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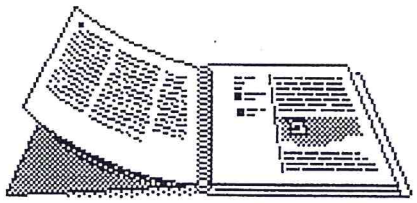

Edited by

Klaus von Heusinger
Kerstin Schwabe

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Sentence Type and Specificity

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Preface

Sentential force and specificity both have a long and independent history in linguistic research. Both concepts describe aspects of a sentence that can only be captured by taking into account the interface between syntax and semantics on the one hand, and between semantics and pragmatics on the other. This becomes quite clear in this volume, which focuses on sentence types, sentence modality, (in)definiteness and specificity as well as on the impact that information structure may have on these phenomena.

In their contribution *Exclamative Clauses at the Syntax-Semantics Interface*, RAFFAELLA ZANUTTINI & PAUL PORTNER offer a new perspective on the concept of clause type by arguing that the class of exclamatives is syntactically characterizable in terms of a pair of abstract properties and that these properties encode two components of meaning which uniquely define the semantics and pragmatics of exclamatives.

HORST-DIETER GASDE in his paper *Yes/no questions in Mandarin Chinese revisited* argues that Mandarin Chinese has two functional categories which trigger interrogative force: a Force1Phrase, at the top position of the sentence, which hosts the sentence-final interrogativity particle *ma*, and a Force2Phrase, which is sentence-internal and provides a position for the assertive *shi-bu-shi* as well as for an operator that licenses the interrogative verbal A-not-A form. Since the interrogative particle *ma* has scope over the whole sentence, it allows for more variety in information structure as well as the occurrence of (core) adjuncts, which operate over propositions.

KLEANTHES K. GROHMANN with *Clausal Tripartition, Anti-Locality and Preliminary Considerations of a Formal Approach to Clause Types* sketches a syntactic framework that takes into account that movement dependencies also display a lower bound or anti-locality effect. Splitting up the syntactic sentence structure into three Prolific Domains (a thematic domain θ, an agreement domain φ, and a discourse domain ω), he formulates an Exclusivity Condition that bans movement within such a domain. Since, consequently, wh-movement is then impossible within ω, Grohmann deprives the wh-phrase of indicating interrogativity and only permits it to mark focus.

REMUS GERGEL with *From Simple Predicators to Clausal Functors: The English Modals through Time and the Primitives of Modality* tries to shed some light onto the history of English modals including the modern stages of the standard dialects. He first discusses the relational nature of modality and the existence of a predicational node at all recorded stages of English and second, the prepositional nature of any modal node. The assumption of the Pr-head is supported by semantic arguments starting off from the dual nature of most modals in English.

In her contribution *Sluicing Phenomena*, KERSTIN SCHWABE investigates the role information structure plays with respect to the interpretation of elliptical wh-interrogatives. By showing that the indefinite relatum of the wh-phrase must always be F-marked and also allow a specific interpretation, she presents an explanation why indefinite relata cannot occur in presuppositional contexts.

KLAUS VON HEUSINGER in *Specificity and Definiteness in Sentence and Discourse Structure* shows, supported by Turkish data, that pretheoretical characterizations of specificity can only describe a restricted set of specific expressions. He argues that the reference of a specific expression depends on the "anchor" expression. Once the reference for the anchor expression is determined, the reference for the specific term is also determined, giving a specific reading of the indefinite.

The paper *Specifics* by BART GEURTS relates specificity and presupposition to each other by subsuming them under a concept, which he calls 'backgrounding'. He regards indefinites as always denoting properties. If an indefinite occurs as an argument, it may be construed as specific or non-specific depending on whether it is backgrounded or not. He argues that this 'background' concept sheds a new light on presupposition as well as on a number of phenomena that previously lacked a systematic account.

Within the SDRT framework, NICHOLAS ASHER demonstrates in his paper *Deixis, Binding and Presupposition* how the discourse-based, anaphoric theory of presuppositions accounts for the deictic use of definites. He shows that in many of these uses, presuppositions are anaphorically bound to the discourse context via a particular discourse relation, 'Anchoring', whose semantics and conversational function is directly linked to the participant's conversational goals. Anchoring, when accepted by all participants, leads to a mutual belief in coordinated reference.

In the final contribution *About the Whereabouts of Indefinites*, WERNER FREY argues that there are three different domains in the German middle field which are relevant for the interpreation of an indefinite. He shows that the so-called 'strong' reading of an indefinite is the basic one and that the 'weak' interpretation needs special licensing which is mirrored by special syntactic requirements.

This volume continues the discussion on sentence types and referentiality which was started with ZASPIL 23 *Information Structure and the Referential Status of Linguistic Expressions* – cf. the table of contents on p. iv. The contributions by Raffaella Zanuttini & Paul Portner, Kleanthes K. Grohmann, Kerstin Schwabe, Klaus von Heusinger, Bart Geurts and Werner Frey were presented at the workshop *Sentence Type and Specificity* which took place in March 2001 at the ZAS Berlin. The papers by Nicholas Asher, Horst-Dieter Gasde and Remus Gergel have been included as they are essential to the topic of this volume.

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

Klaus von Heusinger
FB Sprachwissenschaft
Universität Konstanz
Fach D 185
D-78457 Konstanz
Germany

Email: klaus.heusinger@uni-konstanz.de

Kerstin Schwabe
Zentrum für Allgemeine Sprachwissenschaft
Typologie und Universalienforschung
Jägerstr. 10-11
D-10117 Berlin
Germany

Email: schwabe@zas.gwz-berlin.de

Exclamative Clauses at the Syntax-Semantics Interface*

Raffaella Zanuttini & Paul Portner
Georgetown University
zanuttir@georgetown.edu portnerp@georgetown.edu

Exclamative clauses exhibit a structural diversity which raises the question of whether they form a clause type in the sense of Sadock & Zwicky (1985). Based on data from English, Italian, and Paduan, we argue that the class of exclamatives is syntactically characterizable in terms of a pair of abstract syntactic properties. Moreover, we propose that these properties encode two components of meaning which uniquely define the semantics and pragmatics of exclamatives. Overall, our paper is a contribution to the study of the syntax/semantics interface and offers a new perspective on the notion of clause type.

1. Exclamatives and the notion of Clause Type

Sadock and Zwicky (1985) define clause types as a pairing of grammatical form and conversational use.[1] In this paper we discuss exclamatives within the context of this notion of clause type. We argue that exclamatives are not a purely semantic or pragmatic category expressed by a variety of unrelated syntactic forms; rather, the diverse realizations of exclamatives all share certain syntactic characteristics. These represent the defining semantic properties of this clause type. Thus, ours is a study of the syntax/semantic interface and its application to the study of exclamatives, and to the notion of clause types more generally.

The syntactic part of our claim is both interesting and difficult because of the diversity of forms which are plausibly to be categorized as exclamatives. Consider, for example:

(1) a. What a nice guy he is!
b. The things he says!

* We have benefited from discussion accompanying presentations of this work at Georgetown and Yale Universities, and the University of Padova. We are also grateful to the audiences at the Workshop on 'Minimal Elements of Linguistic Variation' in Paris, the Workshop on 'Spoken and Written Texts' at the Univeristy of Texas at Austin, the Going Romance conference at the University of Utrecht and ZAS in Berlin. In particular, we would like to thank Héctor Campos, Ralph Fasold, Elena Herburger, Roumi Izvorsky, Cecilia Poletto, Manuela Ambar, Hans Obenauer, Manfred Krifka, Larry Horn, Bob Frank, and the participants in our graduate seminar on clause types. We would like to extend our special thanks to Paola Benincà, both for providing all of the judgments and for extensive discussion of our ideas. This research was supported in part by a Georgetown University Graduate School summer grant.

[1] More precisely, the set of clause types within a language forms a closed system in that:

1. 'There are sets of corresponding sentences, the members of which differ only in belonging to different types.'
2. 'The types are mutually exclusive, no sentence being simultaneously of two different types' (Sadock & Zwicky 1985: 158).

(2) a. Che caro che è! (Italian)
what expensive that is
'How expensive it is!'
b. Che libro ha comprato Gianni!
what book has bought Gianni
'What a book Gianni bought!'

In (1)a, we have what appears to be a WH movement structure, similarly to an interrogative but without subject-auxiliary inversion. Example (1)b appears to have the structure of a noun phrase which includes a relative clause. Example (2)a, from Italian, is like (1)a in that it involves a WH constituent and no inversion, but contains an overt complementizer; it contrasts with (2)b, which also shows the WH constituent but lacks the complementizer. It is natural to wonder whether these examples have anything syntactic in common.

Given the diversity in (1)-(2), it's not possible to identify a single construction to be labeled 'exclamative'.[2] We will argue, though, that all of these forms do share certain abstract syntactic properties, and that having these properties is sufficient to identify a sentence as an exclamative. As we will see, these properties are rooted in their connection to the semantics of the clause type. More specifically, they encode the essential semantic components which together yield the meaning of an exclamative. Since these properties may be present in a variety of syntactic forms, they do not yield a set of structures which are syntactically similar in any immediately obvious way. Hence, exclamatives are a category which can only receive a natural characterization at the interface.

This overall picture is quite simple in the abstract, but at the practical level it requires a great deal of detailed work on the syntax and semantics of exclamatives. In both of these areas, we build on some existing work, though compared to other types like interrogatives and declaratives, there is relatively little available. The fundamental idea we will pursue is that there are two syntactic components necessary to make a clause an exclamative. These encode the two key semantic properties of exclamatives:

1. Exclamatives are factive. This is represented in the syntax by an abstract morpheme FACT which brings about a CP-recursion structure (cf. Watanabe 1993).
2. Exclamatives denote a set of alternative propositions, similarly to interrogatives. This is represented by a WH operator-variable structure parallel to that of questions.

In section 4 we will see how these two semantic properties combine to give the intuitive interpretation of exclamation; in section 5 we will see how the two syntactic components which encode them allow an account of the diversity of structures in (1)-

[2] In this respect, we agree with Michaelis & Lambrecht (1996). Their approach to this issue, within a construction grammar framework, is to relate individual constructions like those in (1) using an inheritance hierarchy. In this way, the various exclamative sentences can derive their common properties from an 'Abstract Exclamative Construction' while not sharing any structural features in common. Our analysis differs from theirs in that we argue that all exclamatives do in fact share certain defining syntactic properties, and that these properties are essential to their compositional interpretation as exclamatives.

(2). The properties of WH operators in exclamatives are in some cases different from those in interrogatives, and we will explore the differences in some detail in section 6.

A prerequisite for our project is an ability to determine whether a given clause is an exclamative. This is not a trivial task, since other clause types may express a similar pragmatic function, as in (3).

(3) a. He's so cute! (Declarative)
b. Isn't he the cutest thing! (Interrogative)

Of course this is not a difficulty which is restricted to the study of exclamatives; there are declaratives which function to request information, interrogatives which give an order, and so forth. Unlike with these latter cases, however, there does not appear to be an implicit consensus in the syntax/semantics community as to precisely which sentences count as members of the exclamative clause type. Perhaps this is simply because they have been studied less. Whatever the reason may be, our first task will be to establish some explicit criteria which allow us to determine whether a given clause is an exclamative. We'll undertake this in section 3.

As the last paragraph makes clear, we do not label just any clause which can be used to 'exclaim', in the intuitive sense, an exclamative, just as we would not call *Could you come in at 9:00 tomorrow?* an imperative simply because it can convey an order. In other words, we distinguish the illocutionary force of a clause from its grammatically encoded function. The illocutionary force of a sentence, as defined by e.g. Searle (1965), incorporates the Gricean analysis of meaning as intentional: 'In speaking a language I attempt to communicate things to my hearer by means of getting him to recognize my intention to communicate just those things' (Searle 1965: 258). A sentence would thus have the illocutionary force of ordering if and only if the speaker intends to impose an obligation by getting the hearer to recognize this intention. According to such a definition, since someone saying *Could you come in at 9:00?* may have the relevant intention, the sentence would in such cases have the illocutionary force of ordering. But this shouldn't lead to the conclusion that it is an imperative. Crucially its form is that conventionally associated with the force of asking. We label the force conventionally associated with a sentence's form its *sentential force*, following Chierchia & McConnell-Ginet (1990). In some cases, such as our example, a sentence whose sentential force is that of asking may have the illocutionary force of ordering.[3]

Likewise with exclamatives, we need to distinguish illocutionary force from sentential force. While members of various clause types may be associated with the illocutionary force of exclaiming, only members of the exclamative clause type are conventionally associated with this sentential force. Certain structures have traditionally been seen as clear examples of this clause type, for example:

(4) a. What a nice guy he is! (cf. *What a nice guy is he?)
b. How very tall she is! (cf. *How very tall is she?)

[3] It isn't clear whether this kind of example should be seen as having the illocutionary force of asking in addition to that of ordering. While interesting, this issue doesn't affect the point that it is necessary to distinguish the grammatically encoded force from other types of force.

Both of these have an initial WH constituent, but they differ from interrogatives in that they cannot occur with subject-auxiliary inversion. In addition, their WH phrase contains an extra element not possible in interrogatives, *a* in (4)a and *very* in (4)b. Despite the presence of such clear cases, the criteria developed in section 3 will prove useful for two reasons: First, they will help us to decide the status of examples like (3)a and (3)b in which the illocutionary force is not equivalent to the sentential force; and second, they will reveal some of the important properties of exclamatives which any theory of this clause type must explain.

Returning to the broader question of how the concept of clause type fits into grammatical theory, exclamatives provide a good place to begin the study of this issue. They are less well-studied than the other types of declarative, interrogative, and imperative. Moreover, their many similarities to interrogatives may make it easier to see precisely which aspects of structure are relevant to distinguishing one clause type from another. And finally, the diversity of structures which appear to exemplify this type, as in (1)-(2), poses a particular challenge for the idea that there can be a useful theory of the grammar of clause types at all. Hence, in addition to being of interest for what it can show us about the nature of exclamatives in particular, this paper also works towards the goal of understanding clause type systems more generally.

2. Previous approaches to the syntax of force

Before we examine in detail the nature of exclamatives, we will consider some of the ideas present in the literature concerning the nature of clause typing. One prominent idea is that a force-indicating feature or operator is central to the analysis of individual clause types. Thus, for example, we have imperative force features and question operators used to motivate movement in these types. As we suggested in the introduction, however, we will not pursue this approach. For one thing, such an element does not seem helpful in accounting for the diversity of structures found among exclamatives. In particular, it is hard to see how such a morpheme would let us unify clausal and nominal exclamatives, as in (1)a-(1)b; even the diversity within clausal exclamatives seems too much for a single force feature to account for (Zanuttini & Portner 2000). Moreover, even for the clause types where the idea has been pursued, there are many problems with the proposal that force is syntactically realized in terms of a single element or feature. In this section we will point out these difficulties.

In most cases, a force indicating element has been proposed for the analysis of a particular clause type (almost exclusively imperatives and interrogatives[4]). Authors focusing on other issues will at times invoke a force indicating feature for a narrow range of cases. For example, an illocutionary feature has been used to trigger the verb-initial order of non-negative, non-polite-form imperatives in Spanish or Italian (e.g. Rivero 1994a, Rooryck 1992, Graffi 1996). The goals of such papers aren't necessarily to consider the full range of structures which exemplify a particular clause type, and so they are of less relevance to us here. Others make more general claims about at least one clause type; among them are Pollock (1989), Cheng (1991), den Dikken (1992), Platzack and Rosengren (1994), Rivero (1994b), Henry (1995, 1996), Michaelis & Lambrecht (1996), Rivero & Terzi (1995), Rizzi (1997), and Han (1998). Of these,

[4] Wechsler (1991) is an exception, considering declaratives is some detail as well.

Platzack & Rosengren and Han specifically make claims about how clause types are marked in general, not limiting their claims to a particular type.

We begin by outlining some of the proposals which use a force-indicating element in the analysis of imperatives and interrogatives. In general, we find three main points of view concerning the location of the force-indicating element: (i) force is always represented in C; (ii) force is consistently associated with one projection within a given language, but whether this projection is I or C may vary from language to language; and (iii) force is underlyingly represented in I, though it may undergo movement to C in some circumstances. Beginning with imperatives, certain Romance and Balkan languages, among them Spanish, Italian, and Modern Greek, have morphological forms particular to positive, non-polite-form imperatives. This is illustrated by the contrast between the imperative and declarative in (5), from Italian. The imperative verb in (5)a is morphologically unique in that it only occurs as a second person form in imperatives (though it can be a third person indicative); it has a unique syntax as well, obligatorily preceding the object clitic le.

(5) a. Telefonale! (Italian)
call.imp-her
'Call her!'

b. Le telefoni troppo.
her call.indic.2sg too-much
'You call her too much.'

Much of the literature on Romance imperatives proposes that the word order in (5)a results from the verb moving to C. The trigger for such movement is the presence of some element associated with the force of imperatives.

Preverbal markers of sentential negation are incompatible with imperatives of this kind. A suppletive verbal form (drawn from the indicative, subjunctive, or infinitive paradigms) is used instead. In (6)b from Italian, the verb takes its infinitival form:

(6) a. *Non telefonale!
neg call.imp-her

b. Non telefonarle!
neg call.inf-her
'Don't call her!'

Both Rivero & Terzi (1995) and Han (1998) utilize the proposed imperative operator in C to account for this incompatibility. Rivero & Terzi claim that the negative marker, a head which intervenes between I and C, blocks the verb's ability to move to the force indicator. Crucial to this approach is the assumption that the verb and negation cannot form a unit and move together to C. A difficulty is that other constructions within these languages do seem to show the verb forming a unit with negation (e.g. so-called Aux-to-Comp constructions, Rizzi 1982). Moreover, in at least one language discussed by Rivero & Terzi, Serbo-Croatian, the verb can form a unit with negation, as shown by the fact that a preverbal negative marker is compatible with a verb-initial order in imperatives (as well as other clause types). This raises the question of why this option is possible in Serbo-Croatian and not in other languages.

Han responds to these issues by allowing the verb to move to C in all cases. In the presence of a preverbal negative marker, she claims that the resulting structure is

semantically uninterpretable. Specifically, the following structure is derived (Han 1998: 42):

(7) $[_{CP}\,[_{C}\,[_{I}Neg\ I][_{C}\ Imp]]\ IP]$

Following Kayne's (1994) definition of c-command, the negative marker asymmetrically c-commands the verb (within I), and thus takes scope over it. She makes two other crucial assumptions as well: first, that the verb takes over the force-indicating function of the imperative operator, and second that in general a sentence's force cannot be negated or be within the scope of negation (these alternatives are not clearly distinguished). Hence, she concludes that the configuration in (7) is semantically ill-formed.

Difficulties arise for these approaches when they attempt to extend their ideas to languages which do allow negated imperatives. Rivero & Terzi discuss the case of Ancient Greek, which lacks a special syntax for imperatives. The only case which gives rise to verb-initial order, for imperatives as well as declaratives, is when this is necessary to provide an enclisis site for second-position clitics. They account for the lack of an inversion operation specific to imperatives by proposing that the feature encoding imperative force is located in I rather than C in this language. Han, in contrast, maintains for languages that allow negated imperatives the idea that force is encoded in C. There are two classes of such languages. On the one hand, French and other languages with post-verbal negative markers can form negative imperatives simply because I to C movement can take place without movement of the negative marker, which therefore will not take scope over the force indicator. She assumes the *not* of *Do not do that!* to be like French *pas* in this regard. On the other hand, Han assumes that in English examples like *Don't do that* the negation does move along with the auxiliary to C. However, the resulting configuration differs from that derived for Italian, Spanish, and Modern Greek in that *n't* does not end up c-commanding the force indicator:

(8) $[_{CP}\,[_{C}\,[_{Neg}I\ Neg][_{C}\ Imp]]\ IP]$

Notice that in (8) I is adjoined to negation, and not the other way around as in (7). For this reason, *do*, which is in I and has taken over the function of the imperative operator, c-commands negation. The resulting scope configuration is interpretable, as negation does not take scope over directive force.

Turning now from imperatives to interrogatives, many authors have accounted for verb-movement in the latter in terms of an element in C which indicates that the clause is a question. This element has been instantiated as the Q morpheme or WH feature originating with Katz & Postal (1964) and Baker (1970) and employed in much subsequent work. This element bears an obvious similarity to the one invoked in the case of imperatives, and so it is tempting to view it as a force-indicating element as well. (Of the works we are aware of, only Han's explicitly postulates a force-indicating element in C for interrogatives.) A problem with doing this is that this feature is utilized in both main and embedded clauses, and it is not typically assumed that embedded clauses have force. We can think of two possible directions to pursue here. It might be that the Q morpheme or WH feature only counts as a force-indicator in root clauses, and that when selected by a higher predicate it is semantically inert. Alternatively, it could

be that sentential force is represented in both root and embedded clauses, but in the latter case it is ignored by subsequent semantic computation.[5]

Most discussions of the Q morpheme or WH feature assume it to be located in C. An interesting variant is that of Rizzi (1996). He proposes that in root clauses the WH feature is underlyingly associated with I; it then moves to C in order to instantiate a configuration of spec-head agreement with an appropriate wh operator in [spec, CP]. Thus, as with imperatives, within the discussion of interrogatives we find both I and C considered as the possible locus of force.

In light of this brief summary, we can now see why invoking a force-indicating element has not been able to explain the concept of clause type. A serious with all of the theories we have considered so far is that they are applicable to only a subset of the structures which comprise each type.[6] This is most clear in the case of imperatives. Recall that the basic facts in Italian, Spanish, and Modern Greek are that the morphological form specific to imperative meaning cannot be negated, as in (6)a, but sentences with imperative meaning in other morphological forms may be. This class includes both the suppletive forms used for negative sentences, as (6)b, and those used to express polite imperatives. Since these types of imperative do not involve verb movement to C, according to Rivero & Terzi's and Han's assumptions they do not contain the force-indicating element. Despite this, they share the same sentential force as the non-suppletive forms; that is, they are conventionally associated with the force of ordering just as much as so-called 'true imperatives'. Han appears to dispute this and claim that force is not syntactically represented in those suppletive imperatives based on subjunctive or infinitive morphology, suggesting instead that it is indicated 'via inference' (p. 57). Han's idea is that the infinitive/subjunctive operator expresses an irrealis interpretation compatible with directive force, and presumably incompatible with other forces like assertion. This approach seems to con the pragmatic notion of illocutionary force with sentential force. As noted in the Introduction, pragmatic inference may lead any clause type to be interpreted with any illocutionary force, e.g. declarative as a question, etc., but this is an aspect of interpretation beyond the pairing of form and sentential force which defines clause type. An alternative approach to dealing with those imperatives that do not show verb movement would be to suggest that force is represented in both cases, but only triggers overt movement in one (e.g. because it's 'strong' in one case and 'weak' in the other); this is Han's approach to those suppletive imperatives based on indicative morphology. Saying either that force comes 'via inference', or that the syntactic properties of the force-indicator vary from case to case, amounts to abandoning the idea of a uniform representation for sentential force.

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[5] This possibility would be implausible if we were working with a notion of illocutionary force, but given our narrower concept of sentential force, it is more likely to be workable. In line with the dynamic semantics idea that the meaning of a sentence is context change potential (or CCP, Kamp 1981, Heim 1982, among others), we might treat a sentential force as giving a sentence a certain kind of CCP. For instance, the force of assertion creates a CCP that updates the common ground, whereas that of an imperative affects the hearer's obligations. The meaning of the force indicator would then be to map any proposition onto the appropriate kind of CCP. For example, the CCP of a declarative sentence expressing proposition p is the function f which maps any context C onto C' which only differs from C in that p is in the new common ground. The effect of the force indicator can always be 'undone', retrieving from f the underlying propositional content: if f is applied to the empty context, i.e. that with nothing in the common ground, p can be recovered as the sole element of f(C).

[6] Since they do not work with a force indicator, Michaelis & Lambrecht's (1996) approach is not subject to this criticism.

A similar problem arises in some languages with interrogatives. In Paduan, for example, while positive yes/no questions involve inversion, those negated by the usual marker of sentential negation, *no*, do not:[7]

(9) a. Vien-lo? (Paduan)
comes-s.cl
'Is he coming?'
b. *No vien-lo?
neg comes-s.cl
c. Nol vien?
neg-s.cl comes
'Isn't he coming?'

If inversion results from the presence of a force indicating feature in C, the lack of inversion in (9)c would lead one to conclude that there is no such feature. That is, negative questions, like the negative imperatives discussed above, would differ from their non-negative counterparts in lacking the syntactic representation of force. And yet they are just as fully interrogatives as their non-negative counterparts. The alternative of saying the force-indicating feature is strong in positive clauses but weak in negative ones gives up on the idea that the members of a clause type are unified by sharing a single syntactic feature.

The basic problem we are faced with is that the syntactic operation giving rise to verb-initial order does not correlate with the expression of force which defines a clause type. Thus, in the languages under discussion at least, there is no justification for tying the verb's behavior to any feature which encodes force or clause type. It would be simpler to have a single feature triggering all cases of verb movement to C. In Italian and Spanish this would bring together positive imperatives and interrogatives, leaving aside their negative counterparts as well as declaratives.[8]

The approach to exclamatives which we will pursue here doesn't rely on a force-indicating feature or operator at all. While it's possible that such an element is present, it is not what shapes the members of the class. Rather, what is shared by all exclamatives is the need to represent in the syntax those two semantic properties mentioned in the introduction: that exclamatives are factive and that they denote a set of alternative propositions. It is worth wondering whether semantic properties other than force could be helpful in solving the problems mentioned above for the analyses of imperatives and interrogatives, but we will not pursue this in the present paper.

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[7] Paduan is a Romance variety spoken in the Italian city of Padua. As shown by Portner & Zanuttini (1996), Paduan *no* actually has two, syntactically distinct forms. One is the ordinary marker of negation, while the other is a clitic and carries, in addition to negative meaning, a particular scalar implicature described in the reference cited. Here we focus on ordinary negation. In the Paduan data, the gloss *s.cl* stands for 'subject clitic'.

[8] This line of reasoning follows the assumption made by many in the literature that positive interrogatives in Italian and Spanish involve inversion. The matter is subject to debate because of the range of subject positions available in these languages. Paduan presents a more clear case; the relative order of verb and clitics provides direct evidence for inversion in all positive interrogatives and imperatives.

3. Criteria for identifying exclamatives

In this section we establish a number of criteria for identifying exclamative clauses, drawn from Zanuttini & Portner (2000) and Portner & Zanuttini (2000). We identify three properties which distinguish exclamative clauses and show how they give rise to criteria which help us pick out members of this type. The three properties are: factivity, scalar implicature and inability to function in question/answer pairs. At this point our goal is only to establish criteria; we will provide an analysis of each of the properties in section 4.

Like us, Obenauer (1994, section 2.4) also provides criteria for determining the class of exclamatives. Concentrating on data from French, he focuses on certain WH phrases, like *quelle chance* ('what luck') and *quel génie* ('what genius'), that can only occur in exclamatives.

(10) a. Quelle chance tu as eue! (Obenauer 1994: 364)
what luck you have had
'What luck you've had!'

b. *Quelle chance as-tu eue!
what luck have-you had
'What luck have you had!'

