hierarchy, Farkas asks why noun phrases rank as they do. With respect to definites, i.e. pronouns, proper names and definite descriptions, she poses the questions (a) what makes them a natural class, and (b) what distinguishes pronouns and proper names on the one hand from definite descriptions on the other.

Farkas follows Hawkins in viewing definiteness as indicating uniqueness, subsuming familiarity as a special case of uniqueness. Her central notion is the notion of "determined reference" of a variable. This is explicated on the basis of DRT (Kamp, Reyle 1993): A variable introduced by a noun phrase has determined reference if for every update of an assignment function embedding the previous (input) DRS the value assigned to this variable is the same. Noun phrases introducing a determined reference variable are "no-choice". The notion of determined reference implements uniqueness without referring to a particular domain within which the referent has to be unique. The only requirement is that there is no other choice for assigning a value to the variable. But the reason why a variable has a determined reference is deliberately left open because this is where pronouns and proper names depart from definite descriptions.

Pronouns are handled in the usual DRT manner, i.e. they introduce a variable x in the domain of the respective DRS and add an identifying condition x=y where the newly introduced variable is equated with a variable y previously given. Proper names are also assumed to induce an identifying condition, e.g. x=Sarah, where the referent of the name stays constant across assignments and worlds. Thus both pronouns and proper names contribute an identifying condition directly associating the variable they introduce with the entity serving as its value. Therefore, proper names and pronouns are said to achieve determined reference directly.

Descriptions, on the other hand, have to achieve determined reference by means of the description. This may be the case if the descriptive content denotes a singleton set, as e.g. *the moon or the strongest man in the world.* For descriptions other than

[4] Farkas (2000) discusses a typology of definites which is recapitulated in section 2 of Farkas (2001) in this volume. I will mainly refer to the (2000) paper.

singletons Farkas assumes that the domain is restricted to (a subset of) variables that have been introduced before, the description being unique within the restricted domain. Thus a noun phrase like *the girl* is interpreted as "the unique element among the previously mentioned discourse referents which is a girl". According to the (2001) paper uniqueness may be restricted to a salient subdomain of the input DRS.

Answering the questions above, (a) the class of semantically definite noun phrases is characterized as being no choice NPs, and (b) the difference between pronouns and proper names on the one side and definite descriptions on the other stems from their different ways of achieving determined reference, either directly by introducing an identifying condition or by a description eventually relating to a restricted domain. Pronouns and proper names outrank definite descriptions on the definiteness scale because they achieve determined reference directly.

In this paper, I will follow Farkas in taking a uniqueness perspective on definites and regarding anaphoricity as one way of achieving uniqueness. Furthermore, I will follow her in distinguishing between definites that achieve determined reference directly by introducing an identifying condition, and those that achieve determined reference based on their description. But there are some problems: First, the reason she gives for why identifying conditions achieve determined reference is not really convincing. She argues that the antecedent has determined reference because for any assignment function the value is uniquely determined. But this is trivially true for any variable simply because assignments are functions. In fact, an identifying condition does not per se render determined reference – in principle the variable can be identified with any of the variables previously given. To determine the referent we have to take a resolution procedure into account which is based on the order of accessibility of discourse referents and will (normally) give a unique result Second, Farkas' view of definite descriptions implies that definite descriptions which don't involve singleton descriptions must refer to given referents. I will argue below that this assumption cannot be maintained.

3. Given vs. non-given definite descriptions

This paper focuses on definite descriptions. The central claim is that even definite descriptions can come both ways, either being identical to an antecedent or exploiting their descriptive content, depending on whether or not the descriptive content is accented. If deaccented, the definite represents an identity anaphor. Let us call these uses "given definites". If there is an accent on (part of) the descriptive content, the definite is not an identity anaphor (which does not imply that there is no anaphoricity at all). Since these definites do not refer to a given referent, they are called "non-given definites".[5] (Given and non-given definites are, of course, uses of definite descriptions – throughout this paper we are talking about occurrences of definite descriptions in utterances, not about definite descriptions in isolation.)

We will first turn to the non-given definites in this section, demonstrating how they achieve uniqueness, and show that they need an accented part in their description to do so. Next we will come to the given definites, showing that they have to be deaccented, and discuss the accessibility order of antecedents which is basic to resolve the

[5] They are called "non-given" instead of "novel" because they may involve a bridging anaphoric relation, see below.

identification condition. A DRT-like representation for both given and non-given definites will be given. Finally the two uses are related to the referential/attributive distinction which is well known in the literature.