He then takes their syntax to be definitive of the syntax of exclamatives in general. Thus, since these WH phrases disallow inversion and cannot remain in situ, he concludes that if a WH structure is to be classified as an exclamative in this language, it must not involve inversion or WH in situ. This classification appears to accurately pick out the class of WH exclamatives in French. Notice, however, that Obenauer's criteria are purely syntactic, and so they can only be counted on to single out a syntactically relevant class (similarly to Rivero & Terzi's class of imperatives involving V to C movement). This methodology cannot assure us that all sentences with the relevant sentential force get classified as exclamatives. Since the notion of clause type which we investigate in this paper is defined as a pairing of form and sentential force, we need to make sure that the criteria are not too narrow, thus picking out only a syntactically coherent subset of the clause type. In other words we need to make sure that we are not leaving out other types of exclamatives in the same way that some of the literature on imperatives left out those which do not involve verb movement to C.

For these reasons, our criteria for exclamative status will be built on the three semantic properties outlined above. The first property, factivity, was first pointed out by Grimshaw (1979).[9] The factivity of exclamatives is shown by two facts. First, they can only be embedded under factive predicates, as seen in (11):[10,11]

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[9] Michaelis & Lambrecht (1996) incorporate a similar property, 'presupposed open proposition' into their account. Though it is not formally defined, this property is paraphrased in a way that makes it appear equivalent to Grimshaw's notion of factivity.

[10] This is not to say that all factives allow exclamative complements. For instance, regret doesn't allow WH complements in general, as pointed out by a reviewer.

[11] The effects of factivity are somewhat different in WH complements than in declarative complements, as discussed in Berman (1991). Note also that the non-factive predicate believe has a special factive use in sentences of the form *I can't believe ...* or *You wouldn't believe ...*, and as expected in these cases it can have an exclamative complement: *I can't believe how very cute he is!*

(11) Mary knows/*thinks/*wonders how very cute he is.

Second, when they are embedded under a verb like *know* or *realize*, in the present tense and with a first person subject, this verb cannot be negated, as seen in (12):

(12) *I don't know/realize how very cute he is.

Intuitively, the problem with (12) is that denying the speaker's knowledge con with the factive presupposition generated by the exclamative.[12]

The second property, what we refer to as *scalar implicature*, makes more precise the intuition that exclamatives convey that something is surprising or noteworthy in some way. Exclamatives introduce a conventional scalar implicature to the effect that the proposition they express lies at the extreme end of some contextually given scale. Thus, we take *How very cute he is!* to express the proposition that he is very cute (in fact, it presupposes it, due to factivity) and to implicate that his degree of cuteness is greater than the alternatives under consideration. This must be a conventional, rather than a conversational, implicature because it is non-defeasible (as seen in (13)a) and detachable (as in (13)b, which shows that the implicature is tied to the sentence's form not its semantic content):

(13) a. ??How very cute he is! – though he's not extremely cute.
b. He's quite cute! – though not extremely cute.

This property explains two facts. The first, pointed out by Elliott (1974), is that exclamatives cannot be embedded under *It isn't amazing*, though they can be embedded under its positive counterpart:

(14) a. *It isn't amazing how very cute he is!
b. It is amazing how very cute he is!

The second, related property is that (14)a becomes good if it is questioned, whereas (14)b becomes ungrammatical:

(15) a. Isn't it amazing how very cute he is?
b. *Is it amazing how very cute he is?

The intuitive reason why (14)a is unacceptable is that it denies the amazingness of his cuteness, and this amounts to contradicting the scalar implicature. A parallel explanation holds for (15)b, where the interrogative questions the amazingness of his cuteness, thus casting doubt on the implicature. In contrast, (15)a is acceptable because a negative question expects a positive answer, and thus the pragmatics of this sentence supports the implicature of extreme cuteness.

The third property distinguishing exclamatives from interrogatives and declaratives is their inability to function in question/answer pairs. Obviously, interrogatives characteristically serve to ask a question. Exclamatives may not do so.

[12] In certain pragmatic circumstances, an exclamative may serve to provide new information. For instance, when I return from seeing my friend's baby for the first time, I may say *What a cute baby he is!* We can see this case as introducing the proposition that the baby is very cute via accommodation (Lewis 1979), parallel to examples like *I didn't know that she had a new baby*.

(16) A: How tall is he?
B: Seven feet.
(17) A: How very tall he is!
B: *Seven feet. / He really is! / Indeed! / No he's not!

The response *Seven feet* in (16) provides the information requested by A's question; that is, it is an answer. (Theories of the semantics and pragmatics of questions provide a more formal and precise characterization of what it is to be an answer. For our purposes, we may leave the notion at the intuitive level.) In contrast, the same response in (17) is unacceptable when taken as an answer; to the extent that it's acceptable, it indicates agreement with A's presupposition, like *He really is!* and the other responses given.

Another criterion arising from the fact that exclamatives do not introduce a question into the discourse is their contrast with interrogatives in patterns like the following:

(18) How tall is he? Seven feet or eight feet?
(19) How very tall he is! *Seven feet or eight feet?

In (18), the second phrase serves to narrow the preceding question, indicating that the answer is to be drawn from the set {seven feet, eight feet}. In this light, it is clear why (19) is unacceptable. The exclamative does not introduce a question, so there's nothing for the follow-up phrase to narrow.

The final criterion for identifying exclamatives is that, unlike declaratives, they cannot be used as answers:[13]

(20) A: How tall is Tony's child?
B: *How very tall he is!

With this set of criteria, we can now determine whether a sentence whose status is unclear should be categorized as an exclamative. We can illustrate with examples (21)-(22) below:

(21) a. Who could be cuter than you?
b. Isn't he the cutest thing?
(22) He's so cute!

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[13] Certain yes/no exclamatives may be exceptions here. Though the English exclamative in (i), pointed out by McCawley (1973), is not clearly a full clause, its Italian counterpart in (ii) is:

(i) A: Is Tony's child tall? B: And how!

(ii) A: E' alto il bambino di Toni?
is tall the child of Tony
B: Eccome se è alto! (Italian)
and-how if is tall

We speculate that the conjunction which introduces B's utterance has something to do with why these are acceptable. Perhaps they conjoin an elliptical answer with the exclamative, as *Yes he is - and how!* or *Yes, and how he's tall!*

Another possible exception is the type seen in *Boy, is he!* or *Is he ever!* (McCawley 1973). We are not certain that these cases are truly exclamatives, however. They may be pronounced with falling intonation, like a declarative and unlike *And how!* They may be examples of Sadock's (1971) 'Queclaratives', sentences with the form of questions but the pragmatic force of assertion.

With regard to the rhetorical WH question (21)a, we can see that it may be embedded under a nonfactive predicate ((23)a), and under *I don't know* ((23)b); thus it is not factive. It may be answered ((23)c) and it does introduce a question which may be narrowed ((23)d), thus patterning with interrogative and not with exclamatives.

(23) a. I wonder who could be cuter than you.
b. I don't know who could be cuter than you.
c. A: Who could be cuter than you?
B: Nobody.
d. Who could be cuter than you? Your brother or your sister? Not even them!

We cannot construct examples with (21)a that allow us to test for the scalar implicature of exclamatives. *Who could be cuter than you* may not be embedded under *amazing* at all, and so we cannot attempt to embed it under *It isn't amazing...* or *Is it amazing....* (In general, questions may not be embedded under *amazing*. Given this, we may use embeddability under *amazing* as an additional criterion to distinguish exclamatives from interrogatives.)

The rhetorical yes/no question (21)b can be answered, as seen in (24), and thus behaves unlike exclamatives:

(24) A: Isn't he the cutest thing? B: Yes.

The other criteria are inapplicable, since a yes/no question cannot be embedded without major alteration of its structure. (One is hardly tempted to consider clauses introduced by *whether* or *if* as exclamatives, even in cases like *It isn't even a question whether he's the cutest thing!*) The only evidence available, then, namely the fact that it can be answered, leads us to consider (21)b an interrogative.

Finally, declaratives with *so* and *such* like (22) may be embedded under non-factive predicates ((25)a) and under *I don't know* ((25)b), thus failing the factivity test. When embedded under *amazing*, the sentence may be negated ((25)c) or questioned ((25)d), illustrating it lacks the scalar implicature of exclamatives. Moreover, it may serve as an answer ((25)e), once again patterning with declaratives and not exclamatives.[14] [15]

(25) a. I think he's so cute.
b. ?I don't KNOW that he's so cute.
c. It isn't amazing that he's so cute.
d. Is it amazing that he's so cute?
e. A: Is he cute? B: He's so cute.

In the rest of this paper, we classify sentences as exclamatives based on these tests, though for reasons of space we will not give the full set of examples.

[14] The first three examples are natural with contrastive intonation on *so*, *know*, and *amazing*, respectively. Note that (25)b has the same intonation and interpretation as the sentence with an embedded declarative *I don't KNOW that he's 6'5"* cited in footnote 24. We take this as further evidence that it is an embedded declarative.

[15] Michaelis & Lambrecht (1996) consider examples with *such* and *so* to be true exclamatives, but they do not have explicit criteria for distinguishing exclamatives from other clause types.

4. The semantic and pragmatic analysis of exclamatives

Our goal in this section is to provide a precise characterization of the sentential force of exclamatives. After outlining our proposal in section 4.1, we'll show how it is able to capture the informal, qualitative descriptions of what exclamatives do in terms of notions like 'surprise', 'unexpectedness', 'emotional reaction', and 'extreme quality' (section 4.2). We'll also discuss how it is able to explain the various semantic properties of exclamatives outlined above (section 4.3). Drawing on our own previous work, in this section and those following we'll make extensive use of data from Paduan. The reason for focusing on this language will become more apparent in section 5, where its unique syntactic properties become relevant.

As we discuss their semantic analysis, it is convenient to divide exclamatives in Paduan into two groups. Parallel to the distinction between WH and yes/no questions, we find both WH and \yes/no" exclamatives:

(26) Che roba che l magna! (Paduan)
what stu that he eats
'The things he eats!'

(27) No ga-lo magnà tuto!
neg has-s.cl eaten everything
'He ate everything!'

Example (26) is introduced by a WH constituent, and rates some of the things that he eats as surprising compared to other, more normal food. In contrast, the example in (27) lacks a fronted WH constituent; it compares the true proposition that he ate everything to the alternative that he didn't, rating the former as less likely.

4.1. Two components of the force of exclamatives

The analysis we propose has two main components: *factivity* and *widening*.[16] We will discuss how these two aspects of the meaning are syntactically represented in section 5; for now, let us use $R_{factivity}$ to refer to the representation of factivity in the syntax and $R_{widening}$ to refer to that of widening. The role of $R_{factivity}$ is straightforward. It introduces a presupposition that the propositional content of the exclamative is true. In terms of (28), this informally means that it is presupposed that he eats something.

(28) a. Che roba che l magna!
what stu that he eats
'The things he eats!'
b. The things he eats!

As for the contribution of widening, we assume that $R_{widening}$ has the semantics of a quantificational operator. To see the role of this operator, let us consider the following context. We're discussing what hot peppers some of our friends like to eat. The domain of quantification for $R_{widening}$, let us call it D1, is a set of peppers which contains (in increasing order of spiciness): poblano, serrano, jalapeño, and güero. Our friends who

[16] This concept of widening is related to that used by Kadmon & Landman (1993) in the analysis of *any*.

like spicy food tend to eat the poblanos, serranos, and occasionally jalapeños. About one of them, we say (28). In this context, the sentence implicates that he eats all types of peppers, not only all those in D1 but also, for example, the habanero, which is so spicy that it often makes people ill. Uttering (28) thus causes the domain of $R_{widening}$, D1, to be expanded to D2, including this additional type. This expansion of the domain is the widening component of meaning of exclamatives. Widening, in this sense, is closely related to Obenauer's (1994, p. 355) description of the meaning of exclamatives: the WH phrase binds a variable for which an appropriate value cannot be found in the contextually given domain. In order to find the appropriate value, one must look outside of the domain. Though Obenauer's semantic ideas are not spelled out in more detail than this, they clearly bear a close intuitive similarity to our own proposal.

The factivity and widening components can be seen as related to one another.[17] Given that exclamatives are presupposed, certain functions for root occurrences of them are ruled out. Their sentential force cannot be that of assertion, since that would conflict with the presupposition that the information is already known (though they could, via presupposition accommodation, indirectly introduce new information). They cannot be questions, because it would be pointless to ask a question where the answer is presupposed to be known. Finally, they cannot be imperatives because one wouldn't give an order to do something which one knows will be the case anyway.[18] Assuming that each type of root clause must have some function, another type of function must be available for exclamatives. The role of affecting, in particular widening, the domain is a plausible one for them to have.

Our goal in the rest of this section will be to formalize the contributions of factivity and widening. As discussed in the speech act theory literature (e.g. Austin 1962, Searle 1965), the illocutionary meaning of a sentence is made up of two components, a propositional part and a force. Building on their syntactic similarity to questions, we propose that the propositional part of the meaning of exclamatives is identical to that of questions, while the force will differ. In particular, we'll work with one prominent approach to the semantics of questions, the *proposition-set* view (Hamblin 1973, Karttunen 1977, Groenendijk & Stokhof 1984), according to which questions denote sets of propositions. We'll follow Karttunen in particular in treating questions as denoting their set of true answers. (The other proposition-set views could also be used.) Thus, the question *What does he eat?* might denote a set like {'he eats poblanos', 'he eats serranos', 'he eats jalapeños'}. This same set would be the propositional content of (28)a, as given in (29).[19]

(29) [[che roba che l magna!]] = {p : p is true and ∃ a [p = 'a is a pepper and he eats a']} = {'he eats poblanos', 'he eats serranos', 'he eats jalapeños'}

Now we are able to examine how we can define widening within our approach. To do this, we need to discuss the notion of the domain of quantification for $R_{widening}$. In WH exclamatives, this is intuitively thought of as the set from which values for the WH phrase may be drawn; in (28), it would be the set of peppers D = {poblano, serrano,

[17] This point was suggested to us by Manfred Krifka (personal communication).

[18] These points are related to the preparatory conditions on speech acts discussed by e.g. Searle (1965).

[19] Note that we differ from traditional speech act theory, according to which the propositional part of a sentence's meaning is taken to be a single proposition. We think of it more broadly, as the semantic object in terms of which the sentence's illocutionary force is defined.

jalapeño, güero}. The semantics of the clause must then be given in terms of this contextually provided domain of quantification for $R_{widening}$ and an ordering on a subset of D; this is represented by a subscript as in $[\![S]\!]_{D,\prec}$. Given this, we propose that widening consists in the context change in (30):

(30) **Widening**: For any clause S marked by $R_{widening}$, widen the initial domain of quantification for $R_{widening}$, D1, to a new domain, D2, such that
(i) $[\![S]\!]_{D2,\prec} - [\![S]\!]_{D1,\prec} \neq \varnothing$ and
(ii) $\forall x \forall y[(x \in D1 \ \& \ y \in (D2 - D1)) \rightarrow x \prec y]$.

Here, $[\![S]\!]_{D2,\prec}$ is the set of true propositions of the form 'he eats x', where x is drawn from the new domain D2, while $[\![S]\!]_{D1,\prec}$ is the corresponding set for the old domain D1. Saying that the difference between these two, $[\![S]\!]_{D2,\prec} - [\![S]\!]_{D1,\prec}$, must be non-empty amounts to requiring that new things that he eats be added to the domain. In the scenario outlined above, D2 would differ from D1 in containing habaneros, an the sentence would say that he even eats this very spicy pepper. Thus, the analysis can be seen as representing the intuition that (28) says that he eats any kind of pepper, and that if there is any sort he doesn't eat, it's beyond even the widened domain D2 and thus so far out that it's not worth consideration.[20]

Turning to yes/no exclamatives, note that the Paduan example (27) above contains an instance of negation. Before we can discuss how widening applies to this case, let us point out some relevant facts which may be observed in negative yes/no questions. Let's look at the following examples:

(31) a. Did he eat everything?
b. Didn't he eat everything?

With regard to (31)a, the true answer might be either *he did* or *he didn't*. Thus, its propositional content is either {'he ate everything'} or {'he didn't eat everything'}, depending on which is true. In contrast, because (31)b is a negative question, it is implicated that the true answer should be *he did*; thus, the propositional content of the question must be {'he ate everything'}.[21] Returning now to the yes/no exclamative,

[20] One could consider the possibility that the ordering represented by $\prec$ is not part of the explicit content of widening, but rather that (30)(ii) is a pragmatic implicature which results from the simpler (30)(i). A case where this would potentially be problematical is the following: suppose that in the context of (28), the hearer has simply not been thinking of the jicama (a type of root vegetable. Then, one might expect that (28) could be uttered to draw attention to the fact that the set of relevant vegetables must be expanded. But such a use seems impossible, unless the jicama can be construed as extreme on some relevant scale, for example 'unfamiliarity'; it can't be an ordinary vegetable which the hearer has simply failed to consider. This point suggests that part (ii) of (30) is needed. However, there is a possible alternative. Suppose we require that any domain of quantification for Rwidening be $\prec$-inclusive, in the sense that if x and y are in D and $x \prec z \prec y$, then z is in D. In that case, it would only be possible to widen, as in (30)(i), by adding an element which is extreme on the $\prec$ scale. Thus, (30)(ii) might be unnecessary. We don't take a stand on the choice between these alternative formulations here.

[21] If the implicature is false and the hearer answers by canceling it (*No, he DIDN'T*), we can think of this in two ways. One possibility is that we take the semantics of a negative yes/no question to be the same as the positive one; then the propositional content of the negative question would be {'he didn't eat everything'} in this case. The other possibility is that the negative question has no true answer when its implicature is false; in this instance, its meaning would be the empty set.

repeated below, its negation plays a similar role to that in the negative yes/no question (31)b:

(32) No ga-lo magnà tuto! (Paduan)
neg has-s.cl eaten everything
'He ate everything!'

Because of the negation, (32) can be used to conventionally implicate that he ate everything. A situation in which this might be uttered is one where we are talking about a child who rarely eats all of his meal. On a particular occasion, however, he does. The fact that (32) is used in contexts where the child has eaten everything confirms the idea that it is appropriate to think of it as having a meaning analogous to (31)b.

Another thing we have to decide before the definition of widening can be applied to yes/no cases is what the domain of quantification for $R_{widening}$ would be. Since there is no WH word, we can't appeal to the set of possible values for the WH word, as we did above. We propose that this type of yes/no exclamative involves widening the domain of events under discussion; that is, we go from talking about 'normal' events of a certain type to considering even exceptional ones. In the case of (32), D1 would be the set of normal eating situations for the child we're talking about. $R_{widening}$ would then say to widen D1 to D2 so as to add true propositions to the original proposition-set. Since a yes/no exclamative, like a yes/no question, denotes either a singleton set or the empty set, in order for this to be possible, two conditions must hold: First, the proposition 'he has eaten everything' must be true with respect to D2. And second, this proposition must not be true with respect to D1; that is, we must have added to the domain an unusual case in which he has eaten everything.[22] Noting the existence of such an unusual case is precisely what (32) does.

Next we turn to a definition of factivity as it applies to exclamatives. Definition (33) says that any proposition which has been added to the denotation of the clause through widening is presupposed to be true:

(33) **Factivity**: For any clause S marked by $R_{factivity}$, every $p \in [\![S]\!]_{D2,\prec} - [\![S]\!]_{D1,\prec}$ is presupposed to be true.

In the case of (28), the factive presupposition is that he eats this hottest pepper of all, the habanero. In the case of the yes/no exclamatives like (32), recall from the discussion of widening that its denotation with respect to the initial domain D1 is the empty set, while that with respect to the new domain D2 is {'he ate everything'}. The characterization of factivity in (33) generates a presupposition that this new proposition in $[\![S]\!]_{D2,\prec}$ is true; i.e. it's presupposed that he ate everything. Notice as an aside that according to this reasoning the presupposed proposition, 'he ate everything', is not negative, despite the presence of no. In this way, we can account for the description of this case as containing 'expletive negation' (see also Portner & Zanuttini 2000).

[22] The proposal would work equally well if the proposition-set is empty with respect to D1 or if it is {'he didn't eat everything'}. In either case, 'he ate everything' will be in $[\![S]\!]_{D2,\prec} - [\![S]\!]_{D1,\prec}$.

4.2. Widening and informal descriptions of exclamatives

With this formal proposal in hand, we turn next to a discussion of how it can capture the intuitions behind various qualitative descriptions of the use of exclamatives. One frequently finds concepts like 'unexpectedness', 'extreme degree' and 'speaker's strong feelings'; for example, Michaelis & Lambrecht (1996: 239) consider 'scalar extent' and 'assertion of affective stance: expectation contravention' to be definitive properties of all exclamatives. We do not build our analysis on these concepts because they are difficult to make precise and because (as we will see) they do not always seem to be present. Instead, we will show that that these properties, to the extent that they characterize exclamatives accurately, can be derived from our concepts of factivity and widening.

One intuition is that exclamatives convey an unexpected fact. One way to think about this would be to take an example like *How tall Muffy is!* as saying that it was unexpected that she is tall. This cannot be correct in general, however, given examples like *What a delicious dinner you've made!* or *What a nice house you've got!* In these cases, the speaker doesn't mean to imply that he or she didn't expect a good dinner or a nice house. Rather, the speaker implies that Muffy is taller than expected (the dinner is more delicious than expected, the house is nicer than expected). This way of describing the meaning of exclamatives is completely in accord with our approach, since widening the domain amounts to adding possibilities to those in the previously expected range. However, our approach makes clear that exclamatives have a different meaning from declaratives of the form 'It is unexpected that p'. Though exclamatives also convey the sense of unexpectedness, they do so through a different sentential force. That is, while the declarative *It is unexpected that she is as tall as she is* and the exclamative *How tall she is!* end up contributing similar information to the conversation, they do so through different routes: the former through assertion and the latter through widening.

Another way we could describe the meaning and function of exclamatives is by saying that they mark the fact that an entity has some property to an extreme degree (cf. among others Milner 1978, Gèrard 1980). For example, *How tall Muffy is!* says that Muffy has the property of tallness to a very high degree. While this is certainly correct, it cannot be a complete description since it doesn't explain how the exclamative differs from declaratives like *Muffy is very/quite/extremely tall.* Our analysis in terms of widening can account for the intuition behind descriptions in terms of 'extreme degree'. With a scalar word like an adjective as the head of the exclamative's WH phrase, the domain of quantification for $R_{widening}$ is a set of heights. These heights are organized into a scale, and a domain will naturally be taken as a continuous subpart of the scale, in that if 5'10" and 6' are in domain of quantification, 5'11" will naturally be as well. Saying that the force of exclamatives involves widening the domain means that the subpart of the scale considered relevant for the case at hand must be extended. This will result in the inclusion of new heights previously considered too great for consideration, one of which will be that of Muffy.

In order to make this reasoning more precise, we'd need to cast it in terms of theories which have been developed to account for the vagueness of scalar terms, comparatives, and the like (e.g. Russell 1905, Cresswell 1976, Hoeksema 1983, von Stechow 1984, Rullmann 1995, Kennedy 1997). In particular, the semantics must be framed in terms of degrees (e.g. of tallness) rather than simple quantities (like heights). Simply talking in terms of the latter wouldn't allow us to explain why extensions of the domain must be in a certain direction (in the case at hand, towards greater rather than lesser heights). We will leave working this out further to future research.

A final way one might try to describe the meaning of exclamatives, in particular in contrast to declaratives, is by saying that they express the speaker's strong feeling towards what is being said. As it stands, this characterization is too vague to tell us much about the function of exclamatives; after all, it doesn't tell us much about what exclamatives do to simply know that one who says *How tall Muffy is!* has some feeling towards this fact. There are various ways in which we might try to make this intuition more precise. One possibility is to frame the contribution of exclamatives as conveying an emotional reaction of some sort. Thus, *How cute Shelby is!* can be seen as expressing adoration and *What a vicious dog I met on my bike ride!* as expressing fear. The sense that emotion is involved in these cases arises from the particular lexical items, and the scales they introduce, along with the force of widening. If Shelby is cute to a degree beyond what was contemplated before, this is naturally seen as the cause of adoration; likewise, if the dog the speaker met is vicious beyond what we had thought possible, it is plausible to conclude that it caused fear in the speaker. Furthermore, there are cases in which it's not so clear that any emotional reaction is being expressed by an exclamative: *How tall she is!* or *What a cool day it was yesterday in New Delhi!* Of course these may be seen as conveying emotion, though in many contexts it seems more relevant to say they simply indicate something surprising. But at this point, our concept of widening is able to provide a more formal characterization of the same idea. With the example *What a cool day it was yesterday in New Delhi!*, widening means that the temperature is below what we had considered as a relevant possibility before; learning that one's expectations are not met is precisely what gives rise to a feeling of surprise. However, this is the kind of case which very clearly need not generate an emotional reaction in the ordinary sense (for instance, if we take the exclamative as an offhand remark made over the morning paper's weather section).

To sum up, we have suggested that our notion of widening can account for various informal ways in which one can describe the function of exclamatives. The primary advantages of our approach are (i) that it is more precise, and (ii) that it makes clear the difference in force between exclamatives and declaratives like *It is surprising that . . .* which assert closely related content.

4.3. Returning to the tests for exclamative status

Next we will show how our formal analysis of the meaning of exclamatives is able to explain the data underlying the various tests for exclamative status introduced in section 3. Recall that the tests fell into three categories: factivity, scalar implicature, and question-answer relations. We will look at each in turn.

4.3.1. Factivity

The reason our analysis is able to account for the factivity facts is simple: we have directly incorporated a factivity component into the semantics (see (33)). One effect of factivity is that exclamatives are incompatible with non-factive predicates, as was seen in (11). This follows from the presuppositional status of exclamatives, along with the point, noted by Grimshaw (1979), that non-factive predicates are incompatible with factive complements in general. That is, they are not merely *non*-factive, they are *anti*-factive. The following data makes this point ((34)a is from Grimshaw 1979; see also Kiparsky & Kiparsky 1970):

(34) a. *John proposed the fact that they had gone to the movies.
b. John regretted the fact that they had gone to the movies.

Our factivity principle can also explain the ill-formedness of examples like (12) and (35) below:

(35) *I don't know how very tall Tony is.

The embedded exclamative is impossible because of an incompatibility between the factive presupposition and the lack of speaker's knowledge asserted by the sentence. To show that this intuition follows within our formal implementation requires a certain amount of detailed work. First, we need to go over both the presupposition and the assertion of (35). We'll begin our discussion by looking at the positive version, (36):

(36) I know how very tall Tony is.

In order to calculate the factivity presupposition for the embedded exclamative, we must compare its denotation with respect to two domains, D1 and D2, each a set of heights (or more accurately, degrees of tallness). D2 is the actual domain at the time the sentence is used, while D1 is some other, smaller domain salient in the context. In the case of (36), we seem to be comparing Tony's actual height to what would be expected for a man like him. Supposing he is 6'5", but that men like him are typically no more than 6' tall, the two domains might be as follows:[23]

(37) a. D1 = {5'5", 5'6", 5'7", ..., 6}
b. D2 = {5'5", 5'6", 5'7", ..., 6, 6'1", ..., 6'5"}

Given these two domains, it is presupposed via the definition of factivity in (33) that Tony is 6'5".

Notice that even in the case of an embedded exclamative like (36), we make use of two domains as part of the calculation of factivity. With root exclamatives, the two domains were those associated with widening. Since we have identified widening as the force of exclamatives, we don't expect it to occur with embedded examples as well (since they lack an independent illocutionary force). So, one might ask, what are these two domains? Looking at example (36), it appears that the two domains stand in the kind of relationship which would be appropriate for widening at the root level. Thus, D1 re the 'expected' values while D2 also contains more extreme values, one of which we know to be the true one. If such a D1 and D2 are not available in the context, the exclamative cannot be used. This would only come about if either of the following conditions were to hold: (i) we didn't have an expected range of values, or (ii) we didn't know what the true value was. But of course a failure in (i) would go against the very raison d'être of exclamatives, while a failure in (ii) would imply that factivity does not hold.

Given this factivity presupposition for the embedded exclamative in (36), we must now consider what the larger structures containing it presuppose. As observed by

[23] We present the degrees of height under consideration as specific numerical measurements (interpreted as 'at least n', so that all of the measurements in (37)b may be true). Only rarely would this be truly appropriate (e.g. in talking about basketball players), but it's simpler than discussing the example using terms like 'average height', 'a bit taller than average', 'pretty tall', etc.

Karttunen (1973), a sentence of the form V -, where V is an attitude verb like *believe, know, claim, hope,* etc., presupposes that believes whatever - presupposes. Thus, *Mary knows that it stopped raining* presupposes that Mary believes that it was raining before. Hence, given the context we have set up, (36) presupposes that the speaker believes that Tony is 6'5". Example (35) has the same presupposition, since negative sentences inherit the presuppositions of their positive counterparts.

Recall that our goal is to show that this presupposition for (35) is in con with what it asserts. Given that we are treating exclamatives semantically like interrogatives, we can interpret *know* plus an exclamative in parallel to *know* plus an indirect question. Continuing to follow Karttunen's (1977) semantics for questions, (38) means that the speaker knows each (true) proposition in the denotation of *how tall Tony is.*

(38) I know how tall Tony is.

Applied to (36), this means that the speaker knows that Tony is 6'5". The negative counterpart (35) thus asserts that the speaker does not know that Tony is 6'5". But this is in con with the presupposition that the speaker believes Tony is 6'5".[24] This con we claim, is the reason for the ungrammaticality of (35).

4.3.2. Scalar implicature

Next we will use our analysis of widening to explain the facts attributed in section 3 to the scalar implicature of exclamatives. These were (14)a and (15)b, repeated below along with their Paduan counterparts:

(39) a. *It isn't amazing how very cute he is.
b. *No ze incredibile che belo che el ze.
neg is incredible how cute that s.cl is (Paduan)

(40) a. *Is it amazing how very cute he is?
b. *Ze incredibile che belo che el ze? (Paduan)
is incredible how cute that s.cl is

Recall that we explained the ungrammaticality of these examples in terms of an incompatibility between the scalar implicature of the exclamative and the denying or questioning of the predicate *amazing*. Here we will treat the scalar implicature as an effect of the comparison between two domains, the correlate of widening for embedded exclamatives discussed in section 4.3.1. We will show that this aspect of the meaning of exclamatives is incompatible with negating or questioning *amazing*. (We will only go over the explanation in detail in the case of negation (39); things work similarly for the question (40).)

[24] The only way the assertion and presupposition of (35) could fail to be contradictory would be the odd situation in which the speaker believes Tony is 6'5" (which he is) but lacks the right kind of justification for this belief to be knowledge (and knows his or her justification to be inadequate). But if one is remarking on one's lack of adequate justification for *p*, it's odd to simultaneously presuppose that one believes *p*. We think this is the source of the ungrammaticality of the sentence even in this kind of context. The sentence which is naturally used to report this type of situation, *I don't KNOW that Tony's 6'5"*, differs in that it doesn't presuppose the speaker's belief that Tony is 6'5", but rather just implicates it.

In order to make the explanation precise, we need to make a detour into the details of the meaning of *amazing*. Let us consider some additional data contrasting minimally with (39).

(41) a. It's amazing how cute she is. (embedded Q, no experiencer)
b. It's amazing how very cute she is. (embedded E, no experiencer)

(42) a. I'm amazed at how cute she is. (embedded Q, experiencer subject)
b. I'm amazed at how very cute she is. (embedded E, experiencer subject)

The two examples in (41) lack a thematic subject, like (39), contrasting with the experiencer subject sentences in (42). (41)a and (42)a differ from their (b) counterparts in containing an embedded question, as opposed to an embedded exclamative.

The incompatibility with negation noted in (39) only holds with the experiencer-less construction. Negation is fine when the experiencer subject is present:

(43) I'm not amazed at how very tall she is.

This shows that *It's amazing ...* has a different meaning from *I'm amazed at ....* We will use the contrast between (41) and (42) to determine what this meaning difference is, with the ultimate goal of seeing precisely what the experiencer-less *amazing* means and why it is incompatible with negation. The first thing to note is that the two examples (41)a and (41)b are synonymous. We know that the embedded exclamative in (41)b involves a relation between two domains parallel to that which contributes widening at the root level. We also know that questions do not involve widening. Thus, for the two sentences to be synonymous, this comparison of two domains must be coming from somewhere other than the embedded question in (41)a. The only plausible candidate is *amazing* itself. We thus hypothesize that the meaning of *amazing*, when it lacks a thematic subject, makes a contribution parallel to that of an embedded exclamative; more precisely, it asserts the existence of two domains D1 and D2, the former the expected range and the latter an extension of this which includes the value presupposed to be true. Given this, negating this version of *amazing*, as in (37) above, will lead to a contradiction between the presupposition, from the exclamative, and denial, from the negation of *amazing*, that two such domains exist.

The experiencer sentences with *amazed* at differ in that they have additional entailments pertaining to the (denotation of the) subject. Thus, the examples in (42) imply that the subject has a specific kind of subjective experience, a feeling of 'marvel'. This aspect of its meaning is over and above the comparison of two domains present in the meaning of the sentences in (41). It is this difference which accounts for the grammaticality of (43). In this case the negation may be taken as denying the subjective experience of marvel, and not the domain comparison, and so it can be compatible with the interpretation of the embedded exclamative. This contrasts with (41), where negation may only be seen as denying that a D1 and D2 of the relevant sort exist.

This way of looking at the meaning of *amazed* at also explains another fact: when the subject is other than I, examples with an embedded question, (44)a, and those with an embedded exclamative, (44)b, differ in meaning:

(44) a. Linda is amazed at how cute the baby is.
b. Linda is amazed at how very cute the baby is.

While in both cases an expected and a widened domain are compared, there is a difference in terms of whose expectations are at issue. Example (44)a says that the degree of cuteness exceeds what the subject expected; (44)b implies in addition that the speaker also finds her degree of cuteness exceptional. This difference can be brought out in a situation where the subject's and the speaker's expectations differ. For instance, suppose that Linda does not in general think that babies are cute, whereas the speaker finds each and every baby darling. In such a situation, while the use of (44)b may implicate that the speaker finds the baby's appearance especially worthy of exclamining, (44)a does not. We may explain this difference as follows: In (44)b (as in (42)), both *amazed at* and the embedded exclamative bring about a comparison of two domains. The expected domain D1 relevant for *amazed at* re the subject's expectations, while the D1 associated with the embedded exclamative has to do with the speaker's. In this way, with an embedded exclamative both the speaker and the subject must be committed to the situation's being worthy of exclaiming. In contrast, with (44)a only *amazed at* brings in an expected domain (Linda's); the embedded question does not.

4.3.3. Question/answer relations

Finally we return to the facts showing that exclamatives may not be answered and typically may not be used as an answer. The first point follows from the simple fact that the function of exclamatives is not to introduce a set of alternatives into the discourse in the way questions do. Rather, we have proposed that their function is widening the domain. The specifics of our account of widening don't play a role here; the point is simply that the force of exclamatives does not affect the discourse in a way which opens the door for answering.

Exclamatives typically cannot be used as an answer because they are factive (though we noted a possible exception in note 13). In general, a sentence being used as an answer may not presuppose the information which provides the answer, as pointed out by Grimshaw (1979). Thus, (45) is unacceptable because *It's odd that...* is factive (Grimshaw's example (154), p. 321):

(45) A: Did Bill leave?
B: *It's odd that he did.

Since exclamatives are factive, we expect them to be impossible as answers.

4.4. Conclusion

In this section, we have identified two semantic properties which characterize exclamatives: they are factive and they trigger the operation of widening. These semantic components together can explain all of the data which motivated our criteria, and could capture various informal ways of describing the contribution of exclamatives.

5. The structure of exclamatives

We now turn to the 'form' side of the form/meaning pairing which is the basis of the concept of clause type. Our picture of the syntax/semantics interface suggests that a clause should be an exclamative if and only if these two components are structurally represented. In this section, we argue that this is so, looking at data from Paduan,

English, and Italian. In particular, we propose that widening is tied to the presence of a WH operator.[25] The widening operation discussed in section 4 requires a set of alternative propositions, and the WH operator provides this set of alternatives in just the same way as it does in an interrogative. In addition, we claim that the factivity of exclamatives is represented by a CP layer of structure. The purpose of this section is to support the idea that factivity is syntactically represented in the CP-domain.

5.1. CP-recursion: some initial evidence from Paduan

Paduan provides direct evidence that exclamative clauses contain an extra CP layer of structure. We will identify three ways in which WH exclamatives and questions in Paduan differ syntactically,[26] and then show how these differences can be explained by proposing a second layer of CP for exclamatives. In Section 5.2 we will provide arguments that exclamatives in other languages, in particular Italian and English, have a similar structure.

The first contrast between exclamatives and interrogatives in Paduan is in the linear order of the WH phrase with respect to left-dislocated constituents (cf. Benincà 1996). WH constituents in questions can follow, but cannot precede, left-dislocated elements:

(46) a. A to sorela, che libro vorissi-to regalar-ghe? (Paduan)
to your sister, which book want-s.cl give-her
'To your sister, which book would you like to give as a gift?
b. *Che libro, a to sorela, vorissi-to regalar-ghe?

(47) a. To sorela, a chi la ga-li presentà?
your sister, to who her have-s.cl introduced
'Your sister, to whom have they introduced her?
b. *A chi, to sorela, ghe la ga-li presentà?

In contrast, complex WH constituents in exclamatives may precede the left-dislocated element:[27]

(48) a. Che bel libro, a to sorela, che i ghe ga regalà!
what nice book, to your sister, that s.cl her have given
'What a nice book, to your sister, they gave her as a a gift!'
b. In che bel posto, to fjolo, che te lo ga mandà!
in what nice place, your son, that s.cl him have sent
'In what a nice place, your son, you sent him!'

We can summarize Benincà's (1996:41) conclusions about the possible relative orders among left dislocated elements and WH constituents as follows:

(49) Left dislocation - WH exclamative - Left dislocation - WH interrogative

[25] Based on data from Dutch, Corver (1990, Ch. 5) argues that the WH operator *wat* ('what') in CP can function to mark a clause as exclamative.

[26] The precise characterization of all of the subtypes of exclamative clauses in Paduan is quite complex. See Zanuttini & Portner (2000) for detailed description.

[27] Simple ones may not, nor may WH phrases headed by adjectives or adverbs. We discuss these facts in detail in section 6.1.

The pattern of behavior of WH phrases in exclamatives is in this way similar to that of WH phrases in relative clauses, discussed by Rizzi (1997).

The second way in which questions and exclamatives in Paduan differ is with respect to the nature of the element in the C position. The WH constituent in an exclamative co-occurs with either the complementizer *che* or the complex head [$_V$ *no* V] (plus associated clitics) in C:

(50) a. Cossa *che* l magnava!
what that s.cl ate
'What things he ate!'

b. Che libro *che* te lezi!
what book that s.cl read
'What a book you are reading!'

(51) a. Cossa [*no ghe dise-lo*]!
what neg him says-s.cl
'What things he's telling him!'

b. Che libro [*no lezi-to*]!
what book neg read-s.cl
'What a book you are reading!'

In contrast, co-occurrence of the WH phrase and the complementizer *che* or *no*+V is never possible in matrix questions:

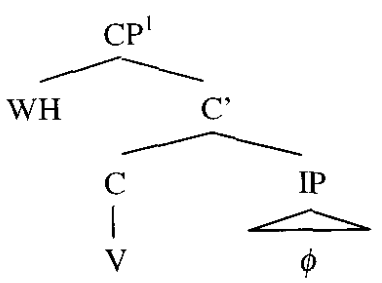
(52) a. *Cossa *che* l magnava?
what that s.cl ate
'What did he eat?'

b. *Cossa *no ga-la* magnà?
what neg has-s.cl eaten
'What didn't she eat?'

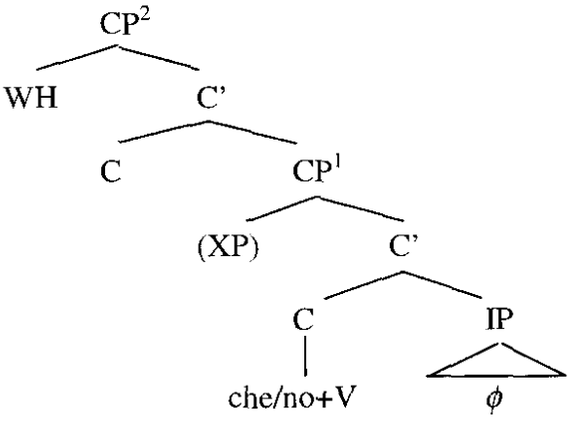
A final difference between Paduan WH questions and exclamatives concerns the obligatoriness of movement: overt movement is obligatory in exclamatives but not in questions (Benincà 1996, Gérard 1980, Obenauer 1994, Radford 1982).

We take the similarities we have examined to suggest that questions and exclamatives both involve movement of the WH constituent to a CP position. At the same time, we take the observed differences to suggest that the requirements that must be satisfied in the two cases are not identical. In particular, we hypothesize that exclamatives involve movement to a position which is structurally higher than the one involved in questions:

(53) Questions:



(54) Exclamatives:



Given these structural analyses of the two clause types, the properties differentiating exclamatives from interrogatives are derived as follows:

- The WH phrase occurs in the higher CP in the syntax, leaving room for another phrase in the spec of the lower CP.
- The lower C^0 is always filled, either by *che* or by *no* plus the verb; the fact that the WH phrase is in the higher projection allows for the presence of *che* without a doubly-filled-COMP filter violation.[28]
- The higher specifier of CP position must be filled, giving rise to the obligatoriness of movement in exclamatives.

We speculate that yes/no exclamatives also use both layers of CP structure, though we don't have the same kind of direct evidence available with WH exclamatives. In (55) and (56)a, the obligatory *boy* or *ecome* can be seen as residing in the higher CP. However, the negative inversion (56)b would have to be seen as containing an abstract operator in this position.

(55) *(Boy) if syntax isn't fun!

(56) a. *(Ecome) se l ga pianto! (Paduan)
and how if s.cl has cried
'And how she cried so!'

b. No ga-lo magnà tuto!
neg has-s.cl eaten everything
'He's eaten everything!'

We leave a more detailed analysis of yes/no exclamatives to future work.

Besides the empirical arguments concerning Paduan given above, there is another, more theoretical point which supports the idea that exclamatives may involve an extra layer of CP structure. This arises from the factivity of exclamatives. It has been argued by Watanabe (1993) that factive complement clauses involve CP-recursion. Assuming that this is correct, it is plausible to suggest that the factivity of exclamatives is syntactically encoded by the presence of the extra CP layer (i.e. CP^2 in (54) is the $R_{factivity}$ of section 4.1). We will discuss the connection to factivity in more detail in section 5.2.

[28] Embedded WH questions may contain *che*. Thus whatever principle rules out a doubly-filled-COMP in root interrogatives is not operative in embedded contexts.

Stepping back for a moment, we'd like to point out for future research the number of connections among the categories of NP, factive complement clause, and exclamative. To begin with, some exclamatives in English have the structure of noun phrases:

(57) a. The things he eats!
b. The things he does to impress his friends!

In addition, others resemble free relatives, as seen in (58):

(58) a. What things he eats! (cf. What things he eats I eat too.)
b. What he does to impress his friends! (cf. What he does to impress his friends bothers me.)

Admittedly there are differences between the ordinary free relative construction and the subtype of exclamatives in (58); for instance, a free relative allows *who* as its WH word (*I like who he likes*), but an exclamative doesn't (**Who he likes!*). Nevertheless, the overall affinity between exclamatives and NPs in English supports treating the cases in (58) as free relatives in terms of their structure. Rizzi (1997) argues that Italian relatives involve WH movement to a higher projection than interrogatives. Given that the exclamatives in (58) have the structure of free relatives, this supports our contention that exclamatives in general involve multiple layers of structure in the CP-domain. This way of looking at things suggests a link to the analysis of factives more broadly. Factive complement clauses have been argued to involve structure above the basic CP level, and this structure has been identified both as a CP (Watanabe 1993) and as an NP (Kiparsky & Kiparsky 1970). Furthermore, Koster (1994) mentions that clausal complements of factives in Dutch behave like NPs in that they are obligatorily in pre-verbal position. The overall picture that emerges here is that factives in general, and exclamatives in particular, are expressed with structures containing a CP plus another maximal projection above. This higher projection has been analyzed as an NP or a CP. In the long run we'd like to investigate whether it may indeed be of either category, or whether it has a uniform analysis with the surface properties of one or the other emerging in different languages or contexts.

5.2. The syntax of factivity

In the previous section we discussed evidence that exclamatives contain a more articulated CP structure than interrogatives. We will now provide arguments that this extra structure is connected to one of the two semantic properties that characterize exclamatives, namely factivity. In doing so, we build on the work of Watanabe (1993), who argues that factive complement clauses involve CP-recursion. He proposes the following structure for embedded factive declaratives, where FACT represents a 'factive operator':

(59) a. John regrets that he fired Mary. (Watanabe 1993: 527)
b. ... $[_{CP}$ $[[_{C}$ that$_i$ $[_{CP}$ FACT $[[_{C}$ $t_i]$ IP]]]]]

He presents both empirical and theoretical motivations for such structure. On the empirical side, he uses it to account for the well-known observation that adjunct extraction is more difficult from factive clauses than from non-factive ones; the factive

operator occupies the specifier of (the lower) CP, thus blocking movement of the adjunct.[29] On the theoretical side, he adopts the proposal of Authier (1992) that a clause with any type of material in the specifier of its highest CP is typed as a WH-clause. In (59) *regret* selects a non-WH complement; hence, the top CP layer of its complement clause must have an empty specifier so as not to be typed as a WH clause. This motivates the presence of an additional CP layer above the one hosting FACT. The derivation indicated in (59)b involves creating this second CP by raising *that*. This is necessary to allow FACT to be selected by the higher predicate; the idea is that a configuration in which the two CPs share the same head allows *regret* to have a selection relation towards both of them.

Watanabe makes a similar proposal for embedded topicalization like (58):

(60) a. John said that this book, Mary should have read. (Watanabe 1993: 524)
b. ... $[_{CP}$ $[[_{C}$ that$_i$ $[_{CP}$ this book $[[_{C}$ $t_i]$ IP]]]]]

For us, the main relevance of his analysis of embedded topics is that they show overtly that the specifier of the lower CP is occupied. Since FACT and the topic compete for the same position, this predicts that embedded topicalization should be impossible in factive complements. This prediction is borne out in the following examples, as noted by Iatridou & Kroch (1992) and Watanabe (1993):

(61) a. *John regrets that Mary he fired.
b. *John regrets Mary that he fired. (Watanabe 1993: 528)

While (61)a is certainly better than Watanabe's (61)b, it is nevertheless unacceptable.

Given recent theoretical work on the nature of the CP domain (Rizzi 1997, Benincà 2001, among others), the syntactic analysis of this type of data needs to be revisited. In particular, we now take the CP domain to provide several positions for clause-initial elements, differentiated by their semantic/pragmatic function, and so (61) can't simply be explained in terms of competition for a single specifier position. Moreover, on the empirical side it seems at best partially correct to say that factive complements are incompatible with a clause-initial topic. As pointed out to us by a reviewer, data like the following are acceptable:

(62) Mark didn't understand the first part of your thesis. In fact, he regrets that *most of it* he was unable to understand.

Assuming that Iatridou & Kroch and Watanabe's basic intuition is correct, the question is whether a more sophisticated understanding of the structure of CP allows us to accommodate data like (62) as well.

Without undertaking the whole project of reinterpreting Iatridou & Kroch and Watanabe's idea in Rizzi-style terms, it does seem to us that the embedded topic in (62) has a special status. It is clearly focused and constrastive with *the first part of your thesis*. The split-CP framework provides separate positions for contrastive topics (Rizzi's "focalized elements") and neutral topics, and perhaps only the latter are

[29] Watanabe also comments on the impossibility of complementizer deletion in factive complements. However, his explanation of this property is presented as a speculative remark and requires additional assumptions not relevant here, so we will not discuss it further.

in complementary distribution with the factive operator. In any case, what we care about here is the question of whether there is evidence independent of exclamative constructions for the presence of a factive operator in the syntax. The work of Watanabe and Iatridou & Kroch can still be seen as providing such evidence as long as they have shown an incompatibility between factivity and some particular variety of topical element.

Returning to the analysis of exclamatives, we adopt the idea that factivity is represented by a factive operator in the CP domain and suggest a more precise representation for (63):

(63) a. Che alto che l ze! (Paduan)
what tall that s.cl is
'How tall he is!'

b. [$_{CP}$ che alto [[$_{C}$ Ø] [$_{CP}$ FACT [$_{C}$ che] IP]]]

In this construction, two specifiers of CP are needed in order to host both the factive operator and the WH phrase.

A side issue that arises here is how WH-movement of *che alto* is able to move past the factive operator, given the island effects attributed to this operator by Watanabe. We suggest that FACT does not have the right feature content to count as an intervening potential attractee for WH movement to the higher CP; specifically, it has no WH feature. This way of looking at WH exclamatives still allows an explanation of why extraction is not possible from embedded factives like (59). Movement of a WH phrase to the specifier of the highest embedded CP in (59) would type the clause as WH, and this would be incompatible with the selectional requirements of *regret.* (In the complement of a non-factive, the Spec of CP will not be filled by FACT; once the WH phrase lands there, the complementizer can raise to prevent the clause from being typed as WH.) Direct movement from the embedded IP to the main clause's specifier of CP is ruled out by whatever forces successive cyclic movement; in Chomsky's (1998) terms, this would be the fact that only the periphery of a phase is visible to subsequent derivation.

We may now see how the structure proposed in (63)b types the clause as an exclamative. In root contexts, the mere presence of the factive operator suffices, as no other clause type is compatible with factivity when unembedded. As mentioned earlier, this is so because it does not make sense to assert, order, or ask about a proposition which is presupposed to be true. In embedded contexts, the structure is rather similar to embedded factive declaratives like (59), but the combination of the WH element and the factive operator distinguishes exclamatives from all other types. On the one hand, while embedded interrogatives would contain a WH feature, they are not compatible with factivity; on the other, embedded declaratives could have the factive operator, but are incompatible with the WH constituent.

We can now turn to how these ideas may be applied to a more precise analysis of nominal exclamatives as in English:[30]

[30] One question that arises at this point is how an nominal structure like (61) could have the clause-like interpretation of a proposition associated with a sentential force. For readers who may be interested, let us sketch how such a reading can be compositionally derived, comparing its derivation with that of an ordinary relative.

In the case of a simple noun phrase containing a relative clause, the IP containing a gap denotes an open proposition (i.e. a proposition relative to an assignment function). The role of the relative

(64) a. The things he says!
b. [$_{DP}$ [[$_{D}$ the] [$_{NP}$ things [$_{CP}$ WH [[$_{C}$ Ø [$_{CP}$ FACT [$_{C}$ Ø] [$_{IP}$ he says]]]]]]]]]

The key novel feature here is the presence of multiple layers of CP within the relative clause. In theoretical terms this is again motivated by the need to represent both WH and factivity. It receives empirical motivation from Rizzi's (1997) study of the structure of the CP domain. He argues that the CP projection occupied by relative pronouns is structurally the highest in the clause. This leaves the lower projections of the CP-domain open to host other material. For example, drawing on Italian data he provides cases of embedded clitic left-dislocation within a relative clause. The relative pronoun must precede the left-dislocated element *il premio Nobel*, contrasting with interrogatives where it must follow:

(65) a. Un uomo *a cui*, il premio Nobel, lo daranno senz'altro.
(Italian, Rizzi 1997)
a man to whom the prize Nobel it will-give without-other
'A man to whom they'll undoubtedly give the Nobel Prize'
b. Il premio Nobel, *a chi* lo daranno?
the prize Nobel to who it will-give
'The Nobel Prize, who will they give it to?'

If Rizzi is correct, it is plausible to claim that the relative pronoun in (64) is quite high in the clause, and not in competition with the factive operator for a single structural position. Drawing this together with what we've said about (63), we propose that all exclamatives contain a factive operator in the specifier of a particular CP projection. This factive operator is incompatible with a certain type of topic, but is compatible with certain WH operators and contrastive topics.

To summarize, we have claimed that the syntax of exclamatives is determined by the need to encode the two semantic components which characterize this clause type. They must provide a set of alternative propositions, required by widening, and they must represent factivity. The set of alternative propositions is provided through the presence of a WH operator-variable structure, just as with interrogatives. Factivity is represented by an operator within the CP domain. A phrase is classified as an exclamative at the interface if it has these two syntactic properties.

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pronoun is to turn this into a predicate; for example, *whom he met* would denote the set of entities he met (or the characteristic function thereof). This set is then combined with the head noun by set intersection, so that, for instance, *women he met* denotes the set of entities x such that x is a woman and he met x (or more precisely, its characteristic function). This is an ordinary NP denotation, and can be combined with the determiner without difficulty.

In the case of the exclamative, we would suggest that the relative and head noun do not combine by intersection. Rather, the meaning of the relative pronoun is such that it causes the clause to take the head noun as an argument and yield a sentence meaning. In the case of *the women whom he met, he met* would continue to denote an open proposition, but the relative pronoun would turn this into a function from N meanings to sentence meanings. Thus, *whom he met* would denote λP[he met some P], and *women whom he met* would denote the proposition that he met women. Due to the presence of the factive operator, this proposition is presupposed. Finally, according to our principles this proposition is then associated with exclamative force at the DP level.

6. The syntax of the WH phrase in exclamatives

The account we have given so far of the way in which clauses are typed as exclamative is quite simple: they must have a factive operator and a WH phrase. These two elements correspond to the two semantic components which distinguish exclamatives from other clause types. However, as mentioned in the Introduction, exclamative clauses exhibit significant diversity in their structure. This raises the question of whether our simple proposal is too simplistic. We will argue that it is not. Focusing on WH exclamatives, we will see that, amidst all of their diversity, what consistently distinguishes them from other clause types is the presence of the WH phrase and factive operator.

We think that the key to understanding the diversity of exclamative clauses is a detailed understanding of the WH phrases they contain. Not all WH phrases are alike. Some only occur in exclamatives, while others may occur in both exclamatives and interrogatives. A close examination of the internal makeup of the former group reveals that they contain a morpheme not present in the latter. This morpheme has a special relation to the factive operator. As a consequence, this class of WH phrases occupies a position very high in the CP field. WH phrases which may occur in both exclamatives and interrogatives, in contrast, occupy a lower position. This difference in position leads to a number of other structural consequences. In Italian, for example, the WH phrases which only occur in exclamatives differ from the others in that they require the presence of the complementizer *che* and can be followed by a left-dislocated element.

Our appeal to a number of positions for WH phrases is in accord with a number of other proposals in the literature (e.g., Rizzi 1997 and Benincà to appear). Our study allows us to make a contribution to this approach by pointing out the relevance of some novel data. In addition, because exclamatives are factive, we are able to tie proposals concerning the syntactic representation of factivity to this literature on the positioning of WH phrases. We will attempt to present our findings in a way which is neutral on various issues of detail concerning the structure of the 'left periphery', since the considerations which we bring up add to, rather than modify, the set of arguments that have been put forth.

6.1. Italian and Paduan

6.1.1. Two classes of WH phrases in Italian

As mentioned above, we may distinguish two groups of WH phrases. One only occurs in exclamatives, while the other may occur in both exclamatives and interrogatives.