3.1. Non-given definites

Let us first consider non-given definite descriptions. Since a non-given definite is not identical to a given discourse referent, it has to make use of its description to single out a unique referent. There are two possibilities: Either the description is such that it determines a unique referent by itself, or it needs the support of a "bridging" antecedent. Prototypical examples for self-sufficient descriptions are nouns that denote a singleton due to their semantics *(the pope)* or superlative constructions *(the biggest crook).* Complex descriptions involving adjectival modification, attributive genitives or restrictive relative clauses may also be able to determine a unique referent *(the Italian president, the president of Italy, the man who is elected for president in Italy).*[6]

According to our assumptions the description has to be accented. Compare (5)(a) and (b). In (5)(a) *pope* is accented. Since it is an out-of-the-blue utterance, the definite description obviously introduces a novel referent.[7] In (5)(b) *the pope* is deaccented, rendering the utterance unacceptable in the beginning of a discourse. (6)(a)-(c) present examples for complex noun phrases. To be acceptable as an out-of-the-blue utterance, the entire description has to be accented, cf. (6)(a). Still, if at least part of the description is accented, the definite is acceptable as introducing a novel referent, (6)(b)/(c).

(5) (What's new?)
  a. Last week I met the POPE.
  b. #Last week I MET the pope.

(6) a. Last week I met the ITALIAN PRESIDENT/ the PRESIDENT of ITALY
  b. Last week I met the Italian PRESIDENT/ ITALIAN president.
  c. Last week I met the president of ITALY / the PRESIDENT of Italy.

If the description of a definite is not suited to determine a unique referent by itself, it needs the support of a "bridging" antecedent (we are still talking about non-given cases, i.e. excluding identity anaphors). Consider *the roof, the dean* and *the girl* in the examples in (7). In each of them the description relates to a given referent to achieve uniqueness: The roof is part of the previously introduced cottage, the dean is supposed to be the dean of the faculty, and the girl is obviously a member of John's children.

(7) a. John has an old cottage. Last summer, he repaired the ROOF.
  b. The faculty has a meeting. It is chaired by the DEAN.
  c. John has two children. The GIRL is called Sue.

Familiarity theories of definites usually regard these cases as being (implicitly) given because there is a relation to a given referent. If we regard these definites as being given, however, we would have to believe that whenever a discourse referent is

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[6] The last two examples may be regarded as involving an explicit bridging antecedent.

[7] Since it is an out-of-the-blue utterance the accent has to be a default sentence accent. But we will for the moment ignore the difference between sentence accent and contrastive accent, and we will also ignore the focus domain.

introduced, all entities related to that referent are introduced simultaneously. Introducing the cottage referent in (7a), for example, would simultaneously trigger the introduction of the roof, the door, the kitchen, the mortgage, the previous owner, the landscape etc. This is improbable. But if we don't accept that all these entities are introduced together with the cottage referent, then we have to admit that *the roof* in (7a), although involving an anaphoric relation, does introduce a novel referent. The same argument applies to *the dean* in (7b): If the you reject the idea that introducing a faculty referent simultaneously triggers the introduction of a dean referent then the dean referent has to be novel. In (7c) the situation is slightly different because there is a plural referent which the girl is a member of. So it might be argued that the girl has in fact been introduced by introducing the children. But note that there is no chance for a pronoun to pick up the girl, we don't even know that there is a girl among the children. This is strong evidence that *the girl* introduces a novel referent, too.

Let us call the antecedents employed by the definites in (7) to achieve uniqueness "bridging antecedents", and the relation between the referent of the definite description and the antecedent a "bridging relation".[8] The nature of the bridging relation may be rather unspecific. Note, that it need not be a function (cf. membership, part-of etc.). It is only the combination of the bridging relation and the description of the definite which yields uniqueness. For example, in (7a) being a part of John's cottage is by no means unique – the cottage will presumably comprise more than one part. But being a part which is a roof has to be unique for the definite to be felicitous.

In (8) the example from the introduction is repeated. This example shows that it is the accent alone which tells us how to interpret the definite: With an accent on the descriptive part the definite has to be interpreted as introducing a novel discourse referent and since *shed* doesn't denote a singleton it needs a bridging antecedent to achieve uniqueness. Thus in (8)(a) *the shed* is interpreted as the shed belonging to John's cottage and is newly introduced. But if the description is deaccented, as in (8)(b), the definite has to be identified with a previously given discourse referent. Thus we infer that *the shed* refers to John's cottage the speaker making a disparaging remark.

(8) (John has an old cottage.)
  a. Last summer he reconstructed the SHED.
  b. Last summer he RECONSTRUCTED the shed.

A similar example is the one in (9) from van Deemter (1994). According to van Deemter, if the noun phrase *the women* is accented, it has to be interpreted as a subsectional anaphor referring to a proper part of the antecedent. From our point of view, being a proper part is just one of various possible bridging relations. As opposed to the example in (8), the definite description in (9) is in the topic part of the sentence. Thus in (9)(a) the accent renders the definite a contrastive topic. Nevertheless, it triggers the introduction of a new discourse referent.