1. Some WH phrases that occur in exclamatives do not occur in interrogatives:

(66) a. Che *tanti libri* che ha comprato!
which many books that has bought
'How very many books s/he bought!'

b. * Che tanti libri ha comprato?
which many books has bought

(67) a. Che alto che é!
which tall that is
'How very tall he is!'

b. *Che alto é?
which tall is

The WH phrases in (66)-(67) have a number of other properties which also need to be explained. First, they must cooccur with the complementizer *che*:[31]

(68) a. *Che tanti libri ha comprato!
which many books has bought
b. *Che alto é!
which tall that is

And second, as mentioned above they allow a left-dislocated constituent to their right:

(69) a. Che tanti libri, a tua sorella, che le hanno regalato!
which many books to your sister that her have given
'How very many books they gave to your sister!'
b. Che bel posto, a Giorgio, che (gli) hanno assegnato! (Benincà to appear)
which nice place, to Giorgio, that him have assigned
'What a good place they assigned to Giorgio!'

2. All WH phrases that occur in interrogatives also occur in exclamatives. For example:[32]

(70) a. Chi inviterebbe per sembrare importante!
who would-invite for to-seem important
'The people he would invite to seem important!'
b. Chi inviterebbe per sembrare importante?

(71) a. Cosa farebbe per i suoi gli!
what would-do for the his children
'The things he would do for his children!'
b. Cosa farebbe per i suoi gli?

(72) a. Quanto é alto!
how much is tall
'How tall he is!'
b. Quanto é alto?

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[31] Radford (1997: 101) only reports *che*+ADV as requiring the complementizer, saying that *che*+ADJ/PP merely prefers its presence. He doesn't consider *che tanti*+N. The data in this paper are based on the judgments of the first author. We find the examples with adjectives and adverbs to pattern the same as one another. As Radford notes, however, there appears to be significant variation, perhaps regionally based.

[32] Root exclamatives with *chi* and *cosa* are most productive with a verb in the conditional, and for some speakers with negation, though Rigamonti (1981:78) reports *Che cosa/Cosa/Che mi tocca fare*! ('The things I have to do!') and *Chi mi tocca incontrare*! ('The people I have to meet!'). In this paper we do not focus on these factors. We discuss the role of the negative marker in Portner & Zanuttini (1996, 2000).

The WH words *dove* ('where'), *come* ('how'), and *quando* ('when') behave like *chi* ('who') and *cosa* ('what'). *Perché* ('why'), like its English counterpart, fails to occur in root exclamatives, but is possible embedded (**Perché l'ha fatto!* vs. *Sapessi perché l'ha fatto!* 'You should hear why he did it!').

(73) a. Quanti/quali libri ha comprato!
how many/which books has bought
'How very many/what books s/he bought!'
b. Quanti libri ha comprato?

In contrast to those WH phrases that only occur in exclamatives, these do not allow the complementizer:

(74) a. *Chi che inviterebbe per sembrare importante!
who that would-invite for to-seem important
b. *Cosa che farebbe per i suoi figli!
what that would-do for the his children
c. *Quanto che é alto!
how much that is tall
d. ??Quanti/quali libri che ha comprato!
how many/which books that has bought
'How (very) many books s/he bought!'

The judgement concerning (74)d is less than clear. It seems better than *chi* and *cosa*, but worse than *che alto* and *che tanti libri* in (68).

These WH phrases also disallow a left-dislocated constituent to their right, for example:[33]

[33] There is one WH word which we have not included in our discussion. *Come* ('how') essentially falls into our second group, but it raises some additional issues which lead us to avoid building on it in what follows. Like WH phrases in our second group, it may occur in both exclamatives and interrogatives and disallows *che* and left dislocation to its right, as seen in (i):

(ia) Come (*che) é stata brava! (cf. Radford 1997: 102)
how (that) is been good
'How good she was!'

(ib) Come é stata? (Answer: *Brava.*)
how is been
'How was she?'

(iia) Come (*che) canta bene!
how (that) sings well
'How she sings well!'

(iib) Come canta? (Answer: *Bene.*)
how sings
'How does she sing?'

However, the exclamative and interrogative differ in that the exclamative may contain a modifier in the predicate, here *brava* or *bene* in (ii), which is not present in the corresponding interrogative. (The interrogatives may marginally contain this extra modifier, but this gives rise to an interpretation for *come* different from that in the exclamative: cf. *How does she sing well?* Answer: *By taking steroids.*) This raises an issue concerning the syntactic analysis of the exclamatives, in particular the relationship between *come* and the constituent it seems to modify. Radford (1997) concludes that the two do not form a unit at any level. However, this leaves unexplained the relationship with the corresponding interrogatives, where *come* might be thought to have moved from the position of *brava/bene*. Notice as well that (iia) is plausibly also treated as a yes/no exclamative, that is one used to exclaim about the proposition that she sings well (as opposed to not singing well), in addition to its reading as a WH exclamative. Furthermore, we note that French has two lexical items corresponding to *come: comme*, which is possible only in exclamatives, and *comment*, used only in interrogatives. For these reasons, it is best to put *come* aside for the time being.

(75) a. *Cosa, a tua sorella, (che) le hanno regalato!
what to your sister that her have given

3. Finally, WH phrases formed with che+N are an intermediate case. Like the elements in (70)-(73), they may occur in both exclamatives and interrogatives, but unlike them they allow the complementizer. A left-dislocated element is also possible:

(76) a. Che libri (che) ha comprato!
which books that has bought
'What books s/he bought!'
b. Che libri, a tua sorella, (che) le hanno regalato!
what books to your sister that her have given
'What books they gave your sister!'

We'll treat this type of WH phrases as ambiguous between the two classes of WH phrases. This explains their range of properties and will receive further support below.

We refer to the WH phrases that only occur in exclamatives as 'E-only' WH phrases (cf. (66)-(67)). In what follows, we will discuss the question of why E-only WH phrases, but not the others in (70)-(73), have the two syntactic properties mentioned above: cooccurrence with the complementizer and with a left-dislocated element to their right.

Before we move on, it is important to make clear the connection between the presence of an E-only WH phrase and the status of a clause as an exclamative. While the presence of an E-only phrase forces the clause to be exclamative, exclamatives can also be formed with other WH phrases (cf. (70)-(73)). This also makes the point that exclamatives cannot be defined by the cooccurence of complementizer *che* with a WH phrase. While all such cases are exclamative, there are other types of exclamative as well. A general account of this clause type must encompass all varieties.

6.1.2. The internal structure of WH phrases: some technical issues

Over the next two subsections we will present an argument that E-only WH phrases contain an element, a morpheme glossed as 'E-only', which is not shared by those WH phrases that can occur in interrogatives. This element requires the presence of the factive operator, explaining why such WH phrases only occur in exclamatives. We will show how their syntactic representation explains the facts noted in section 6.1.1: they must cooccur with the complementizer *che* and they allow a left-dislocated constituent to their right. In contrast, other WH phrases may or may not cooccur with the factive operator, and they receive a less highly-articulated syntactic structure which results in their incompatibility with a following complementizer and left-dislocated constituent.

The possibility or impossibility of having the E-only morpheme in a given WH phrase depends on the phrase's morphological makeup. Hence, our first step is a detailed investigation of the internal structure of the WH phrases. With regard to the issues we are concerned with here, the internal makeup of WH phrases in English is particularly transparent. Consider *how many books*, a case where three different components are explicitly and separately realized. The morpheme *how* indicates that we have WH quantification. *Many* provides a specification of the 'measure' by which the

WH element quantifies, indicating that we are counting numbers of individuals.[34] *Books* provides the sortal, indicating that these individuals are books.

(77) how many books
WH MEASURE SORTAL

(78) qu-anti libri (Italian)
WH+MEASURE SORTAL

Notice that many in this case is playing a different semantic role from that in *He bought many books*, since it does not indicate a large number, but merely the fact that some number is being asked for. The Italian counterpart of *how many books* is *quanti libri*, where *quanti* expresses both WH quantification (qu-) and measure *(-ant-)*, along with agreement (-i).

The E-only counterparts of *how many* and *quanti* are *how very many* and *che tanti*, respectively. The English form suggests that the obligatory exclamative nature of these phrases is marked by an additional element, lexicalized as *very* in English, which modifies the specification of measure:[35]

(79) how very many books
WH E-ONLY MEASURE SORTAL

In Italian, we propose that the role of *very* in marking the E-only nature of the WH phrase is filled by *tanti* ('much/many'). More specifically, *tanti* should be viewed as a combination of *t-* and *-ant-*, where *-ant-* is the same morpheme occurring in *quanti* and indicates measure. The morpheme *t-* corresponds to *very* in (79):

(80) che t-anti libri
WH E-ONLY+MEASURE SORTAL

As we'll see, for morphological reasons the E-only marker only occurs in Italian when the WH element is *che*.

Recall that, when *che* is followed by an NP, it has two syntactic analyses, as an E-only WH phrase and as a non-E-only WH phrase. We propose that the E-only form

[34] In fact, we are probably collapsing two concepts here: we are measuring an amount and computing this amount relative the count domain of individuals. In a case like *how much milk*, we continue to measure amount, but we compute the amount relative to a measure appropriate to the mass domain, like liters.

[35] Of course *very*, like the corresponding Italian element *tanti*, can occur in non-exclamative constructions where no E-only morpheme would play a role. It is only in the presence of *how* or *che*, respectively, that these elements indicate the exclamative nature of the phrase. It could be that very and *tanti* are ambiguous between E-only markers, which occur in these constructions, and ordinary modifiers. One point in favor of such an approach is the fact that not even nearly synonymous words can have the function of marking the phrase as E-only: *??how extremely tall*, **what some book* (cf. *what a book*), and **che molto alto* ('how very tall'). Alternatively, there may be a single form of each, one whose potential to function as an E-only element is only triggered in the right syntactic context. Note that nothing can intervene between the WH word and these E-only markers: **how not very tall*, **what many an enjoyable evening*, **che così tanti libri* ('how so many books'). This shows that the syntax of these cases is somehow special.

contains a null morpheme, indicated by ∈, which represents the fact that the phrase is E-only:

(81) che ∈ libri (... che ha comprato!)
WH E-ONLY SORTAL that has bought

This case has a different interpretation from *che tanti libri.* Because the latter contains *-anti*, which indicates MEASURE, it exclaims over the number of individual books. In contrast, (81), which does not contain a MEASURE, has to do with some quality of the books. Thus, it means 'what books'.

The non-E-only WH form of *che libri* has the following structure:

(82) che libri
WH SORTAL

(82) occurs in both exclamatives and interrogatives, making the point that the E-only morpheme is not required to make a clause exclamative. This phrase lacks a specification of MEASURE, and so do not quantify over quantity or amount. Rather, it simply quantifies over books. This is particularly clear in the interrogative use, where it simply means 'which books'; in exclamatives, it means 'what books' like (81).

WH phrases containing *che* plus an adjective or adverb are similar but not identical to those containing nouns. They may or may not contain *tanti*, but in either case are E-only forms. They have a structure parallel to (81), as seen below:

(83) che tanto/∈ + Ø alto
WH E-ONLY+MEASURE SORTAL

As with (80), *tanto* represents both the E-only morpheme and measure. The element indicated with Ø is simply a null version of *-ant*, the measure component of *tanto/quanto*. Ø, like *-ant*, is a bound morpheme, and must be combined with ∈ to yield a null version of *tanto*. *Tanto* or this null counterpart must be present because WH phrases headed by an adjective or adverb must always contain a specification of measure. The reason for this is simply that these WH phrases always quantify over an amount or quantity (in the formal semantic literature on adjectives, these are often referred to as degrees). For instance, when we talk about height, we are always concerned with the degree of height; there is no meaning parallel to (82), something like 'what tall (thing)', lacking MEASURE.

Given that a specification of measure must be present, and that this goes along with the E-only morpheme as part of *tanto/∈ + Ø*, *che*+ADJ/ADV cannot receive an interrogative interpretation comparable to (82). Interrogative WH phrases headed by an adjective or adverb always contain *quanto*, which as mentioned above marks measure with *-ant-:*

(84) qu-anto alto
WH+MEASURE SORTAL

The cases so far discussed contrast with the non-E-only WH phrases *chi*, *cosa*, and (less clearly) *quanto*+AP/ADVP/NP. We suggest that *chi* and *cosa* are not E-only WH phrases because they cannot incorporate the E-only morpheme. Specifically, none of the

markers of E-only status (*tanto*, its null counterpart, or $\in$) can *t* within the already morphologically complex word. For example, *chi* is essentially the combination of WH (*ch-*) and the sortal HUMAN. Because this combination is lexicalized, it is impossible to insert material between WH and the sortal. A similar explanation may be given for the forms introduced by *quanto*. *Quanto* lexicalizes both the WH and measure components of the WH phrase, and so it is impossible to introduce an E-only marker in the appropriate position.

6.1.3. The relation between the WH phrase and the layers of CP

Having analyzed in some detail the structure of WH phrases, we can now provide an account of the pattern outlined in section 6.1.1. There we observed that, in Italian, E-only WH phrases obligatorily co-occur with the complementizer *che* and allow a left-dislocated constituent to their right. In non-E-only WH phrases, we find the same behavior as in interrogatives, namely the verb immediately following the WH phrase (in C^0, we assume) and no following left-dislocated element. In this section we will connect the presence or absence of the E-only marker in the WH phrase to these properties. Moreover, with regard to non-E-only WH phrases, we will differentiate in structural terms those cases in which they occur in interrogatives from those in which they occur in exclamatives.

Our approach to this contrast builds on the proposal, discussed earlier, that exclamative clauses contain more structure in the CP domain than interrogatives. Moreover, we must incorporate the factive operator present in exclamatives but not interrogatives. In Watanabe's analysis, FACT was licensed by the higher predicate; this raises the question of what licenses it in exclamatives. Given that all exclamatives contain a WH operator, it is natural to suggest that this is the licenser.[36] Thus, we propose that FACT is always in a specifier position lower than the one where the WH phrase is located. This may be implemented either through a selection mechanism from the head whose specifier hosts the WH phrase or by postulating an interpretable feature on the factive operator which may be checked by the WH phrase. We may tie the presence of the factive operator to the need to place WH phrases in a higher position in exclamatives than in interrogatives. Since the factive operator occupies a specifier of CP, the WH phrase in exclamatives must be in a higher specifier position than in interrogatives.

Though all exclamatives contain more structure than interrogatives, we propose that, within the class of exclamatives, E-only WH phrases occupy a higher position than their non-E-only counterparts. This we take to be the result of the E-only morpheme needing to be licensed in the specifier of a higher functional projection. Its being in a higher position makes room for a left-dislocated element in a lower specifier.

We may summarize these ideas with Table 1. Both of the exclamative structures contain the factive operator, regardless of the type of WH phrase, while interrogatives do not. Thus, the CP structure of exclamatives is always richer than that of interrogatives. Moreover, E-only WH phrases occupy a higher CP layer than non-E-only phrases, even when the latter occur in exclamatives; this makes room for a left-dislocated element in the former case alone.

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[36] This proposal may also allow an explanation for the fact, noted by Emonds (1985) and discussed in Obenauer (1994), that pied-piping is more restricted in exclamatives than in interrogatives (cf. **With how many languages she is familiar!* vs. *With how many languages is she familiar?*). If the WH phrase is too deeply embedded in the moved constituent, perhaps it cannot license the factive operator.

	spec,CP^3	spec,CP^2	spec,CP^1	C^0
Exclamative	E-only WH	FACT	(Left-dislocation)	*che*
Exclamative		non-E-only WH	FACT	V
Interrogative			non-E-only WH	V

Table 1: Distribution of elements in Italian WH constructions

The next issue is why the complementizer is present with E-only WH phrases, while the verb is in C with the others. The generalization that emerges is that it is filled by the verb when spec, CP^1 is occupied by an operator, whether FACT or WH. This amounts to extending to the factive operator the intuition that a WH operator must enter into a relation with the verb or a feature on inflection realized on the verb. If spec, CP^1 does not contain an operator, its head is occupied by the complementizer *che*. We see the complementizer in exclamatives as a way to fill the C^0 position when verb movement has not been triggered by the presence of an operator.

A side issue that arises at this point is why an analysis allowing verb movement is not possible with E-only WH phrases. Specifically, what would be wrong with having FACT in spec, CP^1, thereby triggering inversion? Assuming that the highest C^0 requires the presence of CP^2, there are two cases to consider. The first is that a left-dislocated element is in the specifier of CP^2. This phrase would intervene between the WH phrase and factive operator, blocking the licensing of the latter. The second possibility is that nothing is in the specifier of CP^2; but then both the specifier and the head would be empty, and this might be ruled out by a general principle that every phrase requires suitable 'lexical support'.

Turning now to Paduan, it differs from Italian in that the complementizer *che* may occur with non-E-only WH phrases, in addition to E-only ones as in Italian. For example:

(85) a. Chi che l ga fato inrabiare! (Paduan)
who that s.cl has made to get angry
'The people he made angry!'

b. Cossa che l magnava!
what that s.cl ate
'What things he ate!'

We analyze this as showing that only WH operators trigger verb movement in Paduan; FACT in spec, CP^1 cooccurs with the complementizer, just as a left-dislocated element does. Otherwise matters are the same as in Italian. This is summarized in Table 2.[37]

	spec,CP^3	spec,CP^2	spec,CP^1	C^0
Exclamative	E-only WH	FACT	(Left-dislocation)	*che*
Exclamative		non-E-only WH	FACT	*che*
Interrogative			non-E-only WH	V

Table 2: Distribution of elements in Paduan WH constructions

[37] As seen in (51) above, non-E-only WH phrases may also cooccur with *no*+V in C^0. This type of inversion is also possible in interrogatives with a particular pragmatic function (Portner & Zanuttini 1996, 2000). Presumably this structure is possible in Italian as well, though it is impossible to see clear evidence for the inversion. Within the framework represented by Table 2, *no*+V would be licensed in C^0 by either a WH or factive operator, just like simple inversion in Italian.

6.2. English

English is like Italian and Paduan in that the set of WH phrases which can occur in exclamatives differs from that which can occur in interrogatives. This difference manifests itself in a rather different way, however. Some of the properties that distinguish E-only WH phrases in Italian don't play a role in English: an overt complementizer is never present, and left-dislocated elements may not follow the WH phrase. Instead, the two classes fundamentally differ in whether or not they occur in root clausal exclamatives at all. In this section, we will examine the nature of WH phrases in English exclamatives.

6.2.1. Some properties of WH phrases in English

1. Some WH phrases that occur in exclamatives do not occur in interrogatives. We continue to label them 'E-only WH phrases':

(86) a. What a nice guy he is! (cf. *What a nice guy is he?)
b. How very tall she is! (cf. *How very tall is she?)

2. All WH phrases that occur in interrogatives may also occur in embedded clausal exclamatives:

(87) a. It's amazing who/what/what book she saw.
b. It's amazing how tall she is.
c. It's amazing how quickly she reads.

However, not all WH phrases that occur in interrogatives also occur in root clausal exclamatives:[38]

(88) *Who/what/what book she saw! (cf. Who/what/what book did she see?)
(89) a. How tall she is! (cf. How tall is she?)
b. What books he reads! (cf. What books does he read?)

We will argue that, as with the corresponding cases in Italian, the WH phrases in (89) are ambiguous between E-only and non-E-only forms.

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[38] Elliott (1974) and Grimshaw (1977, 1979) point out the inability of simple WH words like *who* and *what* to occur in root clausal exclamatives. However, they point out that these WH words may occur in embedded exclamatives, as seen above. According to them, the fact that *amazing* does not embed a clause introduced by *whether* shows that it cannot take an interrogative complement. Hence, *amazing* has an exclamative complement in (87)a.

Lahiri (1991) disputes Elliott's and Grimshaw's conclusion. He takes the ungrammaticality (88) to show that *who* cannot introduce an exclamative clause, and thus concludes that the complement in (87)a is interrogative rather than exclamative. As will be shown in this section, we maintain the idea that (87)a embeds an exclamative. Lahiri also points out that *amazing* can take a multiple-WH complement, as in *It is amazing which men love which women* (Lahiri 1991: 26). He takes this as evidence that *amazing* can embed a interrogative, presumably because of the contrast with **What a nice man loves what a nice woman!* From our perspective, what this shows is that E-only WH phrases cannot occur in multiple-WH structures, and while this is an interesting observation, it does not show that complements containing multiple WH phrases cannot be exclamative.

3. There is another strategy for forming root exclamatives in English. These have the structure of a noun phrase with a relative clause:[39]

(90) a. The people who/that/Ø she would invite!
b. The things which/that/Ø he would do for his children!
c. The book which/that/Ø I saw!

These, in a sense, cover the territory of the cases which can't be expressed using a root clausal exclamative; for example, (90)a means what **Who she would invite!* would mean, if it were grammatical. However, the distinction between E-only and non-E-only WH phrases is irrelevant here, since the WH words in nominal exclamatives are simply those otherwise available in relative clauses.

The pattern which needs to be explained is why certain WH phrases, the E-only ones, are able to occur in root clausal exclamatives, while others are not. As we did for Italian and Paduan, we will first examine the internal structure of the WH phrases, and then turn to their distribution.

6.2.2. E-only and non-E-only WH phrases

The clear cases of E-only WH phrases in English are how *very many*+NP, *how very*+AP/ADVP and *what a*+NP. Each case contains an element not present in the corresponding interrogative WH phrases, namely *very* and *a*; we propose that these represent the E-only nature of the phrase:

(91) a. how very many books
WH E-ONLY MEASURE SORTAL
b. how very much water
WH E-only MEASURE SORTAL
c. how very Ø tall
WH E-ONLY MEASURE SORTAL

The most straightforward cases are (91)a-(91)b, where each component of the phrase is overtly and separately expressed. In (91)c, we propose that measure is encoded by a null counterpart of *much*, parallel to the role of *much* in (91)b and *tanto*/∈ + Ø in (83). As mentioned in the discussion of Italian, the existence of an abstract element indicating measure is supported by the semantics of adjectives. Contemporary theories of the semantics of adjectives, in particular as they have developed in connection with the analysis of comparatives, claim that adjectives always contain a specification of degree, so that *She is tall* is analyzed as 'she is *d*-much tall'. Empirical support comes from the fact that an overt instance of *much* may express degree in comparative exclamatives, as well as interrogatives:

(92) a. How very much taller (than him) she is!
b. How much taller (than him) is she?

In these cases, much expresses the degree-difference between the heights of the two individuals.[40]

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[39] These structures are mentioned by Elliott (1974: 243); Michaelis & Lambrecht (1996) also include them within their class of exclamatives.

Like the Italian *che libri* ('what books') in (81), English *what a* +NP exclaims over some quality of individuals and not their number. It therefore lacks a specification of measure.

(93) what a guy
WH E-ONLY SORTAL

It's natural to suppose that *a* represents the phrase's E-only nature, since it is the extra element not present in interrogatives.[41]

Because they can occur in both interrogatives and root clausal exclamatives, we propose that *what*+N_{pl} and *how*+A are ambiguous between non-E-only and E-only analyses. As for *what*+ N_{pl}, it has two structures which, though identical in appearance, differ in terms of whether the determiner is present. The reason for this can be seen from a comparison with the corresponding singular forms. Recall that *what a*+ N_{sg} is E-only, while *what*+N_{sg} is not E-only. Given that the determiner for plural indefinite NPs in English is null, we may view the E-only form of *what books* as containing this empty determiner, the counterpart of a in (93). Thus, the exclamative form of *what books* is (94)a. In contrast, the interrogative version is simply (94)b, parallel to *what book*.

(94) a. what $\emptyset_{det}$ books
WH E-ONLY SORTAL
b. what books
WH SORTAL

Turning now to *how*+A, the E-only analysis (95)a parallels Italian *che alto* (cf. (83)). The non-E-only analysis in (95)b is the counterpart of *how very tall* lacking the E-only marker *very* (cf. (91)c).[42]

(95) a. how Ø tall
WH E-ONLY+MEASURE SORTAL
b. how Ø *tall*
WH MEASURE SORTAL

6.2.3. Nominal and clausal exclamatives

Having examined the internal makeup of WH phrases in English, we can now turn to their distribution in exclamatives and interrogatives. The embedded cases, where all WH phrases can occur in exclamatives, is more parallel to Italian than the root one, where non-E-only WH phrases are impossible. However, even in embedded contexts

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[40] The sortal is the description of difference-degrees provided by the comparative clause, *taller than him*. The semantics of (92)b is roughly the following:

for-which*(d)*[*d* is a degree of tallness & *d'* is his degree of tallness & *d"* is her degree of tallness & *d*+*d'*=*d"*]

[41] In this paper we won't examine the details of phrase structure within complex WH phrases. See Corver (1990, Ch. 5) and Nelson (1997) for relevant discussion.

[42] Italian *che alto* differs from English *how tall* because there is no overt or covert morpheme in Italian which expresses measure alone. Measure is always expressed in combination either with E-only (*tanto*) or with WH (*quanto*). This appears to be connected to the fact that measure is expressed in Italian APs via the bound morpheme *-ant-*, whereas in English it's expressed via the null counterpart of *much* (i.e. *d*-much).

the languages differ in that in English a left-dislocated element may not follow the WH phrase:

(96) *It's amazing what a nice book, to your sister, they gave her as a gift.

Thus, in English there is no evidence for a third level of CP structure like that postulated for Italian. We therefore place E-only and non-E-only WH phrases in the same position in embedded exclamatives, namely the specifier of CP^2. This is summarized in Table 3.

	spec,CP^2	spec,CP^1	C^0
Exclamative	E-only WH	FACT	Ø
Exclamative	non-E-only WH	FACT	Ø
Interrogative		non-E-only WH	V

Table 3: Distribution of elements in English embedded WH constructions

This analysis of embedded exclamatives leaves open why non-E-only WH phrases do not occur in root exclamatives. There is no fundamental incompatibility between these WH phrases and an exclamative interpretation, given that they are possible in embedded contexts. We thus take this to be a somewhat superficial difference between English and Italian. Within the perspective presented here, it is natural to suggest that this difference concerns the licensing of the factive operator. Specifically, we would say that English E-only WH phrases may license FACT, while non-E-only ones may not. In root exclamatives, then, we must have an E-only WH phrase. In embedded clauses, in contrast, the higher predicate is able to license FACT, just as in Watanabe's proposal for embedded factive declaratives. For this reason, embedded exclamatives are allowed regardless of the type of WH operator present, while root cases require an E-only WH phrase.[43]

A remaining issue concerns the status of nominal exclamatives like those in (90). We have argued in Portner & Zanuttini (forthcoming) that they are not simply ordinary noun phrases used for the function of exclaiming. In that paper wt argued that they also have the two syntactic components, which mark an exclamative, namely the WH and factive operators. As for the WH operator, the relative pronoun can fulfill this role. The factive operator is in the extra [spec,CP] provided by an additional CP layer, as with clausal exclamatives.[44] Thus, despite the differences between nominal and clausal

[43] As observed in note 32, the data in Italian is in some respects similar to that in English. Root exclamatives with *chi* and *cosa* are less than perfect, unless they occur with a conditional verb form or negation. We don't treat their marginality in the same way as the English cases simply because we judge them to be grammatical, though difficult to interpret, in contrast to the English cases which are fully ungrammatical. Perhaps what is going on in Italian is that, because the word order is the same, it is difficult to distinguish root exclamatives introduced by *chi* or *cosa* from the corresponding interrogatives. Whenever we have a means of distinguishing the two, through the presence of an embedding predicate, negation, or non-indicative verb form, it becomes easier to observe the exclamative interpretation. In English, in contrast, the same kind of ambiguity does not arise, since subject-verb inversion clearly marks a root clause as interrogative.

[44] Another alternative is that the definite article *the* marks the clause as, in effect, factive. The definite article triggers an existence presupposition: in the case of *The people she would invite!*, that there are people she would invite. This is equivalent to the factive presupposition required by the exclamative, namely that she would invite some people. If this is right, the definite article would fulfill the role of marking the phrase as factive, and no other factive operator would be required.

exclamatives, the two classes share the key syntactic components which make for an exclamative: a WH operator and a syntactic marker of factivity.

6.3. Remarks

In this section we have departed somewhat from the paper's main focus on the syntax/semantic interface, concentrating instead on the internal makeup of WH phrases. Our goal has been to relate the morphological properties of the WH phrase to certain syntactic properties of exclamatives and interrogatives. Not all WH phrases that occur in interrogatives also occur in exclamatives. In terms of our analysis, what differentiates an exclamative from an interrogative is the presence of a factive operator. Therefore, we see those WH phrases that only occur in exclamatives as requiring the presence of this factive operator.

While we have identified certain material, in particular *tanto*, *very*, and *a* (in *how very*+ADJ/ADV and *what a*+N), as marking a phrase as E-only, we have not considered why these elements in particular are used. Are they arbitrary choices? On the one hand, the interpretations of *tanto* and *very* have a clear similarity to one component of the meaning of exclamatives, namely widening. It therefore might be suggested that they have the semantic role of marking widening, in addition to whatever syntactic role they might have. On the other hand, English *a* does not seem especially well-suited for this function, leaving open the possibility that the choice of E-only markers is indeed arbitrary.

Another issue is the nature of the relationship between E-only WH phrases and the factive operator. It may be that it is purely syntactic, so that FACT licenses the E-only element (even as the latter may also license the former). Alternatively, if E-only WH phrases mark widening, there may be some semantic relationship. Thus far, we have seen widening and factivity as two co-occurring but independent components of meaning in exclamatives, but perhaps widening only makes sense if the clause is factive.[45] This remains to be further investigated.

7. Conclusion

In this paper we have investigated the characterization of exclamative clauses. Our main theoretical point has been that, despite their syntactic diversity, it is possible to give a uniform analysis which meets the definition of clause type as a pairing of form and function (Sadock & Zwicky 1985). We have argued that the syntactic representation of exclamatives must realize their two central semantic properties: factivity and widening. Moreover, any clause which realizes these two components is an exclamative. In concrete terms, factivity is encoded through a factive operator of the sort discussed by e.g. Watanabe (1993), and widening depends on the presence of a WH operator. This way of looking at things implies that the category of exclamatives can only be understood at the interface, since the cooccurence of these two operators in the clause is only motivated by the semantic and pragmatic components.

[45] Paduan has a clitic form of the negative marker *no* which contributes a meaning very similar to widening (cf. Portner & Zanuttini 1996, 2000). It occurs both in exclamatives and (rhetorical) interrogatives. If this semantic function, which we have previously characterized as a conventional implicature, is in fact identical to widening, we cannot say that widening is necessarily tied to factivity.

In addition, we have made a number of significant side contributions. First, we developed a number of descriptive criteria for identifying exclamative clauses (see also Portner & Zanuttini 2000, Zanuttini & Portner 2000). These make it possible to distinguish exclamative clauses from pragmatically similar declaratives and interrogatives. Given that exclamatives are often syntactically, as well as functionally, similar to interrogatives, it is especially important to be able to distinguish these two types. Our analysis allows us to understand the syntactic similarities and differences between these two types: they share the presence of a WH operator, reflecting their shared need to denote a set of alternative propositions, but differ in whether a representation of factivity is present. Second, we elaborated on the relationship between factivity and the syntactic structure in the CP-domain. Building on data and ideas from the literature, we propose that the extra structure present in exclamatives is needed to realize the factive operator in a way similar to embedded declarative factives. And third, we investigated the internal structure of the WH phrases that occur in exclamatives and interrogatives. This allowed us to better understand how the different components of WH phrases relate to one another and to other elements in the clause, including the factive operator, complementizer, and higher predicate.

While for the most part we have focused on clausal structures similar to WH interrogatives, our discussion has extended to other varieties of exclamatives. On the one hand, we have brought in yes/no exclamatives of the kind in (97). On the other, we have discussed English nominal exclamatives like (98).

(97) No ga-lo magnà tuto! (Paduan)
neg has-s.cl eaten everything
'He ate everything!'

(98) The things he eats!

Despite their superficially different appearance from "core" cases of exclamatives, these represent the two components of exclamative meaning, and so fall within our uniform characterization.

Our study of exclamatives makes a contribution to the study of clause types in that it provides a rather different perspective on how clause types are marked. In much of the literature, one finds an identification of clause type with the syntactic expression of illocutionary force. One more minor point we have discussed is that illocutionary force is not the appropriate concept; sentential force is. More significantly, in the case of exclamatives there is not a single element which is present in all and only exclamatives. Thus, there is nothing to play the role of force-indicator. Instead, the clause type is marked by the cooccurence of markers of two defining semantic characteristics. This leaves open the question of whether sentential force is represented in the syntax at all. In some cases there is an element which could plausibly play the role of force indicator (e.g. *very* in English *how very tall*), but we do not have evidence that one is present throughout the range of cases. It is of course possible that force is syntactically represented, but the data we have are also compatible with the hypothesis that force is implemented in the semantic or pragmatic components, without needing any grammatical realization. More generally, our work shows that we must keep separate the questions of how force is indicated and how clause types are marked. Such a perspective might also be useful for the study of imperatives and interrogatives. For these types, an element in C has sometimes been cited as the force-indicator (e.g. Rivero

1994, Rivero & Terzi 1995, Han 1998). However, the re of this element, verb movement, is not uniformly present throughout the full range of cases. This casts doubt on the hypothesis that a force-indicating element is necessary because it functions as the marker of clause type. From the perspective of this paper, the relevant questions would not necessarily focus on force; rather, we would ask what semantic properties both uniquely identify each type and are represented in the syntax, thus creating the pairing of form and function which comprises a clause type. These properties might include force, but – as we see with the case of exclamatives – need not.

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Yes/no Questions in Mandarin Chinese Revisited*

Horst-Dieter Gasde
Zentrum für Allgemeine Sprachwissenschaft (ZAS) Berlin
gasde@zas.gwz-berlin.de

This article discusses some syntactic peculiarities of Chinese yes/no questions. Starting from the observation that Standard Mandarin shares significant typological features with prototypical SOV languages, Chinese is treated as an underlyingly verb-final language. Based on this heuristic principle, A-not-AB, AB-not-A and AB-not questions are uniformly derived by means of one simple raising rule that operates within the sentence constituent V'. This novel idea is elaborated on in great detail in the first part of the article. In contrast to the prevailing trend, it is argued that the question operator contained in A-not-A and A-not sentences CANNOT be raised to "Comp". In consequence, A-not-A and A-not questions are "typed" in the head position of a sentence-internal functional phrase that we call Force2 Phrase (F2P) in the present paper. This position is not to be confused with Drubig's (1994) Polarity1 Phrase (Pol1P), in the head position of which assertive negations and an abstract affirmative element are located. The existence of a head position F2° other than Pol1° is supported by the fact that F2° can be occupied by certain overt question operators, such as assertive *shi-bu-shi*, which are compatible with negations. In contrast to the assertive question operator *shi-bu-shi* which is obligatorily associated with information focus, non-assertive *shi-bu-shi* serves as a compound focus and question operator whose focus feature is complex insofar as it is composed of two subfeatures: a contrastivity and an exhaustivity subfeature. Non-assertive *shi-bu-shi* is obligatorily associated with identificational focus in the sense of Kiss (1998). In accordance with some basic ideas of Chomsky's checking theory, the two subfeatures of the complex focus feature carried by the non-assertive *shi-bu-shi* operator check a correlating subfeature in the head position of a corresponding functional phrase (Contrastive Phrase and Focus Phrase, respectively). The question feature contained in the non-assertive *shi-bu-shi* operator is attracted by the head of Force1 Phrase (F1') at the level of LF. Due to the fact that F1° is sentence-final, the question feature of non-assertive *shi-bu-shi* must be Chomsky-adjoined to F1'. Unlike identificational focus phrases which are inherently contrastive, topics are non-contrastive in the default case. As separate speech acts, they are located in a c-commanding position outside the sentence structure. Semantically, there is a difference between Frame-Setting Topics and Aboutness Topics. As shown in the article, both A-not-A and A-not questions on the one hand and yes/no questions ending with *ma* on the other can be used in neutral and non-neutral contexts. The decisive advantage of *ma* questions, however, is that their question operator has scope over the whole sentence.

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1. Introduction

1.1. Sentential Force in natural languages

Natural languages make use of various universal strategies in expressing 'sentential force' in the sense of Chierchia & McConnell-Ginet (1990).

In the simplest case, sentential force, i.e. the semantic correlate of 'sentence type', is made manifest by means of intonation contour and word order. This case is realized, for example, in all Germanic languages, where a combination of rising final intonation and verb-subject word order is operative in yes/no questions. Furthermore, sentential force can be denoted morphologically. Russian imperative sentences, for instance, display distinctive morphological forms on the verb involved. Moreover, sentential force can be signaled by certain lexical elements, such as special particles. An example would be the role of enclitic *li* in interrogative sentences of Russian and other Slavic languages, not to mention the role of clausal typing particles in numerous East and South East Asian languages. Finally, sentential force can be expressed by affixes, phonological alternations and missing elements.

In view of the syntactic, morphological, lexical and prosodic resources of languages, it is not a surprising fact that, despite certain similarities with regard to the presentation of declarative, interrogative and imperative sentences, we can find important differences between various languages in the system of sentence types, especially as far as the specificity of functions within a particular sentence type is concerned.[1]

The present paper deals with Chinese yes/no questions.

Unlike wh-questions and disjunctive questions[2], yes/no questions can be conceived as a request that the person you are addressing should tell you whether the proposition you have supplied him is true or not[3].

Based on the dimension of the regular association of 'form' and 'use', there are at least three different subtypes of yes/no questions, which shall be discussed in this paper.

1.2. A proposal for a discourse-based model of Chinese sentences

My subsequent syntactic descriptions are based on the following model of the Chinese sentence:

(1.1) TOPIC > F1' > FocP > IP > ContrP > F2P > PolP > V'

with > for 'preceding + dominating', F1 for 'Force1', FocP for 'Focus Phrase', IP for 'Infl(ection) Phrase', ContrP for 'Contrastivity Phrase', F2P for 'Force2 Phrase', PolP for 'Polarity Phrase', and V for 'verb / predicative adjective'.

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[1] Cf. Sadock and Zwicky (1985), p. 160.

[2] Disjunctive questions, which consist of two yes/no questions connected by the element *or*, are often called 'alternative questions'. Disjunctive questions and wh-questions share the feature that they cannot be answered with 'yes' or 'no'.

[3] Cf. Sadock & Zwicky (1985), p. 155. Following Groenendijk & Stokhof (1997: 1072), I start from the position that a question requires a change in information ABOUT THE WORLD, but not a CHANGE IN THE WORLD ITSELF. Given this, asking a question is a basic speech act. But see Vanderveken's (1990) typology, according to which asking a question belongs to the basic speech act type of directives: 'I (hereby) ask you to answer (the question) Q'. As for details about the different 'pragmatic' and 'semantic' approaches to the interrogatives see Groenendijk & Stokhof (1997).

In this model, only the constituent V' headed by a verb or a predicative adjective is obligatory in every complete sentence.

1.2.1. IP is only projected in categorial sentences. This is due to the fact that categorial sentences express an overt predication relation between an initial constituent functioning as a 'notional subject', and the subsequent sentence part functioning as a 'notional predicate'. Kiss (1994) claims that 'topic-prominent' languages realize categorial and thetic judgments in different syntactic structures. Whereas in categorial judgements the subject argument of the verb appears in a VP-external position, thetic judgements are expressed in structures in which all arguments of the verb remain within VP. Provided that this is correct, Chinese is a topic-prominent language needing IP to accommodate the unmarked syntactic subject in categorial sentences.[4] More precisely, I reason that spec-IP is a topic-position reserved for the unmarked subject in active sentences and the direct object in passive structures.

Nevertheless, the claim that the Chinese sentence contains an Inflection Phrase is problematic in some ways, since Chinese has neither verb-subject agreement nor a morphological category of Tense.[5] Moreover, there is no distinction between finite and non-finite clauses in Chinese, as demonstrated by Xu (1985/86: 346ff.; 1994: 323ff.) and Y. Huang (1994: 27-33, 157ff., 265f.).[6] Y. Huang (2000: 37) concludes that "there are only finite clauses in Chinese".[7]

1.2.2. F1' is the functional phrase where information about whether a given sentence is a statement, a question, a command etc. is located in the default case. One typological peculiarity of Chinese is that the head of this phrase, as an immediate result of its right-peripheral position, does not project a Spec position[8]. A second typological peculiarity of Chinese is that A-not-A and A-not questions are typed in the head position of a

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[4] Contrary to categorial sentences, thetic sentences do not express predication about something or somebody. Compare the categorial sentence (i) containing an IP with the thetic sentence (ii) lacking an IP:

(i) Keren lai-le.
guest come-ASP
'The guest has come'

(ii) Duimian lai le yi qun haizi.
over there come PART one group children
'There is a group of children coming over there.'

As for the difference between categorial and thetic judgements, cf. von der Gabelentz (1901: 369f., 372), Kuroda (1972-73), and Sasse (1987), for example.

[5] Concerned with different quantifier scope facts characteristic of English and Chinese, Aoun & Li (1989: 152; 1993: 22f.) argue that subjects in English are generated at D-structure in the Spec of VP position and raised to the Spec of Infl position at S-structure, whereas subject raising is not available in Chinese because of the "degenerate nature of Infl" in this language. So the subject is base-generated in Spec of VP position and stays in this position at S-structure. In contrast, Hornstein (1995: 164f.) claims that Chinese subjects are directly generated in Spec ArgS, without a copy in VP-internal position.

[6] See also Y. Huang (1995; 2000). Contrary to this, C.-T. J. Huang (1984; 1987; 1989) and others tried to show that a difference between finite and non-finite sentences does exist. Their examples and test criteria, however, were disproved by Y. Huang and Xu.

[7] Y. Huang's position is indeed the most plausible conclusion compared with the two alternatives: (i) there are neither finite nor non-finite clauses in Chinese; (ii) there are only non-finite clauses in Chinese.

[8] In this respect, I follow Whitman (1997), cf. section 7.

clause-internal functional phrase that I will call F2P. This phrase is head-initial, unlike F1'. Both functional phrases, F1' and F2P, are in complementary distribution, for every sentence must be typed[9], but no sentence can be typed twice.

These assumptions conflict with Rizzi's (1997: 287) tenet that the force-finiteness system as the essential part of the C system is present in all "non-truncated clausal structures".[10] Furthermore, these assumptions are at variance with Huang (1982), Li (1992) and Ernst (1994) who postulate that the question operator in A-not-A questions must raise to Comp at LF. Finally, our assumptions deviate from the approach of Schaffar & Chen (2001) who accommodate the illocutionary question operator contained in A-not-A questions in Drubig's (1994: 23) Polarity1 Phrase (Pol1P). In contrast to Schaffar and Chen, I will argue that illocutionary operators on the one hand and elements like assertive negation (*bu/mei*) on the other should not be accommodated in the same functional head position, even more so since they are not strictly complementary, as I will show.

1.2.3. In connection with identificational foci in the sense of Kiss (1998), FocP and the functional Middle Field category ContrP pertain to the focus-background system of the sentence structure. As such, they are present "only if 'needed'" (Rizzi 1997: 288).

1.2.4. Following Lippert (1965), Altmann (1981), Jacobs (1984), and Krifka (2000; 2001b), TOPICS are perceived as separate speech acts. Consequently, I claim that they are located outside the sentence structure, though in a c-commanding position.

1.2.5. (1.1) is a strictly discourse-oriented sentence model predicated on the Strong Lexicalist Hypothesis.

Rizzi (1997: 281) suggests that any structural presentation of a clause consists of three layers: 1. the lexical layer headed by the verb, the structural layer, in which theta assignment takes place, 2. the inflectional layer, headed by functional heads corresponding to concrete or abstract morphological specifications on the verb, and responsible for the licensing of argumental features such as case and agreement, 3. the complementizer layer containing a force-finiteness system[11] and a topic-focus system.

Following Rizzi, Platzack (1999) advocates a model where a V-domain, an I-domain and a C-domain exchange information with systems of thought via the designated interfaces Thematic Form (TF), Grammatical Form (GF) and Discourse Form (DF). Whereas at TF thematic information is exchanged, and at GF grammatical meanings are exchanged, DF is the interface level at which pragmatic information and information regarding sentence type is exchanged.

Similarly, Grohmann (2000) splits the clause into three domains with a θ-domain for thematic relations, a φ-domain for agreement properties and a ω-domain for discourse information.

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[9] Cf. Chomsky & Lasnik (1977: 445) and Cheng (1991).

[10] A-not-A and A-not yes/no questions are by no means truncated structures.

[11] According to Rizzi, ForceP is considered as the interface between a propositional content expressed by IP and the superordinate structure (a higher clause or the discourse), whereas FinP "faces inside" expressing a distinction related to finiteness (ibid., p. 283f.). As mentioned above, a clear-cut distinction between finiteness and non-finiteness in Chinese clauses does not exist. I infer from this that FinP as a special functional projection is "not needed" in Chinese.

It seems, however, that Rizzi's, Platzack's and Grohmann's assumptions are too strong. In fact, all of the domains suggested are interspersed with elements conveying information that is associated with categories like force-finiteness and topic-focus, as we will see in this paper.

1.3. Organization of the paper

The present paper is organized as follows:

The first two sections lay out the specific background which my subsequent claims about major properties of A-not-A and A-not questions will be based on: Section 2 is mainly devoted to the discussion of some typological peculiarities of Chinese. The section starts from certain SOV remains in Pre-Qin Chinese, SOV tendencies in Northern dialects, and significant features shared by prototypical SOV languages and Standard Mandarin. Based on the preposition-postposition parameter, Chinese is described as a postpositional language. It ensues that Chinese is treated as an underlyingly verb-final language in section 3.

In section 4, I argue for a unified derivation of A-not-AB, AB-not-A and A(B)-not questions. This novel conception conflicts with the influential approach of Huang (1991). Moreover, I claim that A-not-A and A-not questions are "typed" in a sentence-internal functional head position other than Pol1°, a position introduced by Drubig (1994) to accommodate an (abstract) affirmative element and (assertive) negations. In contrast to the prevailing trend, it is further argued that the question operator in A-not-A and A-not sentences cannot be raised to "Comp". This implies that F1' is not projected in A-not-A and A-not questions, differently from yes/no questions ending with the question particle *ma*.

My postulate that A-not-A and A-not questions contain an abstract question feature <Q> in F2° is underpinned by additional evidence provided in section 5, where I focus attention on some overt question operators, which are all located in F2°, as I contend. One of them is the assertive question operator *shi-bu-shi*.

In section 6, the role of non-contrastive and contrastive topics in Chinese yes/no questions is considered. Topics are divided into two basic types: Frame-Setting Topics and Aboutness Topics.

Section 7 is about the properties and the syntactic anchoring of identificational focus phrases in Chinese yes/no questions. The section concentrates on the compound focus and question operator *shi-bu-shi*, not to be confused with assertive *shi-bu-shi*. I posit that the focus feature carried by non-assertive *shi-bu-shi* is composed of a contrastivity feature, [+contr], and an exhaustivity feature, [+exh], checking a correlating feature in the head position of ContrP and FocP, respectively, a procedure that may happen at S-structure or at LF. The question feature of this operator is claimed to undergo LF raising in the result of which it is Chomsky-adjoined to F1'. There is no sentence position in which identificational focus phrases uniformly occur, as the S-structural positions of subjects, direct objects and adjuncts marked by the *shi-bu-shi* operator at issue show.

In section 8, the pragmatic use of A-not-A questions and *ma* questions is discussed. It is claimed that both types of yes/no questions can be used in neutral and non-neutral contexts. However, *ma* questions have the decisive advantage of their question operator having scope over the whole sentence.

2. Chinese as a postpositional language

My proposal for a uniform derivation of all A-not-A and A-not questions which shall be described in section 3 is predicated on the hypothesis that Chinese is a postpositional language with an OV word order at the level of D-structure. This section aims to give reasons for this hypothesis.

2.1. SOV remainders in Pre-Qin Chinese and SOV tendencies in northern dialects

Liu (2000) claims that Chinese has never been a typical SVO language, though SVO has been the basic order in Chinese clauses since its earliest record. As elaborated by Liu, Pre-Qin Chinese contained remains of an earlier SOV word order manifesting themselves by the preverbal position occupied by interrogative pronouns and pronouns in negative sentences. With reference to the fact that Chinese is closely related to the Tibeto-Burman languages which essentially are SOV languages, Liu speculates that the common protolanguage of Chinese and today's Tibeto-Burman languages may have been an SOV language[12]. As for Modern Chinese, the author comes to the conclusion that the so-called *ba*-construction, which came into existence in the 7th/8th centuries and has been predominantly marking direct objects since the beginning of the 17th century[13], makes Chinese look like a very untypical SVO language[14]. In this connection, he mentions SOV orders in the Qinghai Xining dialect of Chinese that can only be explained by the influence of Tibetan and some neighboring Altaic languages (p. 56). In this respect, Liu follows Light (1979: 163) who also connected the word order features of Modern Chinese with influences of neighboring languages. Light points out that Tai language SVO tendencies are reflected in southern dialects, such as Cantonese and Southern Min, whereas Altaic SOV tendencies are reflected in Mandarin.

Likewise, Hawkins (1983) characterizes Chinese as a language with SOV/SVO features. Kroch (2001: 706) states that "languages like Chinese or Yiddish show an apparent mix of headedness at the clausal level, so that there is even controversy over whether they are VO or OV".

2.2. SOV features of Standard Mandarin

2.2.1. Referring to the 45 universal tendencies correlated with SOV, SVO and VSO orders ascertained by Greenberg (1966) on the basis of a sample of 30 languages (which, interestingly enough, does not contain Chinese), Tai (1985: 345f. [= 1973: 663]) claims that Chinese is an SOV language. He especially stresses the point that the following word order features can be generalized under one single general syntactic principle, the principle that SOV languages tend to place restricting elements before restricted elements: A. relative clause before noun, B. adjective before noun, C. genitive before the governing noun, D. adverbial before the main verb, E. adverb before adjective, F. proper noun before common noun. Tai notes that those and other grammatical features of Chinese consistently appear in rigid SOV languages such as Japanese and Turkish.

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[12] Ibid., p. 53.

[13] See also Wang Li (1958: 413ff.), Ohta (1987; 1991), Peyraube (1989), and Bisang (1991).

[14] Cf. Liu (2000), p. 54.

Given fact A it is not surprising that Downing (1978: 383), Mallinson & Blake (1981) and Dryer (1992), treating Chinese as an SVO language, are forced to describe Chinese relative clauses as an exception. Dryer (1992: 86), whose empirical results are based on word order properties of 625 languages[15], sees "evidence of a very strong tendency for VO languages to be NRel: RelN order is found in only one genus (Chinese), while NRel order is found in 60 other genera". Mallinson & Blake (1981: 442) note: "Chinese is an SVO language, more or less, with preposed relatives, though it is true that such a type of language is rare."

2.2.2. In addition to the SOV features of Chinese listed so far, there are further crucial word order features shared by Chinese and prototypical SOV languages. Two of them are reflected in the use of sentence-final yes-no question particles and the fact that wh-phrases remain in situ.

C. L. Baker (1970: 206f.) was the first to observe the relationship between these two facts. Based on Greenberg's (1966) data, Baker hypothesized: First, no language can have a rule which moves the questioned constituent to clause-initial position, but regularly positions all morphemes for yes-no questions in clause-final position. Second, no language can have a rule which moves a questioned constituent to sentence-final position, even if the Q morpheme occurs there. Referring to this hypothesis, Chomsky (1973: 234) posits that only languages with clause-initial COMP permit a COMP substitution transformation.[16]

2.3. The preposition-postposition parameter

Greenberg (1966) employed three sets of order to establish his 'basic order typology': first, the existence of prepositions and postpositions, second, the relative order of subject, verb and object (reduced to the common types VSO, SVO and SOV), and third, the position of qualifying adjectives.

Modifying Greenberg's (1966) second criterion, Hawkins (1983) postulates that the word order SVO is not a reliable typological indicator. In that "SVO does not correlate with other word order properties in Greenberg's data in a unique and principled way"[17], it even undermines the generality of a verb-based typology. Contrary to the ambivalent SVO order, VSO and SOV are type indicators (though limited ones). Yet what has precedence over all the others in Hawkins' theory is a word order typology based on the preposition-postposition parameter. Consequently, he claims that there exist two major word order types, namely prepositional and postpositional languages, each of them having certain unique families of word order combinations.

2.4. The role of postpositions in Modern Chinese

Contrary to Travis (1984), Ernst (1988) and A. Li (1990), who, more or less explicitly, negate the existence of postpositions in Chinese, I will contend that Modern Chinese, in

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[15] Dryer's method involves first grouping the languages into genetic groups, referring to each of these groups as a GENUS. These genera are then grouped into six large geographical areas (ibid., p. 83ff.).

[16] Following Chomsky (1973), Huang (1981/82: 409, fn.6) claims that COMP is a universal element that may appear in various sentence positions: "It should be noted for all our purposes it is not necessary that the COMP be assumed to be clause-initial. All that is necessary is that there is a COMP position c-commanding S."

[17] Hawkins (1983), p. 29f.

essence, is a postpositional language. The need of postpositions has been caused by the strong tendency of Chinese to place restricting elements before restricted elements.

2.4.1. Liu (2000) notes that the fact that postpositions play an important role in the grammar of Modern Chinese is underestimated by many researchers. In contrast, Liu gives a detailed picture of the role of different types of postpositions in the syntactic structure of Chinese sentences. As he elaborated, Chinese postpositions function as 'relators', thereby realizing the 'relator principle' investigated by Dik (1997). According to Dik, a 'relator' links two constituents to each other, having its preferred position between the two relata.[18] In Modern Chinese, relators mainly appear either on the border of an attribute (the dependent) and a noun (the center) or on the border of a preverbal adjunct (the dependent) and a verb (the center). While the corresponding relator in the former case is represented by the postposition *de*, the situation is more complicated in the latter case.

2.4.2. As pointed out by Liu (2000), the latter type of postposition can be traced back to two major historical sources: relational nouns on the one hand and adverbs on the other.

Originally, relational nouns expressed a location, such as *li* ('inner lining'), *zuo* ('left hand'), *zhong* ('center of a circle (occupied by a flagpole)'), *shang* ('top part') etc. Later, they were affected by a process of grammaticalization in the result of which they could no longer be used as independent syntactic units. Today, they are tied to fixed positions (just as other function words are). More precisely, they are obligatorily combined with nouns (or noun phrases) preceding them. The meaning of the nominal unit preceding a postposition can even be abstract. Owing to the semantic depletion which Chinese postpositions were subject to[19], the semantic differences between them dwindled to such an extent that they can sometimes be replaced with each other, as (2.1a,b) illustrate:

(2.1) a. zai di-shang zuo
in ground-above sit
'be sitting on the ground'

b. zai di-xia zuo
in ground-below sit
'be sitting on the ground'

c. *zai di zuo
in ground sit

Lacking a postposition filling the relator position, (2.1c) is absolutely ungrammatical. By the same token, *xin-shang* ('heart-above'), *xin-zhong* ('heart-center'), *xin-li* ('heart-inside'), and *xin-xia* ('heart-below') have the same meaning: 'in one's heart'. Telling examples for the combination of postpositions with abstract nouns are: *sixiang-li* ('in one's thinking'), *xingdong-shang* ('in one's actions'), and *fazhan-zhong* ('in (a process of) development').