(9) (The crowd was approaching the castle.)
  a. The WOMEN were very EXITED.
  b. The women were very EXITED.

Jäger (1998) also shows that accenting has an influence on noun phrase interpretation.

[8] The notion of an inferential "bridge" goes back to Haviland, Clark (1974). Our "bridging antecedent" is called an indirect antecedent there, e.g. *We checked the picnic supplies. The beer was warm.*

He discusses weak quantifiers in topic position and compares cases like (10)(a)/(b). Both (a) and (b) trigger a partitive reading interpretation of *three unicorns* (provided, according to Jäger, that the accent is a rising one). But depending on the position of the accent, the noun either denotes a property of the actual referent, cf. (a), or it denotes a property of the antecedent, cf. (b). In this respect, the examples in (10) are similar to the ones in (8) and (9).

(10) a. There is a whole herd of unusual animals all around. Three UNICORNS are in the GARDEN.
b. There is a whole herd of unicorns all around. THREE unicorns are in the GARDEN.

That there is a correspondence between accenting and the reference of a definite has already been discussed in Bosch (1988). Bosch uses the notions of explicit and implicit focus, the former representing entities mentioned in the preceding discourse, i.e. given referents, and the latter representing entities from the scenario, e.g. the bridged cases above which we would classify as being non-given. According to Bosch, deaccented definite referential expressions, full NPs and personal pronouns alike, take their referents from explicit focus, whereas intonationally marked definite referential expressions draw upon implicit focus. His example in (11) is similar to the example in (8) showing that accenting prevents the definite from taking up a given referent. Moreover, Bosch gives an explanation which comes close to the idea presented in Farkas (2000)/(2001) and in this paper, distinguishing between access via classification (i.e. description) and access via linguistic properties such as gender and number (i.e. non-semantic properties of antecedents).

(11) When Jones returned
a. ... they ignored {him, the idiot, the bastard, the old goat, the pig}.
b. ... they ignored {HIM, the IDIOT, the BASTARD, the old GOAT, the PIG}.

Let us now briefly consider functional nouns, which in Löbner (1985) are the paradigmatic cases of definites descriptions. Consider *roof* and *dean* in (7) above. They are clearly functional in the sense of Löbner because (usually) a house has exactly one roof, and a faculty has exactly one dean. In (7) the definites achieve uniqueness exactly as Löbner predicts, since the bridging antecedents correspond to the internal argument given by the semantics of the nouns. So, instead of assuming a bridging relation, one might regard the noun as denoting a function taking the faculty referent as its argument and yielding the dean-referent as its value. However, the bridging antecedent need not coincide with the internal argument, cf. (12). Although the internal argument is clearly preferred as a bridging antecedent, Löbner's functional concept doesn't cover the full range of bridging cases.

(12) I met a couple at the party yesterday. The wife was beautiful.

Moreover, a functional noun may, of course, occur in a given definite. Suppose, e.g., that (7)(a) is continued by *He had tried to evade that job, but finally the roof was leaking*. This time, *the roof* is clearly an identity anaphor. Thus, whether it's a

functional noun or a sortal or relational noun doesn't make any difference for the way in which the definite achieves uniqueness (except for the preference for a bridging antecedent to correspond to the internal argument). Viewing definiteness as indicating a function is intuitively appealing because the mathematical concept of a function gives us existence and uniqueness for free. But functional nouns are no first class definites.

3.2. Given definites

As discussed above, givenness is used here in a strict sense, for identity anaphors only. Non-given definites make use of their descriptive content to achieve uniqueness. But how do given definites achieve uniqueness? Identification with another referent, as such, does not give a unique result. Of course, the descriptive content of the definite will exclude unsuited candidates. Still there may be more than one referent satisfying the description. Consider *the man* in (13). There are four possible referents: the man, the bar, the suitcase, the barkeeper. The description *man* rules out the bar and the suitcase. But the barkeeper will probably be a man, too (cf. Heusinger 2000 for more examples of this type). The reason why we will not identify the man with the barkeeper is a structural one, given by binding constraints.

(13) (A man came into the bar. He was carrying a black suitcase.)
The barkeeper stared at the man with sudden alarm.

For given definites as well as for pronouns, to determine the referent appropriate for identification we have to take the accessibility of discourse referents into account. In the field of natural language processing there is a broad discussion on anaphora resolution. It is well-known that there are various factors contributing to the accessibility of a referent (cf. e.g. Preuss et al. 1994, Grosz et al. 1995). Such factors relate to structural properties of the respective noun phrases, e.g. distance and syntactic position, and define an order of accessible antecedents. Semantic conditions enter the game if there are equally accessible antecedents, thus reducing ambiguity. So the question of which referent has to be identified with a given definite is primarily determined by the accessibility of referents. Its descriptive content has only an auxiliary function. This is the reason why (a) given definites may be substituted for by pronouns (thus stripping their descriptive content), and (b) given definites, in spite of their descriptive content, have to obey the same accessibility rules as pronouns.