[18] As for Dik's relator principles, cf. also Siewierska (1988; 1991).

[19] This process went hand in hand with a reduction of their suprasegmental structure, mainly characterized by the loss of their etymological tone.

The second historical source of postpositions operating on the border of adjuncts and predicates in Modern Chinese are elements that stem from adverbs, as in:

(2.2) a. Ta (xiang) huli side/yiyang jiaohua.
he like fox similarly sly
'He is as sly as a fox.'

b. Ta (xiang) hua yiyang/yiban/ban meili.
she like flower similarly beautiful
'She is as beautiful as a flower.'

Whereas the use of the preposition *xiang* ('like') is optional, the postpositions *side, yiyang*, and *yiban* (shortened: *ban*), respectively, cannot be omitted in this structure.

Liu (2000) suggests that Chinese postpositions project a postpositional phrase which is embedded in a prepositional phrase, yielding a structure which I will illustrate with the help of *zai di-shang* ('on the ground'):

(2.3) [$_{PP}$ zai [$_{PostpP}$ [$_{DP}$ di] shang]]
in ground above

2.5. Chinese prepositions are coverbs

2.5.1. Although lexical elements like *zai* ('in') in (2.1) and *xiang* in (2.2) are often considered as 'prepositions', Chinese is by no means a 'prepositional language' in the sense of Hawkins (1983). The overwhelming majority of Prep languages in Hawkins' Expanded Sample is distinguished by the feature combination 'NG & NRel'[20], while Chinese lacks this feature combination[21].

Both facts clearly show that 'Prep' does not function as a "major typological indicator"[22] in Modern Chinese.

2.5.2. Actually, all 'prepositions' of Modern Chinese arise out of full verbs previously used in serial verb constructions, where they became subject to a process of grammaticalization which is not yet finished. Despite the fact that their grammaticalization has progressed differently, they should better be described as 'coverbs', as done by Paul (1982), C. Lehmann (1982), Chu (1983), Bisang (1991; 1992), Gasde (1993) and others, or as 'verb-prepositions', as done by Dragunov (1960[1952]). The verbal historical background of modern "prepositions" is effortlessly recognizable because some of them still carry aspect suffixes distinctive of verbs. The most striking example is the coverb *dui* ('towards'), which can be combined with the durative-progessive suffix *zhe*, the perfective suffix *le* and the experiential suffix *guo*, such as in *dui-zhe/le/guo wo xiao* ('smile to me')[23]. Some of the lexical elements in question have a fullverb and a coverb meaning, such as *zai* ('be in' vs. 'in'), *gei* ('give'

[20] Cf. Hawkins (1983), p. 73. 'NG' stands for the word order Noun-Genitive, while 'NRel' stands for Noun-Relative Clause.

[21] To be more precise, Chinese has neither NG (because it is a caseless language) nor the word order NPoss (Noun-Possessive).

[22] Cf. ibid., p. 115.

[23] Cf. Chu (1983), p. 72.

vs. 'for') and *gen* ('follow' vs. 'with'). In special cases, one and the same sentence can have a coverb and a full verb reading:

(2.4) Ni gen wo zou!
you GEN I go
a. Follow me!
b. Go with me.

But the most tangible proof of the non-prepositional status of Chinese coverbs is the fact that nearly all of them, e.g. *yong* ('using', 'with the help of'), *dao* ('going to', 'leaving for'), *zai* ('(being) in'), *gen* ('following', 'with'), *gei* ('giving', 'for'), and *cong* ('from') are compatible with the A-not-A form (more precisely, with the subpattern A-not-AB) in yes/no questions. See the following example:

(2.5) Ni cong-bu-cong Beijing qu Shanxi?
you from-not-from Beijing go Shanxi
'Do you from Beijing go to Shanxi?'

Paul (1982: 123f.) holds the view that the special character of coverbs can be adequately described only by means of a scale with verb and preposition as its poles. She summarizes that *ba* displays almost no verbal behavior, thus advancing towards the prepositional end of the scale[24], whereas the verbal character of *yong* ('using, with the help of') is remarkably strong.

In discussing the historical development of coverbs, Y. C. Li (1980) notes that in Early Archaic Chinese a few coverbs with 'broad' meanings were gradually replaced by many coverbs with specific properties. According to Li, the number proliferated to sixty in Modern Chinese. Some of them, such as *zai, cong, yong, ba* and others, have been utilized throughout the history of the Chinese language.

2.6. Summary

To recapitulate this section, the strong tendency to place restricting elements before restricted elements, the use of sentence-final particles, the fact that wh-phrases remain in situ, and the dominant role of postpositions are the most striking SOV features of Mandarin Chinese.

3. Chinese as an underlyingly verb-final language

As we have learned in section 2, Chinese is a postpositional language exhibiting major typological features of rigid SOV languages such as Japanese, Korean and Turkish. I consider this to be a warrant for treating Chinese as an underlyingly verb-final lan-

[24] *Ba* is often regarded as a pure marker of the direct object or as a case marker. But see the sections 4.3 and 5.2.2, where we treat *ba* as a dummy verb syntactically licensing the direct object of the sentence.

guage, being perfectly aware of the fact that at the level of S-structure the unmarked word order is SVO.[25]

In addition, I will follow Fukui & Speas (1986: 128) who postulate that functional categories project to X", while all projections of lexical categories are X'. This idea implies that X" structures projected by functional categories are limited to a single specifier position and a single complement position, whereas the X' projections of lexical categories are indefinitely iterable, limited only by the Projection Principle and other independent principles of licensing.[26] In consequence, Chinese predicates merely contain V' projections in my system.

Given these two preconditions, the abstract D-structure of a predicate phrase headed by a three-place verb like *song* ('give') is (3.1):

(3.1) $[_{V'}$ SU $[_{V'}$ IO $[_{V'}$ DO $V^{\circ}]]]$

So far, I am in accordance with Koopman (1984) and A. Li (1990) who propose a head-final structure of VP as well. Yet whereas Koopman and Li achieve the S-structural word order by NP movement, i.e. by moving the objects from the left side of the verb to its right side[27], I suppose that in (3.1) the verb must be raised into head positions of higher V'-shells in the sense of Larson (1988; 1990), yielding the S-structure (3.2):

(3.2) $[_{XP}$ SU_1 $[_{V'}$ t_1 $[_{V'}$ $[_{V^{\circ}}$ $V^0{}_2]$ $[_{V'}$ IO $[_{V'}$ $[_{V^{\circ}}$ $t'_2]$ $[_{V'}$ DO $t_2]]]]]]$

This derivation involves the idea that θ-role assignment and Syntactic Licensing of verb arguments[28] are two independent syntactic procedures, which can take place at different levels of the derivation of sentences and which can be opposed with respect to their direction. That is to say, along the lines of the syntactic model outlined by (3.1)/ (3.2), the verb is enabled to assign θ-roles from the right to the left at the level of D-structure, while Syntactic Licensing[29] goes from the left to the right and takes place at S-structure.

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[25] Mulder & Sybesma (1992) make the pretence of having evidence that Chinese is a VO language at D-structure. In fact, the notion of D-structure is a construct. Hence, the syntactic structures assumed at this abstract level can hardly be 'right' or 'wrong'. Rather, they can serve as a heuristic means. In this sense, the problem is with the help of which assumptions one can explain more phenomena of Chinese grammar than by means of others. Therefore, with respect to the question of whether Chinese at D-structure should be treated as a VO language or as an OV language, neither the Small Clause analysis suggested by Mulder & Sybesma for certain sentences nor the analysis of A-not-A and A-*not* questions which I will propose in section 4 can have the status of 'evidence'. In truth, both approaches are no more than hypotheses.

[26] This approach has been called the 'Relativized X'-Theory'. As for the development of this theory, see also Fukui (1991), Fukui & Saito (1992), Saito & Fukui (1998) and Fukui (2001).

[27] As for that procedure, cf. Goodall (1990: 246), who points out that such argument movement from one side of the head to the other leads to theory-internal and conceptual difficulties, besides the fact that there is very little empirical support for such kinds of movement.

[28] In inflectional and agglutinating languages, Syntactic Licensing corresponds to the operation of Case assignment. Our conviction that only in languages with a case morphology Syntactic Licensing is taking place by Case assignment, is supported by (Kiparsky (1991: 1): "Abstract Case and AGR (syntactic elements assumed to be present in all languages independently of morphology) do not exist."

[29] Cf. Koopman (1984: 124), who claims that in Chinese "Case" is assigned to the right.

For the DO to be licensed, the verbal element V^0 has to move to the V'-shell head position marked with t'_2. Having licensed the DO from this position, the verb moves on to the lowest V'-shell head position c-commanding the IO. From there, it licenses the IO.

In Chinese, V° is strictly tied to V', i.e. it can neither be raised to I° since Infl is a deficient category in Chinese (as outlined in section 1.3.1), nor can it be raised to Force1° since Force1' is head-final (cf. section 4.4.2 and section 7.2.4).

As for the subject (in active sentences), no syntactic licenser is required, just as the subject in nominative-accusative languages does not need any authority assigning it the nominative.[30]

The stem of Chinese verbs can commonly be followed by certain (semi-)suffixes and other elements such as non-referential objects, all of them being constitutive components of the head constituent V°. In other words, the head constituent V° can consist of a Verbal Complex (VC) with the stem of the verb in the leftmost position of V°.

4. A-not-A and A-not questions

Keeping in mind the assumptions about the internal structure of V' made in the above section, let's turn our attention towards the construction of yes/no questions of the types A-not-A and A-not.

4.1. The data

The element A as a constitutive element of the A-not-A pattern is thought of as a label for several predicative categories, such as verb, adjective, modal, copula, coverb, and even postverbal manner adverbial.[31] In A-not-AB, 'B' stands for 'direct object'.

4.1.1. In connection with a direct object selected by a transitive verb, the A-not-A pattern can assume the forms 'V-not-VO' as in (4.1) or 'VO-not-V' as in (4.2):

(4.1) Ni kan-bu-kan dianying?
you watch-not-watch movie
'Do you watch the movie?'

(4.2) Ni kan dianying bu-kan?
you watch movie not-watch
'Do you watch the movie?'

In Standard Mandarin, the choice of negation, including that in the A-not-A pattern, depends on the aspect of the verb.

In 'zero-marking' sentences[32], the selected negation normally is *bu*, such as illustrated in (4.1) and (4.2).

If the Verb, however, is marked as aspectually perfective by the preverbal particle *you*[33] or as carrying the experiential aspect, then the selected negation will be *mei*. In the

[30] According to Falk (1991: 199f.), in languages like English or German, nominative case is not actually a case, for nouns (or NPs) used in isolation (in the 'citation form') are nominative, and there is, naturally, no source for case to be assigned to a form in isolation.

[31] In the A-not pattern, however, the element A can only be represented by verbs (see below).

[32] Cf. Klein et al. (2000), p. 765ff.

[33] Wang (1965) was the first to assume that the verb-suffix *–le* occurring in affirmative sentences and the preverbal particle *you* occurring in negative sentences are allomorphs of a perfective morpheme. In terms of Huang (1988: 282), that is to say: "Wang observed that the two elements *–le* and *you*, both

latter case, the case of experiential aspect, the verb is simultaneously marked by the preverbal particle *you* and the verb suffix *guo*.

He (1998: 4f.) gives some telling examples of the interaction of aspect and negation in the A-not-A pattern V-not-VO, which is characterized by an almost bewildering variety of forms[34]:

(4.3) a. Ta lai-mei-(you)lai Meiguo?
he come-not-(YOU)come America
b. Ta laile-mei-(you)lai Meiguo?
he $come_{LE}$-not-(YOU)come America
- a & b: 'Has he arrived in America?'

(4.4) a. Ta lai-mei-(you)laiguo Meiguo?
he come-not-(YOU)$come_{GUO}$ America
b. Ta laiguo-mei-(you)laiguo Meiguo?
he $come_{GUO}$-not-(YOU)$come_{GUO}$ America
- a & b: 'Has he been to America?'

(4.5) Ta laiguole-mei-(you)laiguo Meiguo?
he $come_{GUO-LE}$-not-(YOU)$come_{GUO}$ America
'Has he ever been to America?'

As the above examples show, the preverbal element *you* is incorporated in the A-not-A pattern. In negative declarative sentences, however, the preverbal element *you* may appear in positions that are non-adjacent to the verb. Consider a sentence like the following where a manner adverbial intervenes between the perfective element *you* and the verb *kan* 'read':

(4.6) Wo guji ta genben mei you haohaor kan zhe ben shu.
I guess he at all not YOU carefully read this CL book
'I guess he did not carefully read this book at all.'

It turns out that the perfective element *you* is not a prefix of the verb.

4.1.2. According to Klein & Li & Hendriks (2000: 728, 743), aspect expresses a temporal relation between the time at which the situation (process, state, event) described by the sentence obtains (the 'time of situation', abbreviated T-SIT), on the one hand, and the time about which something is asserted by the sentence (the 'topic time', abbreviated TT), on the other.

Based on this time-relational definition of aspect, Klein et al. claim that Chinese aspectual particles "assert that TT precedes, follows, includes, or is included in the time

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having a meaning and function similar to that of the perfective aspect, are in complementary distribution."

[34] Recall that in declaratives the affirmative form of a perfective predicate is V-*le*, while the negative one is *mei*-V. On the other hand, the negative form of V-*guo* is *mei*-V-*guo*. As the example (4.5) exhibits, the experiential aspect can occur in combination with the perfective aspect. Notice further that the preverbal element *you* can be deleted at the level of PF. I have slightly modified He's notation.

of a situation described by the sentence"[35]. Klein et al. further claim that in the case of 2-phase predicates such as *dao* 'arrive' containing a 'source phase' during which someone 'is not at some place' and a 'target phase' during which this someone 'is at some place', the 'distinguished phase' (abbreviated DP) is the target phase in Chinese, in contrast to the English aspectual system in which the source phase is the DP.

Along the lines of this framework, the perfective aspect marker *le* signals that TT OVL PRETIME AND T-DP[36]. For a sentence like

(4.7) Zhang San zhongyu dao-le jia. (Klein et al. 2000: 758)
Zhan San finally arrive-LE home
'Zhang San finally arrived home.',

this means that T-DP as well as a subinterval of the source phase are included within TT. Klein et al. (2000: 758) illustrate this by means of the following diagram, in which ++++ indicates the distinguished phase, ... the source phase of 2-phase expressions, and [ ] the assertion time TT:

(4.7') ....[....+++++]

In contrast to *le*, the experiential verb suffix *guo* "indicates that the time about which something is asserted falls into the posttime of the distinguished phase"[37]. Consider the following sentence given by Klein et al. (2000: 760):

(4.8) Zhang San chuguo-guo. ----------++++++++ [ ]
Zhang San go abroad-GUO source target
'Zhang San has been to other countries.'

In this sentence, both the source phase and the target phase precede TT, which means that the resulting state, Zhan San's being abroad, no longer obtains.

4.1.3. In contrast to the A-not-A pattern which, if filled with a transitive verb, permits the forms V-not-VO and VO-not-V, such as in (4.1) and (4.2), the A-not pattern is strongly tied to VO-not. That is to say, a question pattern like V-not-O in which the negator *bu* precedes the object does not exist, as indicated in (4.10):

(4.9) Ni kan dianyian bu?
you watch movie not
'Do you watch the movie?'

(4.10) *Ni kan-bu dianying?
you watch-not movie

At this point, it is important to point out that the A-not pattern is much more deeply rooted in the Chinese language than the A-not-A pattern. Whereas the A-not pattern can be traced back to Classical Chinese (Pre-Qin Dynasty to Han Dynasty), as noted by Cheng et al. (1996: 51), it took until the early Middle Ages (Sui and Tang Dynasties) that the A-not-A pattern came into use (cf. Ohta (1987: 378)). This means that the A-not pattern of the verb exemplified by the VO-not form *kan dianying bu* 'watch movie not' in the example (4.9) above is an independent pattern which cannot be derived from the VO-

[35] Ibid., p. 753.

[36] Cf. ibid., p. 754.

[37] Ibid., p. 759.

not-V pattern (2.2), *kan dianying bu kan* 'watch movie not watch', by ellipsis (see also Shao (1996: 110f.)).

4.2. A proposal for a unified derivation of A-not-A and A-not questions

So far we have dwelt on the Chinese data. In this subsection, the problem of how the predicate of A-not-A and A-not questions is construed will be taken care of. As we will see, the analysis of the subpatterns (4.1), (4.2) and (4.9) exceedingly depends on the syntactic level one starts from.

4.2.1. Based on the Strong Lexicalist Hypothesis[38], I propose that both in (4.1) and in (4.2) a 'morphological word'[39], namely *kan-bu-kan* consisting of the verb stem *kan* 'watch' and the semi-suffix *bu-kan*, is directly inserted in the sentence at D-structure, while in (4.9) the same verb stem is followed by the semi-suffix *bu*. In connection with a supposed D-structural OV order, this involves that (4.1) and (4.2) share the D-structure (4.11), whereas (4.9) is derived from a D-structure like (4.12):

(4.11) [$_{V'}$ ni [$_{V'}$ dianying kan-bu-kan]]
you movie watch-not-watch

(4.12) [$_{V'}$ ni [$_{V'}$ dianying kan-bu]]
you movie watch-not

Note that the sentence negation *bu* is incorporated into the morphological word form *kan-bu-kan* and *kan-bu*, respectively.

With respect to the three examples under discussion, my basic idea is that semi-suffixes can be 'taken along' or 'left behind' in the process of deriving the S-structure of sentences. Whereas in (4.1) the semi-suffix *-bu-kan* has been 'taken along' with the stem, it has been 'left behind' in (4.2). In (4.9), however, the semi-suffix *-bu* must be obligatorily 'left behind'.

Viewing this in connection with our assumptions in section 3 (cf., especially, (3.2)), the predicates of the examples concerned are shaped like this at the level of S-structure:

(4.1') [$_{V'}$ kan-*bu-kan*$_1$ [$_{V'}$ dianying t_1]]
watch-*not-watch* movie

(4.2') [$_{V'}$ kan$_1$ [$_{V'}$ dianying t_1-*bu-kan*]]
watch movie *not-watch*

(4.9') [$_{V'}$ kan$_1$ [$_{V'}$ dianying t_1-*bu*]]
watch movie *not*

The grammatical units *kan-bu-kan* in (4.11) and *kan-bu* in (4.12) are morphological words insofar as they cannot be freely interrupted by any lexical material, except for an object in cases like (4.2) and (4.9). That the object in (4.2) and (4.9) gets into a position in between the stem of the verb *kan* and its suffix is a result of the fact that the verb

[38] Cf. Di Sciullo & Williams (1987: 1): "Just as morphology has atoms, so does syntax, and words are commonly taken to be the atoms of syntax. We will call words in this sense *syntactic atoms*."

[39] Cf. Wurzel (2000).

stem moves into a higher V'-shell for purposes of argument licensing, as depicted in section 3. In other words, the object is not 'inserted' in a position between the verb stem and its suffix(es) at D-structure.

The principles on which our analysis of (4.1), (4.2) and (4.9) is based also apply to He's (1998) examples (4.3) through (4.5) above. As for (4.3a), I claim that *you* is a constitutive element of the suffix complex of the verb, yielding the S-structure (4.3a'):

(4.3) a'. $[_{V'}$ lai-mei-(you)lai$_i$ $[_{V'}$ Meiguo t_i]]
come-not-(YOU)come America

4.2.2. Considered from a pragmatic viewpoint, the A-not-AB, AB-not-A and AB-not patterns are not pure duplicates of each other. Instead, they represent different regional variants.

Whereas the pattern A-not-AB is used in southern dialects, in the southern variety of Mandarin Chinese and in the standard variant of Mandarin, the pattern AB-not-A is used in the Beijing dialect and in the northern language area but not in the standard variant of Mandarin Chinese. The pattern AB-not is used not only in the northern language area but also in various central and southern dialects, if '-not' is realized by *bu*. In short, in contrast to the pattern A-not-AB which occurs in Standard Mandarin, the patterns AB-not-A and AB-not have a regional slant.[40]

4.2.3. I would like to stress that a uniform derivation of yes/no questions based on the patterns V-not-VO, VO-not-V and VO-not will be impossible if Chinese is considered as a pure SVO language, as favored by Huang (1982; 1991), Mulder & Sybesma (1992), Dai (1993), McCawley (1994), Ernst (1994), N. Zhang (1997), Sybesma (1999), Schaffar & Chen (2001) and others.

Huang (1991) is forced to give different accounts for the patterns A-not-AB (V-not-VO) exemplified by (4.1) and AB-not-A (VO-not-V) exemplified by (4.2). As for A-not-AB, he proposes a morphological word formation mechanism involving a rule of verb copying followed by a rule inserting the negative morpheme 'not' *bu*. This mechanism fails, however, to work in the case of AB-not-A because of the intervening object which blocks a morphological derivation in Huang's system. Correspondingly, Huang derives the AB-not-A pattern not by a morphological but by a syntactic rule. More precisely, he derives AB-not-A (VO-not-V) from the syntactic pattern AB-not-AB (VO-not-VO) by 'anaphoric deletion'. This means that the predicate of a yes/no question like (4.2) would not have an S-structure like (4.2') given above but rather one like (4.2''):

(4.2'') $[_{VP}$ kan dianying] bu $[_{VP}$ kan ~~dianying~~]
watch movie not watch ~~movie~~

Such an analysis directly leads to the conclusion that the AB-not-A pattern is 'more disjunctive' and 'less grammaticalized' than the A-not-AB pattern.[41] Taking Huang's approach as their starting point, most of the authors concerned with A-not-A questions

[40] I have to thank Professor Liu Danqing (Beijing) for most of these facts (p.c.). See also Chen & Schaffar (1997).

[41] McCawley (1994), for example, differentiates between "two syntactically distinct types" which he calls 'reduplicative yes/no questions' and 'disjunctive yes/no questions', respectively (ibid., p. 179).

restrict themselves to investigating the A-not-AB pattern. Our conception is at variance with this prevailing trend.

4.2.4. Superficially, it seems that our analysis coincides with that of Huang, at least as far as the pattern A-not-AB is concerned. But on closer inspection, this turns out not to be the case. In the theoretical framework of Huang (1991), a [+Q] feature located in Infl° and the naked stem of the verb are separately inserted in the sentence. Not until deriving the S-structure the [+Q] feature triggers the copying of the verb stem and the insertion of a negation:

(4.13) $[_{IP}$ [+Q]...$[_{VP}$ V...]] (D-structure) → $[_{IP}$ [+Q]... $[_{VP}$ V-not-V ...]] (S-structure)

In our approach, however, a full morphological word form carrying a question feature [+Q] is inserted, yielding the D-structural predicate (4.14)[42]:

(4.14) $[_{V'}...[_{V'}$ V-not-$V_{[+Q]}]]$

4.2.5. To summarize the assumptions so far, I claim that the AB-not-A pattern is NOT 'more disjunctive' or 'less grammaticalized' than the A-not-AB pattern. Under a pragmatic viewpoint, the difference between A-not-AB on the one hand and AB-not-A and AB-not on the other is that the former is used predominantly in the standard variant of Mandarin Chinese, whereas the latter serve as dialectal variants of it.

My proposal that the A-not-AB, AB-not-A and the AB-not patterns should be recognized as having the same grammatical status under a synchronic view is supported by the fact that all of them obey Island Constraints, as stated by Huang (1991: 313f.). In contrast, disjunctive patterns with the conjunction *haishi* 'or' do not exhibit island effects. That is to say, as opposed to the A-not-AB, AB-not-A and AB-not patterns, disjunctive patterns with *haishi* 'or' are able to appear in subject clauses and relative clauses.[43]

4.2.6. Some residual asymmetries between A-not-AB and AB-not-A questions on the one hand and AB-not questions on the other are mentioned in Cheng et al. (1996: section 1.1). These asymmetries concern, among others, the use of the element *yijing* 'already', which, according to the three authors, is compatible with the AB-not pattern[44] but not with A-not-AB and AB-not-A. As for the A-not pattern, they give the following example:

(4.15) ta yijing kan-wan shu meiyou? (Cheng et al. 1996: 43, (7b))
he already read-finish book not-have
'Did he already finish reading the book?'

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[42] McCawley (1994: 180f.) correctly objects to Chomsky's (1991) treatment of the negative element in reduplicative questions as a fake negation rather than a real negation, i.e. as an element that does not appear in the deep structure. In our system, the negative element, incorporated in the morphological verb form, does appear at the level of D-structure.

[43] Interestingly enough, the syntactic pattern VP-not-VP representing a borderline type between disjunctive questions with *haishi* 'or' on the one hand and A-not-A questions on the other does show island effects, as noted by Huang (1991: 313f.).

[44] Cheng et al. call this pattern Negative Particle Questions (NPQs).

Basically, this example represents just the perfective subvariant of the AB-not pattern. By contrast, the imperfective subvariant of the pattern is not compatible with the perfective aspect-like element *yijing* 'already':

(4.16) *Ni yijing kan dianyian bu?
you already watch movie not
'Do you already watch the movie?'

It is highly questionable whether the perfective variant of the AB-not pattern exemplified by (4.15) above belongs to the AB-not pattern at all:

While the A-not-A form of the verb is incompatible with the so-called *ba*-construction[45], the perfective variant of the VO-not pattern is absolutely compatible, as (4.17) illustrates:

(4.17) Ni ba shu kanwan-le mei you?
you BA book read-finish-Asp not YOU
'Have you finished reading the book?'

Moreover, the perfective subpattern of AB-not, V-*le*O-*mei you*, can be utilized in the standard variant of Mandarin Chinese with no problems, while the imperfective subpattern of AB-not (i.e. VO-*bu*) has a regional slant, as stated in section 4.2.2.

Provided that this is correct, then A(B)-not is a purely imperfective pattern which, contrary to Cheng et al.'s (1996) claims, is just as incompatible with *yijing* 'already' as the A-not-AB and AB-not-A patterns.[46]

4.3. Additional evidence for our proposal

In section 3 I have hypothesized that internal arguments of the verb are licensed by moving the verb to c-commanding head positions of higher V'-shells. In section 4.2 we have applied this principle to A-not-A and A-not predicates, postulating that the stem of the verb can 'take along' or 'leave behind' its suffixes in deriving the S-structure of a sentence. In this section, I will show that verb raising in A-not-A and A-not predicates is even obligatory, while it can be dispensed with in yes/no questions with *ma*, under certain conditions.

Let's come back to the fact that the A-not-A form of the verb is incompatible with the so-called *ba*-construction and compare the structures (4.18a)/(4.19a), which do not contain an A-not-A predicate, with those of (4.18b)/(4.19b) containing an A-not-A predicate, yielding ill-formed structures:

(4.18) a. Ni ba shu nazou-le ma?
you BA book take away-ASP QP
'Have you taken away the book?'

b. *Ni ba shu nazou-mei- you nazou?
you BA book take away-not- YOU take away

[45] Cf. the next section, where the reasons for this incompatibility shall be explained.

[46] Explicitly arguing with Cheng et al. (1996), N. Zhang (1997: 134f.) also strives to underline the common syntactic features shared by A-not-A and A-not questions.