There is a consequence which is often neglected in semantics: The idea that a discourse referent once introduced is forever accessible turns out to be a fiction. After a certain (rather small) number of ensuing sentences a referent is definitely not accessible any more. But if a referent is no longer accessible, it can't be regarded as being given anymore. So it may be introduced again. Introducing a discourse referent, after all, is just like putting someone on the stage. It will be pushed in the background step by step by its followers. The notion of givenness employed here is not only restricted to identity anaphors but the referent to be identified with the anaphor has to be accessible as well.

To conclude: Farkas skips an important step when saying a pronoun introduces a referent x together with an equation x=y where y is a given discourse referent. In fact, a pronoun introduces half of an equation, x=?, and there is, first and foremost, a request to find the appropriate antecedent. To achieve this accessibility has to be taken into account. This applies to pronouns as well as given definite descriptions.

3.3. Two uses of definite descriptions

Accounting for the different ways of achieving a unique referent, we will assume that given definites, i.e. identity anaphors, are presupposed. This is in accordance with the main stream view on definites in the literature (e.g. Heim 1982). Non-given definites, as opposed to this, will be regarded as being asserted, in a line with indefinites introducing a novel discourse referent. It may be argued that the existence and the uniqueness requirements are presupposed because they can hardly be affected by a denial. But at least the fact that the novel referent has the property denoted by its descriptive content is part of the assertion and can be denied *(Last summer, John reconstructed the SHED. – No, he reconstructed the HEN HOUSE.)*. That such a denial is impossible if the definite is in topic position may well be due to the characteristics of topics.

Spelling this out in a DRT framework, given definites will be represented like pronouns whereas non-given definites are treated like indefinites plus uniqueness condition. For example, in (15a) pope carries an accent indicating novelty. So the definite triggers the introduction of a novel variable y and induces the conditions that y satisfies the description and is unique, as shown in (15)(b).

(15) a. John met the POPE.
b. [x, y: x=John, pope(y), ⟦z: pope(z)] -->[: z=y⟧, met(x,y)]

In (16) the first sentence is represented by the DRS in (16)(b). In the second sentence girl is deaccented. So the definite induces an identifying condition plus the condition that the referent satisfies the girl-predicate. Both conditions are presupposed (indicated by underlining). Following the presupposition-as-anaphors theory (cf. van der Sandt 1992), presuppositions have to be bound or accommodated. Updating of K1 and K2 results in the DRS in (16e), where the girl-referent from K2 has been identified with the girl-referent in K1 (assuming that the girl-referent in K1 is the most accessible referent which is a girl). The second girl-condition is supposed to be bound by the first one. (16)(e) then is equivalent to (16)(f).

(16) a. John met a girl.
b. K1: [x, y: x=John, girl(y), met(x,y)]
c. The girl was BEAUTIFUL.
d. K2: [z: z=?, girl(z), beautiful(z)]
e. K1 + K2: [x, y, z: x=John, girl(y), met(x,y), z=y, girl(z), beautiful(z)]
f. K1 + K2: [x, y: x=John, girl(y), met(x,y), girl(y), beautiful(y)]

In (17) and (18) the different readings of the shed-example are demonstrated. In (17)(c) *shed* is accented thus introducing a novel referent. Since *shed* doesn't denote a singleton (due to lexical and/or world knowledge) the definite requires a bridging antecedent (w) together with bridging relation R, and it introduces a uniqueness condition. The identifying conditions for the pronoun and those for the bridging antecedent are presupposed. Moreover the bridging relation is presupposed, cf. (17)(d). Updating K1 with K2 results in (17)(e) where the identification conditions are resolved. (Note, that the shed cannot be identified with the cottage because the bridging relation is not allowed to be reflexive, cf. the element-of relation or the part-of relation.) The fact that

the bridging relation holds between the cottage-referent and the shed- referent has been accommodated.[9] (17)(e) is equivalent to (17)(f).

(17) a. John has an old cottage.
b. K1: [x, y: x=John, old_cottage(y), owns(x,y)]
c. He reconstructed the SHED.
d. K2: [u,v, w: u=?, w=?, shed(v), R(w,v), [[z: R(w,z), shed(z)] -->[: z=v]], reconstructed(u,v)]
e. K1+K2: [x, y, u, v, w: x=John, old_cottage(y), owns(x,y), u=x, w=y, shed(v), R(w,v), [[z: R(w,z), shed(z)] --> [: z=v]], reconstructed(u,v)]
f. K1+K2: [x, y, v: x=John, old_cottage(y), owns(x,y), shed(v), R(y,v), [[z: R(y,z), shed(z)] --> [: z=v]], reconstructed(x,v)]

In (18)(b) *shed* is deaccented thus indicating that it has to be identified with a given referent. Both identifying condition and the descriptive condition are presupposed. Updating renders the DRS in (18)(d) identifying the shed-referent with the cottage referent. The descriptive condition has to be accommodated.