(4.19) a. Ni ba bilu sheng-le huo ma?[47]
you BA fireplace start-ASP fire QP
'Did you fire up the fireplace?'

b. *Ni ba bilu sheng-mei- you sheng huo?
you BA fireplace start-not- YOU start fire

My account for the difference in grammaticality of the above examples is that the raising of the verb is obviously blocked by the element *ba* in the 'b.'-sentences.

As for the grammaticality of the 'a.'-sentences, I claim that the element *ba*, which we have called a 'coverb' in section 2.5, is in truth a 'dummy verb' acting as a syntactic licenser of the direct object of the verb. Note that *ba* occupies exactly the same head position of a higher V'-shell into which the full verb is raised in the default case.[48]

Contrary to the ill-formed structures (4.18b)/(4.19b), the example (4.17) introduced in subsection 4.2.6 is well-formed, bearing out that no verb raising takes place in this structure and that this sentence is not an instance of the AB-not pattern.

To summarize, I'd like to reiterate that the ungrammaticality of (4.18b)/(4.19b) confirms our claim that V° raising to higher head positions of V'-shells for purposes of argument licensing obligatorily takes place in A-not-A sentences, such as illustrated by means of the S-structures (4.1'), (4.2') and (4.9') in section 4.2.1.

4.4. How A-not-A and A-not questions are structured as a whole

With respect to the problem of how A-not-A and A-not questions are structured as a whole, one of my central tenets is that they are typed in a clause-internal functional head position which I will baptize Force2° (F2°). More importantly, this position is not identical to the head position of the functional Polarity$_I$ Phrase (PolIP) introduced by Drubig (1994) in order to accommodate such elements like assertive negation and elements like *only* or *even* in English.

Additionally, my subsequent claims will be based on some central tenets of Chomsky's (1995) Checking Theory. Reduced to its barest essentials, this theory involves that each functional head possesses an abstract feature <F> that must be checked within its Checking Domain. This checking procedure can take place either by 'Merger', i.e. by the insertion of a lexical element before 'Spell-Out', or by 'Feature Attraction' at the level of LF.

4.4.1. As pointed out by Schaffar & Chen (2001), A-not-A and A-not questions convey 'information focus' without exception, while *ma* questions are compatible not only with 'information focus' but also with 'identificational focus' (as we will see in section 7).

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[47] Cf. Mei (1980: 25). According to Mei, the *ba* construction in this example is coming up from a place adverbial like *zai bilu-li* (lit. 'in the fireplace-inside' = 'in the fireplace'). This is questionable, since locative adjuncts are compatible with the A-not-A pattern (cf. Ernst (1994)).

[48] In Gasde (1998), I have expounded that not only the element *ba* but also *gei* preceding the indirect object and the element *bei* in passive sentences may serve as dummy verbs licensing an argument of the verb. Originally, *ba* was a verb meaning 'grasp' or 'hold'. As for its role in Modern Chinese, *ba* is often regarded as pure marker of the direct object or as a case marker. Cf. Zou (1993), for example.

Information focus is a type of focus which is often called presentational focus, wide focus, projective focus, maximally projected focus, novelty focus, or VP-focus. There is a general agreement that information focus has a "strictly incremental effect on the discourse" (Drubig 1998: 7) insofar as it specifies "new information". Along the lines of Kiss (1998), this type of focus conveys "non-presupposed" information marked by one or more pitch accents. In terms of Drubig (1998: 1), information focus is "licensed by integration into wider focus domains", which means that the focus feature is projected from a focus exponent. Based on this, Drubig & Schaffar (2001: 2) claim that licensing by embedding is a default mechanism which does not entail any further expenditure of encoding. According to López & Villalba (2000: 5), non-contrastive focus is always unmarked, i.e. no syntactic operations or morphological markers are associated with it. Seen in this light, assertive negation and English elements like *only* or *even* which may appear in Pol1° do not necessarily serve as "licensers" of information focus, as originally claimed by Drubig (1994: 22f.). Rather, they act as additional indicators of it. Whereas Drubig (1994) had declarative sentences in mind, Schaffar & Chen (2001: 857f.) establish a relationship between A-not-A predicates and Drubig's Pol1P. More precisely, they advocate that in A-not-A questions Pol1° is occupied by some kind of question operator. This is much to their credit. Yet, strictly speaking, Schaffar and Chen do not clearly distinguish between the morphological V-not-V form of the verb and an abstract question feature in Pol°. Instead, they suppose to "analyze the V-neg-V form as a question operator in Pol1" (p. 857). In consequence, they provide a sentence model according to which Pol1° can be alternatively occupied by 0 (affirmation), *bu/mei* (assertive negation), *zhi* ('only') and V-*bu/mei*-V (yes/no question). As an unavoidable result of this, VP remains literally empty in Schaffar & Chen's (2001: 858) sentence model (33).[49]

Deviating from Schaffar and Chen's intuitively very plausible approach, whose central idea is that the question operator in A-not-A sentences is located in Pol1°, I will take the position that the declarative/interrogative distinction and the affirmative/negative distinction denote different syntactic and conceptual levels which should not be mixed up. This view is empirically supported by the fact that affirmative and negative elements occur in both declarative and interrogative sentences (cf. section 5.2.5).

4.4.2. Starting from this point of view, I will claim that yes/no questions with *ma* on the one hand and A-not-A and A-not questions on the other are typed in two distinct positions.

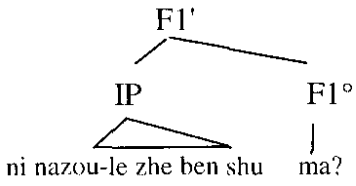
Yes/no questions with the question particle *ma* like

(4.20) Ni nazou-le zhe ben shu ma?
you take away-ASP this CL book QP
'Have you taken away this book?'

are typed in Force1° (F1°). Although located at the rightmost periphery of the sentence, F1° is a hierarchical position, from which *ma* c-commands the rest of the sentence:

[49] Besides, this model incorrectly gives the impression that the A-not-A form of the verb can co-occur with the sentence-final question particle *ma* in the same clause. Referring to Laka (1994), N. Zhang (1997: 126) claims that the functional head Σ, which apparently coincides with Drubig's (1994) Pol1°, can be either interrogative or negative. This claim comes close to Schaffar and Chen's (2001) approach.

(4.20')



Differently from *ma* questions, the typing procedure of A-not-A and A-not questions happens in a clause-internal position, namely in the head position of a functional phrase which I will call 'Force2P' (F2P).[50]

This means that simple yes/no questions like (4.21) and (4.22) have Logical Forms like (4.21') and (4. 22'), respectively:

(4.21) Ni qu-bu-qu?
you go-not-go
'Do you go there?'

(4.21') $[_{IP}\ ni_1\ [_{F2P}\ [_{F2°}\ [[+Q]\ <Q>]]\ [_{V'}\ t_1\ [_{V'}[_{V°}[[qu\text{-}bu\text{-}qu]_{[+Q]}]]\ ]]]]$ (LF)

(4.22) Ni qu-bu?
you go-not
'Do you go there?'

(4.22') $[_{IP}\ ni_1\ [_{F2P}\ [_{F2°}\ [+Q]\ <Q>]]\ [_{V'}\ t_1\ [_{V'}\ [_{V°}[[qu\text{-}bu]_{[+Q]}]]\ ]]]]$ (LF)

That is to say, the morphological words *qu-bu-qu* 'go-not-go' and *qu-bu* 'go-not' bearing a yes/no question feature [+Q][51] are base-generated in the sentence position V°. At the level of LF, however, [+Q] "starts up on its own", moving to F2°[52], where it is 'sister adjoined'[53] to a correlating weak question feature, <Q >, in order to check it.

Provided this, my contention is that it is the <Q > feature checked by [+Q] that contributes interrogative force to the whole sentence in A-not-A and A-not questions. In other words, I claim that in A-not-A and A-not questions the syntactic procedure of 'clausal typing' (Cheng (1991)) takes place within the extended predicate, comprising F2P and V'.[54] Moreover, I contend that yes/no questions of this type do not contain a Force1 Phrase (F1P), since one clause cannot be typed twice.

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[50] Note that F1' and F2P are in complementary distribution.

[51] Actually, [+Q] is an abbreviation of the more complex question feature [+Q, -Wh], which is one specification of the abstract clausal typing feature [+/-Q,+/-Wh]. It ensues that Wh-questions have the feature specification [-Q, +Wh], while declaratives are marked by [-Q,-Wh].

[52] Recall that 'Attraction' involves movement of a set of grammatical features carried by a head on their own (without movement of the corresponding phonetic features). See Radford (1997), p. 230.

[53] The notion of 'sister adjunction' stems from the GB theory. To 'sister adjoin' one constituent A to another constituent B is to attach A under the node C immediately dominating B. Opposed to this, to 'Chomsky-adjoin' A to B means to create a new B-node which immediately dominates both A and B. Cf. Radford (1981: 169).

[54] Arguably, the extended predicate of A-not-A and A-not questions is an instance for a 'phase' along the lines of Chomsky (1998: 20; 1999: 9). Either a verb phrase in which all theta roles are assigned, vP, or a full clause including tense and force can be a 'phase' in Chomsky's sense.

4.4.3. In contrast to this hypothesis, Huang (1982: 532), Li (1992: 137f.), and Ernst (1994: 258) postulate that in A-not-A questions "the A-not-A operator" (Huang) / "the A-not-A form" (Li) / "the verb bearing [+Qu]" (Ernst)[55] must raise to "Comp" at LF.

Similarly, Cheng et al. (1996: 56ff.) postulate that the negation element in 'Negative Particle Questions' (i.e. 'A-*not*' questions) must be raised to C° in Mandarin Chinese which displays agreement between the aspect of the verb and the choice of the negation element, while it is base-generated in C° in non-agreement dialects of Chinese.

Differently from these hypotheses, I contend that [+Q]-raising to Comp at LF in A-not-A and A-not questions does not take place in Mandarin Chinese. Let's take a closer look at Li's and Ernst's arguments:

Li (1992) is concerned with indefinite wh-phrases, the distribution of which is characterized by the fact that they can only appear in polarity environments, i.e. within the scope of a negator or of a question operator. This is the case in (4.23ab) but not in (4.24):

(4.23) a. Ta xi-bu-xihuan shenme?[56]
he like-not-like what
'Does he like something/anything?'

b. Shei/Shenme ren xihuan ta ma?
who /what man like him QP
'Does anyone like him?'

(4.24) *Shei/Shenme ren xi-bu-xihuan ta?
who /what man *like-not-like* *him*

In (4.23a), the indefinite wh-phrase *shenme* 'something/anything' appearing as the direct object of the verb is licensed by the A-not-A question operator [+Q] which, in our terms, is located in F2°. In a similar manner, the indefinite wh-phrase *shei/shenme ren* 'anyone' acting as a subject is in the scope of the question operator in 'Comp' (to use Li's phrase) in (4.23b). In contradiction to this, the subject in (4.24) lacks a licenser, with the result that the whole structure is bad.

Claiming that the A-not-A form undergoes raising at LF, Li's problem is that she cannot explain the asymmetry in grammaticality between (4.23b) and (4.24). If in (4.24) the question operator is raised to Comp at LF, the sentence should be just as grammatical as (4.23b). To put it another way, on the precondition of an LF raising of the question operator, A-not-A structures like (4.24) should behave exactly like their counterparts with *ma*, because once the question operator has been raised to Comp, it c-commands the subject.

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[55] More precisely, Ernst (1994: 246) following Aqvist (1965), takes [+Qu] "as representing an imperative operator which requests information of the listener". Groenendijk & Stokhof (1997) criticize Aqvist's view which is also maintained by Vanderveken (1990). Contrary to Aqvist and Vanderveken, Groenendijk and Stokhof regard asking a question as a basic speech act.

[56] Note that in this example the verb *xihuan* 'like' is – optionally – truncated to its first syllable *xi*, while the semi-suffix of the lexeme in question occurs in its full form. Dai (1993: 24) derives verb forms like *xi* by a formal operation of subtraction which deletes the second syllable *-huan* in *xihuan* in inflectional morphology. Note further that Dai's derivation of the *xi-bu-xihuan* form deviates from that suggested by Huang (1991: 316f.).

In view of this dilemma (which Li is aware of) she argues that "indefinite Wh must be licensed at S-structure" (p. 138). This arbitrary ad hoc assumption, however, amounts to saying that the syntactic level of LF, otherwise responsible for wh-Movement, Quantifier Raising and Scope Interpretation by definition, is idle in the particular case of question operator raising.

At this juncture, the question arises what the point of a movement operation without any impact would be.

Li's Problem can easily be resolved by assuming that the [+Q] operator in (4.21) remains in F2°.

Ernst (1994) correctly observes that the A-not-A pattern is incompatible with some 'core adjuncts', such as epistemic elements and causal adjuncts, whereas yes/no questions ending with the question particle *ma* are allowed to contain such adjuncts:

(4.25) a. *Ta yiding qu-bu-qu?
he definitely go-not-go

b. Ta yiding qu ma?
he definitely go QP
'Is he definitely going?'

(4.26) a. *Ni yinwei ni-de pengyou de yaoqiu qu-bu-qu?
you because your friend PART demand gou-not-gou

b. Ni yinwei ni-de pengyou de yaoqiu qu ma?
you because your friend PART demand gou QP
'Do you go there because of your friend's demand?'

Ernst (1994: 245) explains the ungrammaticality of (4.25a) by means of the 'Isomorphy Principle' (IsoP)[57].

In fact, the asymmetry in grammaticality between A-not-A variants and the *ma*-variants in (4.25) and (4.26) can be explained without recourse to Ernst's IsoP, provided you don't operate on the premise that the verb bearing [Qu] must be raised to Comp. Considered from a semantic viewpoint, it suffices to say that the incompatibility of epistemic modificators and causal adjuncts with the A-not-A form of the verb arises from the fact that they both must operate over propositions. Given this, (4.25a) and (4.26a) are ungrammatical, because the [+Q] feature raised to F2° at LF, as required by our approach, turns the predicate represented by V' into a function.[58]

Differently, yes/no questions with *ma* contain a strong <Q>-feature in F1° that has scope over the whole sentence. This feature is checked by the question particle *ma* which is 'sister-adjoined' to <Q> by Merger. The question feature in F1° turns the

[57] This principle reads: *If an operator A has scope over B at SS, then A has scope over B at LF.* Based on this principle Ernst claims that sentences like (4.25a) are semantically anomalous, as adverbs like *yiding* cannot take question operators in their scope. And, due to the IsoP, this anomaly exists not only at S-structure but also at LF, because not only the verb bearing [+Qu] must raise to Comp at LF, but also the epistemic operator must raise to a pre-field position in which it has scope over the question operator, just as it had at the level of S-structure, yielding an LF like the following (p. 252, (43)):

(i) $yiding_2$ qu-$[Qu]_1$ [ta t_2 t_1]

[58] For the hypothesis that from a semantic viewpoint yes/no questions are functions, see Krifka (2001a: 2).

proposition into a function as well, but in contrast to the A-not-A structures (4.25a) and (4.26a), the epistemic modificator and the causal adjunct lie within the scope of *ma* at every syntactic level in (4.25b) and (4.26b).

4.4.4. B. Zhang (1999: 296f.) observes that indefinite objects cannot occur in A-not-AB and AB-not-A questions, as examples like (4.27ab) show:

(4.27) a. *Nimen mai-bu-mai yi-liang xin che? (A-not-AB)
you buy-not-buy one-CL new car

b. *Nimen mai yi-liang xin che bu-mai? (AB-not-A)
you buy one-CL new car not-buy

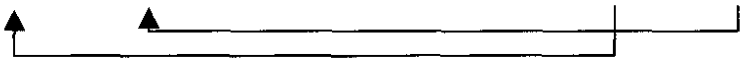
Zhang does not provide an explanation for his observation. However, granted that his observation is correct, it serves as an additional piece of evidence for my claim that A-not-A questions are typed in F2°.

Huang (1987: 249) stresses that it "is well known" that a numerally quantified NP is generally specific in Chinese. With respect to our examples (4.27ab) this means that the object DP *yi-liang xin che* 'a new car' must undergo raising across F2° at the level of LF. Yet, exactly this is not allowed for semantic reasons, since a question operator must have scope over the quantifier at any syntactic level. In contrast to (4.27ab), this requirement is obeyed in (4.28):

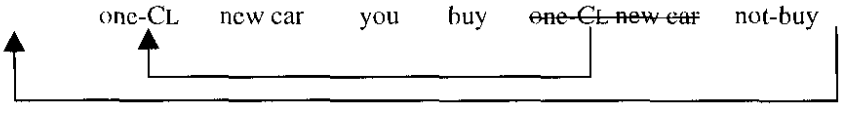
(4.28) Nimen mai yi-liang xin che ma?
you buy one-CL new car QP
'Are you buying a new car?'

It should be noted that Ernst's (1994) Isomorphy Principle does not work in cases like (4.27ab). If the IsoP were operative in such cases, not only the numerally quantified NP *yi-liang xin qiche* 'a new car' but also the [+Q] operator in F2° would have to be raised to "Comp" at LF:

(4.27') a. *[$_{\text{"Comp"}}$[+Q] [$_{\text{IP}}$ yi-liang xin che [$_{\text{IP}}$ nimen mai-bu-mai$_{[+Q]}$ ~~yi-liang-xin-che~~]]]
one-CL new car you buy-not-buy ~~one-CL new car~~



b. *[$_{\text{"Comp"}}$[+Q] [$_{\text{IP}}$ yi-liang xin che [$_{\text{IP}}$ nimen mai ~~yi-liang-xin-che~~ bu-mai$_{[+Q]}$]]]
one-CL new car you buy ~~one-CL new car~~ not-buy



In view of this, (4.27ab) should be just as grammatical as (4.28). The fact that this is not the case proves once more that the scope of the [+Q] operator in A-not-A questions is restricted to the predicate at every syntactic level.

5. Yes/no questions with an overt question operator in F2°

So far we have claimed that A-not-A and A-not predicates contain an abstract [+Q] feature that checks a correlating abstract <Q> feature in F2° by the LF operation of Attraction.

In this section, we will consider several overt question operators which are of theoretical interest insofar as they corroborate our hypothesis concerning the existence of a functional F2P. These operators with interrogative force appear both in some Chinese dialects and in Mandarin Chinese.

5.1. Dialectal variants

The so-called *a*-operator is used in Shanghainese and Suzhounese (both belonging to the Wu dialect group):

(5.1) a. Nong ming zao a dao Shanghai qu? (Xu & Shao 1998: 89, Shanghainese)
you *tomorrow morning* PART to Shanghai go
'Do you go to Shanghai tomorrow morning?'

b. [$_{IP}$ nong$_i$ ming zao [$_{F2P}$ [$_{F2°}$ [a] <Q >] [$_{V'}$ t$_i$ [$_{V'}$ dao Shanghai qu]]]]?
you tomorrow morning PART to Shanghai go

(5.2) a. Li a kan xi? (Yuan 1993: 103, Suzhounese)
he PART watch theatre
'Does he go to the theatre?'

b. [$_{IP}$ li$_i$ [$_{F2P}$ [$_{F2°}$ [a] <Q >] [$_{V'}$ t$_i$ [$_{V'}$ kan xi]]]]?
he PART watch theatre

The interrogative force in (5.1) and (5.2) is exclusively conveyed by the question operator *a* which we claim to be located in the head position of F2P. In F2°, it is 'sister-adjoined' to an abstract <Q> feature by the operation of Merge (which takes place at D-structure). Correspondingly, the predicates of (5.1) and (5.2), *dao Shanghai qu* 'go to Shanghai' and *kan xi* 'go to the theatre', respectively, can neither assume an A-not-A or A-not form nor do they contain a question feature.

The scope of the overt question operator *a* is restricted to the predicate. Hence, just like A-not-A questions[59], yes/no questions with *a* are not consistent with epistemic elements like *yiding* 'definitely' or causal adjuncts like *yinwei ni-de pengyou de yaoqiu* 'because of your friend's demand'. And just like A-not-A questions, yes/no questions made up with the help of *a* do not project F1', because the *a* operator turns V' into a function.

The same should apply to the *kam* operator which is used in the Southern Min dialect spoken on the mainland in the province of Fujian and in Taiwan:

(5.3) a. Li kam u chi:? (Huang 1991: 325)
you PART have money
'Do you have money?'

[59] Cf. (4.25a) and (4.26a) discussed in section 4.

b. [IP li1 [F2P [F2° [kam] <Q >] [V' t1 [V' u chi:]]]]?
you PART have money

5.2. The assertive question operator *shi-bu-shi* in Mandarin Chinese

In the standard variant of Mandarin Chinese, there is a type of *shi-bu-shi* which is not derived from the familiar "*it*-cleft" marker *shi*. Rather, it is derived from a *shi* which is used to "assert the proposition of a sentence", as expressed by Yeh (1995: 43).

My claim is that the A-not-A form of this 'assertion marker' is a pure question operator.[60] Appearing in F2°, assertive *shi-bu-shi* takes scope over the sentence constituent V' which may be extended by various VP modifiers[61].

5.2.1. First, consider examples like the following, in which the assertive question operator *shi-bu-shi* and the full verb are adjacent to each other:

(5.4) a. Ta zuotian shi-bu-shi lai-guo? (Shao 1996: 132)
he yesterday AM-not-AM come-ASP
'Did he drop in yesterday?'

b. [IP ta1 zuotian [F2P [F2° [shi-bu-shi] <Q >] [V' t1 [V' lai-guo]]]]?
he yesterday AM-not-AM come-ASP

(5.5) a. Ni shi-bu-shi xihuan zhe ben shu?
you AM-not-AM like this CL book
'Do you like this book?'

b. [IP ni1 [F2P [F2° [shi-bu-shi] <Q >] [V' t1 [V' xihuan2 [V' zhe ben shu t2]]]]?
you AM-not-AM like this CL book

(5.6) a. Ni shi-bu-shi gaosu-le ta zhe ge xiaoxi?
you AM-not-AM tell-ASP he this CL news
'Did you tell him this piece of news?'

b. Ni1 [F2P [F2° [shi-bu-shi] <Q >] [V' t1[V' gaosu-le2 [V' ta [V' [V° t'2
you AM-not-AM tell-ASP he
[V' zhe ge xiaoxi t2]]]]]]]?[62]
this CL news

As Yeh observes, the negative counterpart of the "*it*-cleft" marker *shi* is *bu-shi*, while the negative counterpart of the assertion marker *shi* is *bu* or *mei(you)*, depending on the aspect of the verb. Given this, the fact that the *shi-bu-shi* in (5.4) through (5.6) represents the A-not-A form of the assertion marker *shi* is borne out by the fact that the correct negative response to them is *meiyou* for (5.4) and (5.6), while it is *bu* for (5.5). Based on this, we can say that the predicates of our examples convey information focus.

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[60] Along these lines, this type of *shi-bu-shi* is rendered as AM-not-AM in the subsequent examples.

[61] Note that, in terms of our sentence model (1.1), VP modifiers are in fact V' modifiers. Regardless of this fact, we use the more familiar notion 'VP modifier' in the subsequent text.

[62] Cf. the abstract sentence structure given in section 3 under (3.2).

5.2.2. Differently from the examples above, the *shi-bu-shi* operator in (5.7) and (5.8) is adjacent not to the full verb of the sentence but to a dummy verb. In (5.7), it is adjacent to the dummy verb *ba* treated in section 4:

(5.7) a. Zhang San shi-bu-shi ba zhe ben shu kanwan-le?
Zhang San AM-not-AM BA this Cl book finish-ASP
'Has Zhang San finished this book?'

b. Zhang San$_i$ [$_{F2P}$ [$_{F2°}$ [shi-bu-shi] <Q >] [$_{V'}$ t_1 [$_{V'}$ ba [$_{V'}$ zhe ben shu
Zhang San AM-not-AM BA this Cl book
kanwan-le]]]]?
finish-ASP

Drubig & Schaffar (2001: 4) consider the *ba* construction as a mechanism to remove de-focused arguments from the focus domain. Given this pragmatic approach, the *shi-bu-shi* operator in (5.7) is obligatorily assertive.

In the same manner, the *shi-bu-shi* operator is assertive in the following example, where the dummy verb *gei* serves as a syntactic licenser of the indirect object:

(5.8) a. Ni shi-bu-shi gei Li Si ji-le yi-ben shu?
you AM-not-AM to Li Si send-ASP one-CL book
'Have you sent a book to Li Si?'

b. Ni$_1$ [$_{F2P}$ [$_{F2°}$[shi-bu-shi] <Q >] [$_{V'}$ t_1 [$_{V'}$ gei [$_{V'}$ Li Si [$_{V'}$ ji-le$_2$ [$_{V'}$ yi-ben
you AM-not-AM to Li Si send-ASP one-CL
shu t_2]]]]]]?
book

According to Yeh's negation test, (5.7) and (5.8) contain the assertive question operator *shi-bu-shi*, for in both cases the correct negative response is *mei you*.

5.2.3. Now consider some examples in which the assertive *shi-bu-shi* operator is adjacent to a VP modifier:

(5.9) a. Ni shi-bu-shi zai Beijing mai-le bu-shao dongxi?
you AM-not-AM in Beijing buy-ASP not-little thing
'Did you buy a lot of things in Beijing?'

b. Ni [$_{F2P}$ [$_{F2°}$ shi-bu-shi] [$_{V'}$ zai Beijing [$_{V'}$ mai-le$_i$ [$_{V'}$ bu-shao dongxi t_i]]]]?
you AM-not-AM in Beijing buy-ASP not-little thing

The ability of the assertive question operator *shi-bu-shi* to appear in the above structure can be accounted for along these lines of Speas (1990: 49ff.) who rejects the hypothesis of Lebeaux (1988) that D-structure includes heads and arguments and nothing else. That is to say, she rejects the allegation that all adjuncts are added to the phrase marker AFTER D-structure. To give evidence for her position, Speas shows by means of English examples, which hold true for Chinese as well, that benefactive, locative and instrumental PPs "do not show anti-reconstruction effects".

As for benefactives, compare the strong crossover cases (5.10a,b) which convincingly prove that these phrases must be present at D-structure:

(5.10) a. *For Mary$_1$'s brother, she$_1$ was given some old clothes.

b. *Weile Zhang San$_1$ de anquan, ta$_1$ duobi-zai cheng-li.
for Zhang San PART safety he hide-in town-inside
*'For Zhang San$_1$'s safety, he$_1$ was hiding in the town.'

In contrast to (5.10), weak crossover configurations like in (5.11) are well-formed:

(5.11) Zhang San$_1$ shi-bu-shi weile ta$_1$-de anquan duobi-zai cheng-li?
Zhang San AM-not-AM for his safety hide-in town-inside
'Does Zhang San hide in the town for his safety?'

Given Speas' theory, it seems justified to regard locatives and benefactives as a part of the extended predicate.

Chinese behaves like English and other languages in that "focus has a systematic phonological manifestation in the form of (sentence/pitch) accent"[63]. This implies that the *shi-bu-shi* operator in (5.9) and (5.11) is assertive on the condition that the VP modifier following it does not carry the pitch accent of the sentence. If the modifier does carry the pitch accent, the *shi-bu-shi* operator preceding it cannot be assertive and the predicate lying in the scope of this operator cannot not convey information focus. Instead, it conveys identificational focus, as we will see in section 7.

5.2.4. The predicate in the scope of assertive *shi-bu-shi* can consist of a matrix clause and a complement clause. In that case, the assertive question operator occupies the F2° position of the matrix clause:

(5.12) Zhang San shi-bu-shi yunxu Li Si he pijiu?
Zhang San AM-not-AM allow Li Si drink beer
'Has Zhang San allowed Li Si to drink beer?'