(18) a. John has an old cottage.
b. Last summer he RECONSTRUCTED the shed.
c. K2': [u,v: u=?, v=?, shed(v), reconstructed(u,v)]
d. K1+K2': [x, y, u, v: x=John, old_cottage(y), owns(x,y), u=x, v=y, shed(v), reconstructed(u,v)]
e. K1+K2': [x, y: x=John, old_cottage(y), owns(x,y), shed(y), reconstructed(x,y)]

Comparing this analysis with the account of definites proposed by Farkas, given definites go with pronouns achieving determined reference directly. It's only the non-given ones that have to make use of their descriptive content to achieve determined reference. Moreover, the latter do not require uniqueness with respect to the referents introduced before, but uniqueness with respect to the world, in most cases being supported by a bridging antecedent. The analysis of definite descriptions given here doesn't agree with Farkas' analysis of definite descriptions. But it does agree with her analysis of definites in general, making a clear distinction between definites which are directly no-choice and definites which are no-choice by description.

This analysis of definite descriptions admits two uses of definite descriptions. But it does not admit two readings of the definite article. The definite article *the* uniformly indicates the uniqueness requirement. The two uses are due to accenting and deaccenting, respectively, which is a feature given on the surface of the linguistic expressions. Thus the two uses must not be regarded as an ambiguity which has to be resolved by the hearer depending on the respective context. Instead, the speaker indicates the intended use by intonation. If the intended use doesn't match with the context, the utterance is not felicitous.

[9] Let us assume that R is an underspecified relation that may be made more specific by world knowledge inferences.

3.4. Referential vs. attributive use

Naturally, the idea that there are two uses of definite descriptions is not a novel one. It was first proposed by Donnellan (1966) who distinguished between a referential and an attributive use of definite descriptions. The attributive use is similar to Russel's view of definite descriptions assuming that the description is part of the assertion. The referential use comes close to Frege's or Strawson's view where the existence of an appropriate referent is regarded as a presupposition. But there is a subtle difference that will be discussed below.

Donnellan's famous example is *"Who is the man with the martini?"*. Suppose the chairman of a teetotalers meeting is informed that someone in the room is secretly drinking a martini. Then he may ask this question without having a particular person in mind. But if the same question is asked by a guest at a party seeing an interesting-looking person holding a martini glass, then the question is about that particular person. In the former case the definite description is used attributively, asking something about whoever or whatever fits the description. In the latter case it is used referentially, to enable the hearer to pick out whom or what the question is about. In the attributive use the referent has to be determined solely by means of the description whereas in the referential use the description is only accompanying a demonstration act. This is why Kaplan paraphrases the referential use by a demonstrative: *"Who is that man with the martini?"* or *"Who is that?"* followed by an appositive, parenthetical, whispered *"the man with the martini"* (Kaplan 1989, Afterthoughts, p. 583)

Donnellan does not argue in terms givenness or novelty of discourse referents and, of course, he is far from taking accenting into account. Nevertheless the referential/attributive distinction seems to correspond to the given/non-given distinction made in this paper: The correspondence between non-given and attributively used definites is evident, both requiring that the referent is determined solely by means of the descriptive content. To realize the correspondence between given and referentially used definites we have to regard the accessibility of discourse referents as the anaphoric counterpart to a demonstration act. Thus the context may be either the previous discourse or the utterance situation. Given definites as well as referentially used definites involve direct reference. Either accessibility of an antecedent or a demonstration act will provide a unique solution for identification, the descriptive content being mere auxiliary information.

To see that in the referential use the description in fact has to be deaccented whereas in the attributive use there has to be an accent, consider (19) and (20) below. In (19) the referential use is demonstrated. Assume a situation like this: Sherlock Holmes and Watson are chasing a drug dealer gang. They are sitting in a bar watching a clandestine meeting. One of the suspects makes a call on a mobile phone and then starts to leave the bar. Homes advises Watson:

(19) FOLLOW the man with the mobile.

As against that, to demonstrate the attributive use, assume that Holmes and Watson are on their way to the bar where the gangsters will meet, and Holmes tells Watson what to do: ... One of the men will have a mobile. They will wait for a phone call and then leave separately. ...

(20) Follow the man with the MOBILE.

There is an additional property of the referential use which makes Donnellan's account notoriously difficult: According to Donnellan, in the referential use the description may not apply to the referent without rendering the use of the definite infelicitous (and the sentence without a truth-value). For example, the man with the martini may actually be drinking water, but the definite will still refer to the interesting-looking person the speaker was curious about. On the other hand, Donnellan explicitly claims that by using the expression referentially the speaker presupposes that this very man is drinking martini, which from the point of view of semantics, is simply contradictory.

One may shift this problem into the area of pragmatics allowing for accommodation as long as there is sufficient similarity (martini being similar to water or white wine, but not to tomato juice). However, there is an observation discussed in Bosch (1988) indicating that the discrepancy in the referential use between the presupposed description and the actual properties of the referent is a systematic one: For a definite description, if the description is accented it cannot be used metaphorically, but has apply literally. Bosch notes that the accented NP in (21)(b) as opposed to the deaccented variant, cannot be interpreted as being co-referential with Jones, but that a "literal" interpretation where *the pig* indeed refers to a pig is possible.

(21) a. When Jones returned they ignored the pig.
b. When Jones returned they ignored the PIG.

Now suppose that Holmes is very upset because his own daughter is addicted to drugs. Then in the first situation he can give Watson the order in (22) instead of (19). But in the second situation, if Holmes would utter (23) instead of (20) Watson would be completely lost because presumably there is no such animal in the bar.

(22) FOLLOW the pig.
(23) Follow the PIG.

In the referential case, but not in the attributive one, *pig* can be used as a derogatory designation for the drug dealer. This, firstly, confirms Donnellan's claim that in the referential use the referent need not exactly fit the description. Secondly, occurring systematically with metaphoric descriptions we can no longer attribute this effect to some sort of accidental similarity, as in the case of martini looking like water. We may explain the discrepancy effect of the referential use along the following lines: In the attributive use, the description is the only information available to determine the referent. In the referential use, on the other hand, the description has a mere auxiliary function, the demonstration being decisive to determine the referent. Hence the descriptive information need not perfectly match with the referent's properties. Still, there are two awkward questions left: (a) How much deviation is possible? – *the man with the martini* will not work for a man with tomato juice, and (b) what are we to make out of a presupposition which contradicts contextual information? – according to lexical/world knowledge the intersection between man and pigs is empty, and this is essential in the attributive/accented use.

4. Focus in definites descriptions

We have seen in the previous section that accenting does have a decisive influence on the interpretation of a definite description making it introduce a novel discourse referent. How does this combine with the focus semantic interpretation of definite descriptions? The general idea of focus semantics is that a focus triggers a set of alternatives providing, e.g. the quantificational domain of adverbs like *only*. This idea is widely accepted. Nevertheless the nature and the range of the alternatives is by no means clear. Assuming that the set of alternatives comprises the entire domain of entities of the appropriate type renders the idea of alternatives trivial. But constraining it by employing a specific function, ALT, is also problematic. In this section, I will show that for definite descriptions the bridging antecedent plays a central role in determining the appropriate set of alternatives.

Let us start with the example in (24) taken from Heusinger (1998). The context is supposed to be an international faculty party. There are some students and some professors from various countries including exactly one Dutch professor:

(24) Sam only introduced the DUTCH professor to John.

In Heusinger (1998) the Alternative Semantics of Rooth (1992) is extended to apply to complex definite NPs. Alternative Semantics is a two-dimensional theory of focus, computing simultaneously the ordinary meaning of an expression α(denoted by $[\alpha]_0$) and its alternative meaning, i.e. the set of alternatives for this expression (denoted by $[\alpha]_A$). For example, in *"John only talked to SUE."* the focus on Sue triggers a set of alternatives comprising individuals, {Sue, Bill, Mary, ...}. The alternative meaning of the VP *talked to SUE* inherits these alternatives rendering a set of predicates, {talk-to-Sue, talk-to-Bill, talk-to-Mary, ...}. The meaning of *only* then consists in asserting that none of the alternatives except the ordinary meaning applies to the John.

Following this schema, the definite description *the DUTCH professor* in (24) should be computed by combining the alternatives of *DUTCH* with the meaning of *professor*, and combining the result with the meaning of the definite article. Heusinger assumes the alternatives of *DUTCH* to be given as in (25)(a). They are combined with the noun denotation by intersection, cf. (25)(b). Then there is a problem with the definite article which we will skip here. The interesting point with respect to our question is that, according to Heusinger, the alternative meaning of the definite description should comprise the union of the intersections, i.e. (25)(c):

(25) a. $[\text{DUTCH}_F]_A = \text{ALT}(\text{dutch}') = \{\text{dutch}', \text{english}', \text{french}', ...\}$

b. $[\text{DUTCH}_F \text{ professor}]_A = \{\text{dutch}' \cap \text{prof}', \text{english}' \cap \text{prof}', \text{french}' \cap \text{prof}', ...\}$

c. $[\text{the DUTCH}_F \text{ professor}]_A = \cup \{\text{dutch}' \cap \text{prof}', \text{english}' \cap \text{prof}', \text{french}' \cap \text{prof}', ...\}$

Suppose, however, that there is a stateless professor at the party. If Sam introduced the stateless professor to John, the proposition in (24) is clearly false. But if we assume the ALT-function to enumerate nationalities, the stateless professor will not be an element of the alternative meaning of *"the DUTCH professor"* as given in (25)(c). Hence *"introduce the stateless professor to John"* will not be excluded by the meaning of *only*.

You will, of course, argue that being stateless is a relevant alternative to being Dutch, English, French etc. and the ALT-function has to include this property. But consider (26) and imagine a situation like this: Sue and Ben, and no other children live in a house with a large garden. Each of the children has a favorite tree in the garden, but there are many other trees. In this situation the contextually relevant alternatives to Sue are clearly Sue and Ben, and nobody else. The proposition in (26) is intuitively false if Sam watered any tree in the garden except for Sue's tree. However, computing the alternative meaning of *SUE'S tree* in the manner of (25)(c) will give us just Sue's and Ben's tree. As in the case of the stateless professor, the other trees will not be included, and hence, not be taken into account by the meaning of *only*. But in this case it does not seem appropriate for the ALT-function to include a property like "childless".

(26) Sam only watered SUE'S tree.

The problem of the stateless professor and the "childless" trees stems from the implicit assumption that the alternatives given by a focussed modifier cover the entire background of the definite, i.e. the entire set of professors and trees. But that can only be guaranteed if the alternatives of a focussed expression comprise the entire domain of the respective type, e.g. $[\text{DUTCH}_F]_A = D_{<e,t>}$. The reason for using the ALT-function was to bring in contextual restrictions. But, obviously, this is the wrong place. To give the correct results, the set of alternatives related to the definite description in (24) has to comprise all professors present at the party, regardless of their nationality (or whether they are stateless or have dual nationality). The relevant restriction is, rather, a different one: The set of alternatives of *the DUTCH professor* in (24) should not include professors who stayed away from the party.

To see that this is the correct restriction, let us first consider the example in (27). Suppose, Sam is the one who has to take care of the guests visiting the institute, and show them around.

(27) (Yesterday Sam met with a Dutch group.)
Sam/he only introduced the PROFESSOR to John.

The definite *the PROFESSOR* in (27) obviously refers to the Dutch group. Due to the accent it introduces a novel discourse referent, but as professors are by no means unique in the world the definite has to make use of a bridging antecedent to achieve uniqueness. The Dutch group is a suitable antecedent inducing a membership relation. Thus *the PROFESSOR* in (27) is interpreted as the unique member of the Dutch group who is a professor. From (27) we can infer that Sam did not introduce any other member of the Dutch group to John. But we can not infer that Sam did not introduce somebody else to John. If, for example, Sam introduced some nice girls from a Finnish group to John, (27) would still be true. Hence, the relevant set of alternatives for *the PROFESSOR* in (27) is mediated by the same bridging antecedent which also mediates the uniqueness of the referent itself, i.e. the Dutch group. Moreover, the alternatives have to stand in the same relation to the bridging antecedent as the referent of the definite description does, i.e. membership.

The definite in (24), i.e. *the DUTCH professor* is no more unique than *the PROFESSOR* in (27). Similar to the latter it needs a bridging antecedent to satisfy the uniqueness condition imposed by the article. Suppose the context is like this:

(28) (The international faculty party last week was a great success. Many students and even some professors appeared.)
Sam only introduced the DUTCH professor to John.

Then *the DUTCH professor* has to be interpreted as relating to the professors which appeared at the party. Compared to the simple description in (27) in the complex description there is a deaccented part, i.e. *professors*. According to the deaccented part the bridging antecedent has to comprise professors, and there has to be a unique member of the professors-antecedent who is a Dutchman. Analogous to (27), the statement in (28) is true even if Sam introduced some professor to John who did not go to the party. So, as in the case of (27), the bridging antecedent gives us the relevant set of alternatives.

There are two implications: First, for bridged definites, in determining the relevant set of alternatives the focussed element doesn't play a role. Constraining the set of alternatives of the complex definite description by constraining the alternatives of the focussed element, i.e. using an ALT-function, may give too few elements, cf. the stateless professor and the "childless" trees. Instead, the set of alternatives is provided by the bridging antecedent, including only elements that stand in the same relation to the bridging antecedent as the definite's referent does. Second, being provided by the bridging antecedent the set of alternatives (minus the definite's referent) is an genuine anaphor.[10] It may in fact be picked up explicitly by *the others*, as in (29).[11] Thus the focus-semantic analysis of a definite description has to match with the semantics of *the others* (cf. Kamp 2000).

The definite, but not the indefinite others, is adequate to refer to the elements excluded by only. The referent of *the others* has to be bound to the alternatives-anaphor triggered by *the DUTCH professor*.

(29) (Sam only introduced the DUTCH professor to John.)
The others were dancing all the time.

5. Conclusions

Let us finally come back to the scale of noun phrases in the definiteness hierarchy. The analysis of definite descriptions given here is perfectly compatible with Farkas' distinction between definites making use of identification and definites making use of their descriptive content. It departs from Farkas' analysis only with respect to definite descriptions showing that the division line between inherently no-choice definites and description based no-choice definites lies within the area of definite descriptions: If the description is deaccented the definite has to be identified with a given discourse referent, but if there is an accented part it introduces a novel discourse referent. This analysis confirms the idea that there are two uses of definite descriptions (given/referential vs. non-given/attributive) without, however, stipulating an ambiguity

[10] This is in a line with the account in Rooth (1992) where at least one of the alternatives has to be bound (or accommodated).

[11] Note that the indefinite others would not be adequate:
Sam only introduced the DUTCH professor to John. # Others were dancing all the time.

of the definite article. Instead, the intended use is indicated on the surface of the linguistic expression by intonational features.

Taking the full scale of noun phrases into account the question arises how accenting affects the end points of the scale, i.e. pronouns and proper names, on the one hand, and indefinite noun phrases, on the other. Pronouns and proper names may be accented too. So we might assume that they also introduce a novel referent when accented. There are cases that seem to support this idea. In (30), for example, the pronouns obviously do introduce novel referents, and in fact they have to be accented.[12] So we could argue that in (30) the minimal descriptive content of the pronoun, i.e. being male or female, is exploited to establish a novel referent via bridging to the couple referent.

(30) (Last week I met a remarkable couple.)
HE looks after the children and SHE makes a lot of money.

However, the majority of accented pronouns does not support this view. Pronouns as well as proper names can clearly be accented without introducing a novel discourse referent. Actually, accented pronouns and proper names are prototypical counterexamples to the focus-novelty correspondence, cf. the examples in (31) and (32) from Schwarzschild (1999).

(31) (Who did John's mother vote for?)
She voted for JOHN.

(32) (Who did John's mother praise?)
She praised HIM.

Schwarzschild concludes from these examples that although lack of intonational prominence indicates givenness, the converse doesn't hold: It is not the case that prominence indicates novelty. In this paper we have seen that within certain limits, i.e. related to the descriptive part of definite descriptions, the converse does hold. But we deliberately excluded cases where the accent is on the definite article itself, or a demonstrative, as in (33):

(33) a. He would be THE man for the job.
b. (witness pointing to one of the defendants:)
I saw THIS man coming out of the bank.

In (33) accenting clearly does not trigger the introduction of a novel referent. It just indicates that there are alternatives, e.g. in (33)(b) there are other demonstration acts the witness could have made. Maybe accenting pronouns is ambiguous, either concerning their descriptive content, or concerning the referential capacity similar to (33)(b).

Considering indefinite noun phrases at the other end of the scale, Krifka (1999) argues for a special class of "non-novel indefinites" that presuppose their discourse referents and have to be deaccented. Evidence for this class stems e.g. from adverbial

[12] Such examples require animated referents. Analogous German examples with unanimated referents are not acceptable (in German, pronouns are marked for gender or sex). This is an examples from Bosch (1988):

**Wenn du die Mutter von dem Bolzen lösen willst, musst du ihn/IHN festhalten und sie/SIE nach rechts drehen.*

quantification as in (34)(a)/(b).[13]The domain of quantification is given by the deaccented indefinite, which forces us to assume that deaccented indefinites may pick up existing referents and "requantify" over them.

(34) a. A freshman usually wears a BASEBALL cap.
('most freshmen wear a baseball cap')
b. A FRESHMAN usually wears a baseball cap.
('most wearers of baseball caps are freshmen')

Krifka's non-novel indefinites suggests that deaccenting goes with specificity. However, the indefinite in (35)(a), though deaccented, is clearly non-specific introducing a novel referent.[14] Deaccenting in (35)(a) appears to be due to the presupposition induced by *only*, i.e. that Sue owns a motor cycle. But if the indefinite is substituted for by a non-given definite, the accent is still there although the definite is also part of the presupposition of *only*, cf. (35)(b).

(35) a. Only SUE owns a motor cycle.
b. (... Yesterday, the Dutch group visited the faculty)
But only SUE met the DEAN.

Apparently, the accent-novelty correspondence observed for definite descriptions doesn't carry over to pronouns and indefinites, thus confirming their position at either end of the definiteness scale.

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[13] (1)(a)/(b) in Krifka (1999). Note that "non-novel" indefinites are not "given" in the sense used here because they do not involve anaphoricity.

[14] Adapting an example from Eckardt (1996): *Sogar ARNIM besitzt einen Mercedes*, which shows that existential (as opposed to generic) indefinites need not be accented. Eckardt concludes that an accent due to a focus-sensitive particle overwrites a default sentence accent. In (35)(b), however, the accent on *dean* is not overwritten by the accent on *Sue*.

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