The information focus conveyed by (5.12) may comprise either the matrix predicate representing a control structure in which the object of the matrix verb controls the PRO subject of the complement clause, as in (5.12'), or merely the predicate of the embedded clause, as in (5.12"):[64]

(5.12') Zhang San [$_{F2P}$ shi-bu-shi [$_{V'\ F}$[yunxu Li Si$_i$ [PRO$_i$ he pijiu]]]]
Zhang San AM-not-AM allow Li Si drink beer

(5.12") Zhang San [$_{F2P}$ shi-bu-shi [$_{V'}$ yunxu Li Si$_i$ [PRO$_i$ $_F$[he pijiu]]]]
Zhang San AM-not-AM allow Li Si drink beer

---

[63] Cf. Rochemont & Culicover (1990: 17).

[64] Note that the *shi-bu-shi* operator cannot appear in the embedded clause:

(i) *Zhang San yunxu Li Si shi-bu-shi he pijiu?

That is, the operator concerned must have scope over the matrix predicate, even if only the embedded predicate is 'new information'. Von Stechow (1991: 810 (45)) and Drubig (1994: 20ff.) discuss the problem with the help of English focus-sensitive particles like *only* and others which can be ambiguous with respect to focus. See also Taglicht (1984).

5.2.5. The *shi-bu-shi* operator is obligatorily assertive if it is followed by a modal, a negation, or a negation combined with a modal, as observed by Liu & Pan & Gu (1983: 491ff.):

(5.13) a. Dasuan shi-bu-shi neng sha xijun?
garlic AM-not-AM able kill germ
'Is garlic able to kill germs?'

b. Ni shi-bu-shi bu tongyi zhe zhong yijian?
you AM-not-AM not agree this kind opinion
'Do you not agree with this kind of opinion?'

c. Zhe zhong shi, shi-bu-shi bu gai zuo?
this kind matter AM-not-AM not ought do
'As for this kind of matters, should one do them?'

The fact that the assertive question operator *shi-bu-shi* is consistent with a sentence negation, as (5.13b,c) show, is highly significant, since it vindicates our hypothesis set up in section 4.4 that F2° and Drubig's (1994) Pol1° are distinct sentence positions which must be strictly distinguished from each other. Whereas F2° acts as the host of the assertive question operator *shi-bu-shi*, Pol° (or, in terms of Drubig, Pol1°) is the head position which sentence negations appear in.

The phenomenon that yes/no questions with the assertive question operator *shi-bu-shi* are consistent with a V'-external negator while A-not-A and A-not sentences are not results from the fact that the negative element within the A-not-A form of the verb "is just as real as the one in disjunctive questions"[65]. In contrast, the predicates in cases like (5.13b,c) above lack any negator incorporated into the verb form.

Notice that the *bu* element in the *shi-bu-shi* operator is not aspect-sensitive. This is an easily verifiable statement: assertive *shi-bu-shi* is compatible with perfective predicates, as the example (5.9) given under 5.2.3 shows. Even in this sentence, the *bu* element incorporated into the *shi-bu-shi* operator cannot be replaced with *mei you* (a *shi-meiyou-shi* operator does not exist in Chinese). In short, assertive *shi-bu-shi* is a pure question operator whose internal *bu* element does not negate the predicate of the sentence.

5.2.6. Our claim that the *shi-bu-shi* described in this section is an assertive question operator which conveys information focus can be confirmed by two tests:

First, sentences containing this type of *shi-bu-shi* are incompatible with Ernst's 'core adjuncts', just as A-not-A and A-not questions are[66]:

(5.14) Ta (*yiding) zuotian (*yiding) shi-bu-shi lai-guo?
he definitely yesterday definitely AM-not-AM come-ASP
'Was he already here (once) yesterday?'

(5.15) Ni (*yinwei zhe ge guanxi) shi-bu-shi xihuan zhe ben shu?
you for this CL reason AM-not-AM like this CL book

[65] McCawley 1994, p. 181.

[66] In contrast to this, the "*it*-cleft" question operator *shi-bu-shi* is compatible with 'core adjuncts'.

Second, sentences containing this type of *shi-bu-shi* allow continuations like (5.16A):

(5.16) Q: Zai zuotian-de hui-shang, ni shi-bu-shi tongyi-le ta-de yijian?
at yesterday-PART meeting-above you AM-not-AM agree-ASP his opinion
'Did you agree with his opinion at yesterday's meeting?'

A: Dui, erqie ni-de yijian wo qishi ye tongyi-le.
Correct, and your opinion I basically also agree-Asp
'Correct, and as for your opinion, I basically also agreed.'

Answers like that in (5.16) are pragmatically appropriate, if the entity concerned ('his opinion' in (5.16Q)) permits alternatives (such as 'your opinion'). Phrased differently, 'his opinion' in (5.16Q) is not exhaustively used. This fact is relevant in that exhaustivity is a significant feature of identificational focus which I will take care of in section 7.

5.2.7. To summarize briefly, the occurrence of overt clause-internal question operators confirms our claim about the existence of a functional F2P other than Pol1P. Furthermore, it bears out our assumption made in section 4 that there is an abstract <Q> feature in F2° which has to be checked by an abstract [+Q] feature in the case of A-not-A and A-not predicates. This checking procedure takes place at LF, while the checking of <Q> by the assertive operator *shi-bu-shi* happens by merging the question operator with <Q> at D-structure.

6. Topics in yes/no questions

At first glance, the question of the role topics play in yes/no questions seems easy to answer, because semantically there is no reason why, instead of making a comment, the speaker cannot ask a question about the topic, as Huang (1981/82: 397) pointed out. But looking at it again, issues like an appropriate typology of topics, problems like whether different kinds of topics are anchored to different syntactic positions, the syntactic status of contrastive topics, and others are quite intricate.

6.1. Two basic types of topic

Semantically, there are two basic types of topics which should be strictly distinguished from each other: Frame-Setting Topics (FST) and Aboutness Topics (AT).

FSTs set an individual (entity-related), spatial, temporal or conditional frame within which the main predication holds, i.e. they do not make any direct contribution to the descriptive content of an assertion but supply information about the relevant contextual background to which the descriptive content is related.[67]

ATs bear a selectional relation to the verb of the sentence. They are divisible into 'outer' and 'inner' ATs. An outer AT is related to an argument position of the verb which may be occupied by a resumptive pronoun, an epithet[68] or an empty element. The

[67] Cf. Chafe (1976), Haiman (1978) and Maienborn (1996).

[68] Cf. Lasnik & Stowell (1991: 708): Epithets may function as non-referential bound variables, provided their antecedent is not in a c-commanding A-position.

inner AT, however, coincides with the unmarked subject. ATs are presented as already existing in the discourse, as the item about which knowledge is added.[69]

Our distinction between FSTs and ATs corresponds to the observation of Yuan (2000: 3) that grammaticalized topics can be traced back to two sources: discourse topics and sentence-internal elements. Asher (1993) claims that discourse topics are propositions. Given this, it is quite natural that many FSTs in Chinese everyday speech have the form of a clause. Let's have a look at the following arbitrary examples which contain both FSTs (a-c) and ATs (d-g):

(6.1) a. Ta yaoshi fei yao zou ne, ni liu-bu-liu ta?[70]
He if whatever happens want go PART you stop-not-stop he
'If he wants to go whatever happens, will you stop him?'

b. (Shuo-qi) shuiguo (a), ni xi-bu-xihuan pinguo?
(talking of) fruit (PART) you like-not-like apples
'While we are talking of fruits, do you like apples?'

c. Zhiyu qita wenti, nimen zuohaole-meiyou-zuohao yiqie zhunbei?
as for other issue you $\text{finish}_{\text{ASP}}$-not-finish all preparation
'As for the other issues, have you prepared anything?'

d. Yi Hangzhou bendiren shuo ba, tamen he-bu-he cha?
take Hangzhou native people speak PART they drink-not-drink tea?
'As for the native people of Hangzhou, do they drink tea?'

e. Zhe ge ren, ni xi-bu-xihuan ta / zhe ge jiahuo?
this CL man, you like-not-like he / this CL guy
'(As for) this man, do you like him / this guy?'

f. Zhe ben shu ni kan-bu-kan?
this CL book you read-not-read
'(As for) this book, will you read (it)?'

g. Li xiansheng ne, ren-bu-renshi ni?
Li mister PART know-not-know you
'(As for) Mr. Li, does (he) knows you?'

Based on Yuan's (2000) and Asher's (1993) conception, DPs serving as a FST like the one in (6.1b) are the remainder of truncated clausal structures. Moreover, the optional particle in (6.1b) is in essence a clause-final modal particle.[71]

Finally, our view involves that one topic-comment structure may simultaneously comprise a FST and an AT (the subject). This applies to the examples (6.1a) through (6.1f).

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[69] Cf. Gundel (1988[1974]), Reinhart (1982), Molnár (1991) and others. Note that our notion of topic does not include "secondary topics" in the sense of Tsao (1990), Xu & Liu (1998) and others.

[70] Based on the observation that conditional clauses and topics are marked identically in a number of unrelated languages, Haiman (1978) postulated that conditionals are topics. Biq (1988), Tsao (1990) Bolland (1993), Gasde (1993), Gasde & Paul (1996), and Xu & Liu (1998) have applied this idea to Chinese.

[71] Many researchers would interpret this particle as a "topic marker". See Xu & Liu (1998), for example.

This conception is consistent with Jacobs' (2001: 641) claim that "the topic can show different degrees of syntactic integration into the rest of the sentence, from full integration (the topic has a grammatical function in the main clause of the sentence) via loose integration (the topic is realized outside the clause, but coindexed with an element within the clause) to total lack of integration (the topic is neither inside the clause nor co-indexed with an element in the clause)".

6.2. Topics as speech acts and the syntactic consequences of this postulate

6.2.1. In this paper, I will follow Krifka (2000: 1, 5; 2001b: 11f.) who postulates that "topic selection is a speech act itself, an initiating speech act that requires a subsequent speech act, like an assertion, question, command, or curse about the entity that was selected". This view was basically also held by Lippert (1965)[72], Altmann (1981), and Jacobs (1984).

In consequence, both FSTs and ATs (except for the AT that coincides with the unmarked subject) must be base-generated in a structural position from which they c-command the comment. This c-commanding condition is vital especially with respect to ATs, which corefer with a resumptive or empty element serving as an argument of the verb by definition.

I claim that both types of topic are adjoined to the highest functional projection of the sentence, i.e. to F1' in declaratives and *ma* questions, as suggested in my sentence model (1.1), and to IP (as in (6.1f)) or F2P (as in 6.1g)), respectively, in A-not-A questions[73]. This treatment agrees with Krifka's (ibid.) claim that topics have "to scope out of speech acts".

6.2.2. Note that, according to this approach, FSTs and outer ATs do not occupy different sentence positions, as opposed to a conceivable alternative derivation of sentences like (6.1f) by movement into a prefield position, say into a TopP lying in the scope of F1°. Yet this derivation, which would imply an abstract sentence structure like

(6.2) F1' > TopP > IP > ... V',

is disproved by weak crossover configurations like the following:

(6.3) Zhe tiao ke'ai de gou$_i$, ta$_i$-de zhuren xi-bu-xihuan t$_i$?
this CL lovely PART dog his master like-not-like
lit. 'This lovely dog, does its master like [it]?'

The structure that we have tentatively assumed for (6.3) in the above violates the Bijection Principle elaborated on by Koopman & Sportiche (1982/83: 145f.):

(6.4) a. A variable is locally bound by one and only one element in a non-A-position.
b. Or, inversely: An element in a non-A-position locally binds one and only one variable.

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[72] Lippert's (1965) dissertation, though being rarely paid attention to, is ingenious in that it anticipated the greater part of what was discussed in the US in connection with the notions of 'Chinese-style' Topics and 'Topic-Prominence' by Li & Thompson (1974; 1976), Chafe (1976) and others ten years later.

[73] Cf. (6.1f') and (6.1.g') below.

(6.3) violates this principle insofar as the topic locally binds a possessive pronoun[74] and an empty category which is a variable according to Chomsky's GB theory[75]. Yet, the grammaticality of (6.3) is predicted if we start from the premise that its topic is base-generated in its peripheral position, and if we do not consider the empty category in (6.3) as a variable trace. In terms of Lasnik & Stowell (1991), empty elements like the one in (6.3) are "null epithets", while Rizzi (1997: 293) defines them as "null constants". Along the lines of Rizzi, a null constant is licensed by an 'anaporic operator' (OP) seeking for an antecedent, to which it connects the bindee. For (6.3), this roughly yields the following S-structure:

(6.3') $[_{IP}$ [Zhe tiao ke'ai de gou]$_1$, $[_{IP}$ [ta$_1$-de zhuren] $[_{V'}$ OP$_i$ $[_{V'}$ xi-bu-xihuan e$_1$]]]]?
this CL lovely PART dog his master like-not-like

This analysis of (6.3) does not violate the Bijection Principle, since the topic (which is base-generated outside the comment) binds one and only one variable, namely the possessive pronoun in the subject DP (which is used as a variable), while the empty element in V' is bound and licensed by an anaphoric operator which connects the topic to the empty element.

Based on this conception, the S-structures of (6.1f, g) given at the beginning of this section are (6.1f') and (6.1g'):

(6.1) f'. $[_{IP}$ $[_{Topic}$ Zhe ben shu]$_1$ $[_{IP}$ ni$_2$ $[_{V'}$ t$_2$ $[_{F2P}$ $[_{V'}$ OP$_1$ $[_{V'}$ e$_i$ kan-bu-kan]]]]]]?
this CL book you read-not-read

g'. $[_{F2P}$ $[_{Topic}$ Li xiansheng]$_i$ ne, $[_{F2P}$ $[_{V'}$ OP$_i$ $[_{V'}$ e$_i$ $[_{V'}$ ren-bu-renshi ni]]]]]?
Li mister PART know-not-know you

An inevitable consequence of the topic theory roughly outlined above is that topicalization as a syntactic movement operation does not exist in Chinese sentences.

6.3. Contrastive topics

First, consider the following dialogue in a pet home, where two visitors are discussing the loveliness of some dogs:

(6.5) Q: (Name) ZHE tiao gou ni XI-BU-XIHUAN?
but this CL dog you like-not-like
'But (as for) THIS dog, do you like (it)?'

A1: Dui, erqie NA tiao gou wo ye xihuan.
correct and that CL dog I also like
'Correct, and (as for) THAT dog, I like (it) as well.'

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[74] Cf. Koopman & Sportiche (1982/1983): If a pronoun is locally non-A-bound, it is no longer a pronoun; instead, it acts as a variable.

[75] See Chomsky (1982), p. 330.

A2: Bu, ZHE tiao gou wo BU xihuan.
no this CL dog I not like
lit. 'No, THIS dog, I do NOT like (it).'

A3: #Bu shi, wo shi xihuan **na tiao gou**.[76]
not right I SHI like that CL dog
'Wrong, it's that dog that I like.'

The question (6.5Q) put by one of the interlocutors contains a contrastive topic par excellence.

Phonologically, the question contains two pitch accents, the first one of which marks the topic as contrastive, whereas the second one marks the predicate as conveying information focus.

According to Molnár (1998: 133), contrastive topics and "operator focus" share the feature of "exclusion", i.e. they have the feature [+exclusive], as opposed to information focus which has the feature [-exclusive]. Yet, as Molnár underlines, contrastive topics lack the feature of "exhaustivity" which is a distinctive characteristic of 'operator focus' (in our terminology: identificational focus, see below, section 7) .

This ambiguous position of contrastive topics between non-operator focus and operator focus is the reason why they have been baptized "focus topics" by Ernst & Wang (1995: 239), "topic focus" (huati jiaodian) by Xu & Liu (1998: 228), and "narrow focus" by Schaffar & Chen (2001: 841ff.). Investigating the distinct syntactic behavior of "thematic topics" (TT) and "contrastive topics" (CT) in Korean, Cho (1997: 44) points out that the "apparent distributional difference between TT and CT has been one of the important reasons to posit a new primitive, that is CT, in the grammar".

As far as our example (6.5) is concerned, Molnár's argument that contrastive topics are not exhaustive is proved by the pragmatic appropriateness of the answer A1. As we will see in section 7, the inappropriateness of A3 shows that the sentence-initial DP in (6.5Q) is no identificational focus.

Last but not least, our claim that this DP is a contrastive topic is validated by the fact that the predicate appears in the A-not-A form. Identificational focus is incompatible with the A-not-A form of the predicate.

6.4. Can Frame-Setting Topics be cleft?

In the following, I will claim that in Chinese not only outer ATs but also FSTs cannot be cleft, though in the case of locative and temporal FSTs quite the opposite seems to be the case.

6.4.1. Topics can be contrastively used, as depicted in the preceding section. This is not surprising in view of the fact that not only complex syntactic units but also words and even singular syllables of a word can be contrastively used in corresponding contexts.

Yet, topics cannot be preceded by the "*it*-cleft" marker *shi*. This has been noted by Chiu (1993: 126, 134), giving only the following example for her contention:

[76] Note that I use small capitals to indicate the location of pitch accents within information focus, and bold type to mark identificational focus.

(6.6) **shi* neiben shu, Akiu zuotian mai-de.
SHI that book, Akiu yesterday buy-DE

Referring to Chiu, Paris (1995: 154; 1998: 152) puts it in the words that "a topic cannot be cleft". Basically, what Chiu and Paris have in mind are 'outer ATs'.

If their claim is correct, yes/no questions with non-assertive *shi-bu-shi*[77] preceding a topic as in (6.7) must be ungrammatical as well:

(6.7) *Shi-bu-shi **zhe tiao gou** ni xihuan?
SHI-BU-SHI this CL dog you like

6.4.2. On the face of it, there seem to exist several counterexamples to Chiu's claim. For example, let's consider the following one:

(6.8) Q: Shi-bu-shi ZHE ge ren ní feichang TAOYAN?
SHI-BU-SHI this CL man you very dislike

Against all appearances, (6.8Q) does not contain a "cleft" topic, but rather a topic that is just as contrastive as that in (6.5) above. In fact, (6.8Q) as a whole is a 'verum question', where the information focus is extended over the whole sentence by definition.[78] Hence, the meaning of (6.8Q) comes close to

(6.8Q') lit. 'Could it be the case that THIS GUY, you very DISLIKE (him)?'.

Accordingly, an appropriate rejoinder to (6.8Q) could be (6.8A1) or (6.8A2), while (6.8A3) is pragmatically inappropriate:

(6.8) A1: Dui, erqie NA ge ren, wo ye bu xihuan.
correct, and that CL dog I also not like
'Correct, and (as for) that man I don't like (him) either.'

A2: Bu, ZHE tiao gou wo BU xihuan.
no this CL dog I not like
'No, this dog, I don't like (it)'

A3: #Bu-shi. Wo shi taoyan **na ge ren**.
not right I SHI dislike that CL man
'Wrong. It is that man that I dislike.'

A4: *Bu, shi **na tiao gou** wo xihuan.
no shi that CL dog I like

The appropriateness of A1 shows that the sentence-initial DP *zhe ge ren* 'this guy' must be a contrastive topic, since it lacks the feature of exhaustivity. The difference in the pragmatic appropriateness between A2 and A3 displays that contrastive topics are

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[77] The nature of this complex focus and question marker will be examined in detail in section 7.

[78] As for the notion of 'verum focus', cf. Höhle (1992). See also Kiss (1998: 264). The notion of 'verum question' has been introduced into the relevant literature by Chen & Schaffar (1997: 15f.), as far as I know.

compatible with the idea of negation, but incompatible with the idea of correction[79]. Finally, an answer like A4 is not only pragmatically inappropriate but also grammatically excluded by Chiu's claim that topics cannot be preceded by *shi*.

Another kind of apparent counterexamples concerns cases in which a sentence-initial locative or temporal expression is preceded by *shi-bu-shi*. First, consider the following case which is apparently well-formed:

(6.9) Shi-bu-shi zai Beijing Daxue, jiuhu suoyou-de liuxuesheng dou gei ni
SHI-BU-SHI at Beijing University almost all the-SUFF foreign students all toward you
liuxia-le shenke-de yinxiang?
make-ASP deep-SUFF impression

Arguing with Tang (1983), Paris (1995: 154ff.; 1998: 152ff.) points out that the agrammaticality of some clefts is not due to the topicality of the sentence-initial constituent that is preceded by *shi*. Instead, she claims, their agrammaticality can be traced back to the distinction between stage-level predicates (SLPs) and individual-level predicates (LIPs).

This claim is consistent with the theoretical framework of Kratzer (1988; 1995: 126ff.) who posits that some uses of spatial and temporal expressions are sensitive to the distinction between SLPs and LIPs. Both types of predication differ in their argument structure. SLPs have an extra argument position for spatiotemporal locations, while ILPs lack this position.

Leaving certain details aside, this means that both types of predication are compatible with locative and temporal Frame-Setting Topics, but ILPs (statives) are defective in that they are incompatible with locative and temporal VP modifiers, i.e. with locative and temporal expressions narrowly modifying only the VP of the sentence.

In this connection, compare the following two declaratives, which differ insofar as (6.10) contains a SLP while (6.11) includes an ILP:

(6.10) Zai Beijing Daxue, jiuhu suoyou-de liuxuesheng dou gei wo
at Beijing University almost all the-SUFF foreign students all toward I
liuxia-le shenke-de yinxiang.
make-ASP deep-SUFF impression
a. 'Almost all of the foreign students at Beijing University made a deep impression on me.'
b. 'Almost all the foreign students made a deep impression on me at Beijing University.'

(6.11) Zai zhe ge cunzi-li, jihu suoyou-de jumin dou shi nü-de.
in this CL village-inside almost all the-SUFF inhabitants all be female-SUFF
'Almost all the inhabitants of this village are female.'

In terms of Kratzer, the 'a.'-reading of (6.10) and the reading of (6.11) indicate that the spatial expression involved modifies the restricting predicate of the quantifier 'almost all', whereas the 'b.'-reading of (6.10) signals the spatial expression to modify the main predicate of the sentence.

[79] Cf. Lambrecht (1994), p. 291.

In our terms, this means that the 'a.'-reading of (6.10) and the reading of (6.11) denote that the locative expressions concerned act as FSTs, whereas the 'b.'-reading of (6.10) denotes that the locative expression acts as VP modifier.

Based on this, consider the yes/no question (6.9) again. This sentence is ill-formed with the reading (6.9'a) but well-formed with the reading (6.9'b):

(6.9') a. lit. *'Was it almost all of the foreign students at Beijing University that made a deep impression on you?'
b. lit. 'Was it at Beijing University where almost all of the foreign students made a deep impression on you?'

In the 'a.'-reading of (6.9), the sentence-initial locative expression serves as a FST, while it acts as a VP modifier in the 'b.'-reading of this sentence. Accordingly, the former reading is ruled out (because a topic cannot be cleft), whereas the latter reading with the locative expression acting as a VP modifier is permitted, because VP modifiers can be cleft.

The 'b.'-reading of (6.9) corresponds to the reading of example (6.12) in which the VP modifier occupies a clause-internal position:

(6.12) Jihu suoyou-de liuxuesheng shi-bu-shi dou **zai Beijing Daxue** gei ni
almost all the-SUFF foreign students SHI-BU-SHI all at Beijing University toward you
liuxia-le shenke-de yinxiang?
make-ASP deep-SUFF impression
lit. 'Was it at Beijing University where almost all of the foreign students made a deep impression on you?'

To summarize, the yes/no question sentence (6.9) is well-formed, but is has a VP modifier reading. Ergo: (6.9) is no real counterexample to Chiu's claim that topics cannot be cleft.

Now, look at the question form (6.13) of the declarative (6.11) introduced above. (6.13) differs from (6.11) in that the locative FST contained in it is "cleft" by the non-assertive focus and question operator *shi-bu-shi*:

(6.13) *Shi-bu-shi **zai zhe ge cunzi-li**, jihu suoyou-de jumin dou shi nü-de?
SHI-BU-SHI in this CL village-inside almost all the-SUFF inhabitants all be female-SUFF

This sentence is absolutely ruled out, because the ILP in it lacks a 'b.'-reading. This fact is borne out by the agrammaticality of (6.14), a structure in which the locative expression *zai zhe ge cunzi-li* 'in this village' directly precedes the predicate:

(6.14) *Jihu suoyou-de jumin dou zai zhe ge cunzi-li shi nü-de ma?
almost all the-SUFF inhabitants all in this CL village-inside be female-SUFF QP

As stated above, ILPs lack an extra argument position for spatiotemporal locations.

Along the lines of Kratzer's framework, not only spatial but also temporal expressions are sensitive to the type of predication they co-occur with. Compare (6.15) below containing a SLP with example (6.16) whose predicate represents an ILP:

(6.15) Shi-bu-shi shang-ge xingqi, jihu suoyou-de shenqingren dou gei ni liuxia-le
SHI-BU-SHI last-CL week almost all the-SUFF applicant all toward you make-ASP
shenke-SUFF yinxiang?
deep-SUFF impression
a. lit. *'Was it almost all last week's applicants that made a deep impression on you?'
(conceivable reply: This week's applicants were not as good.)
b. lit. 'Was it last week that almost all the applicants made a deep impression on you?'
(conceivable reply: The applicants were not as good this week.)

(6.16) *Shi-bu-shi **shang-ge xingqi**, *jihu suoyou-de shenqingren dou shi nan-de?*
SHI-BU-SHI last-CL week almost all the-SUFF applicant all be male-SUFF

Whereas the temporal expression 'last week' in (6.15) has a VP modifier reading that is consistent with the idea of clefting, the same expression lacks such a reading in (6.16). Correspondingly, a sentence with the temporal expression appearing clause-internally is grammatical in the case of (6.17), but ungrammatical in a case like (6.18):

(6.17) Jihu suyou-de shenqingren Shi-bu-shi **shang-ge xingqi** dou gei ni liuxia-le
almost all the-SUFF applicant *SHI-BU-SHI* last-CL week all toward you make-ASP
shenke-de yinxiang?
deep-SUFF impression
'Was it last week that almost all the applicants made a deep impression on you?'

(6.18) *Jihu suoyou-de shenqingren shang-ge xingqi dou shi nan-de.
almost all the-SUFF applicant last-CL week all be male-SUFF

Our examples show that temporal FSTs cannot be cleft, just like locative ones.

6.4.3. In fact, Chiu's claim that topics are excluded from clefting is correct not only for empirical but also for theoretical reasons.

If a topic shall be cleft, it must be marked by the "*it*-cleft" marker *shi* or by the complex focus and question marker *shi-bu-shi*. Whereas *shi* assigns the phrase with which it is associated a focus feature, *shi-bu-shi* assigns a focus and a question feature.

According to the checking theory, both features have to check a correlating feature in the head position of specific functional phrases, as we will see in section 7. Yet, such head positions are not available to topics. For, as separate speech acts, topics are located outside the scope of F1' and FocP, as indicated in our sentence model (1.1), and so neither their focus nor their question feature can be discharged, if they are associated with *shi* or *shi-bu-shi*.

For empirical and theoretical reasons, FSTs and sentence-initial VP modifiers cannot occupy the same sentence position. Applied to (6.10), this means that the FST in (6.10a) is adjoined to F1' while the VP modifier in (6.10b) is adjoined to IP. Although intonationally separated from the rest of the sentence, the latter is not a separate speech act.

7. Identificational focus in yes/no questions

In the previous sections, we have dealt with the role of information focus in Chinese yes/no questions. We have learned that not only A-not-A and A-not questions but also questions containing assertive *shi* or *shi-bu-shi* are tied to that type of focus, only relevant on the pragmatic level by specifying "context-incrementing (or 'new') information"[80]. In the terminology of Kiss (1998: 246), information focus conveys "non-presupposed information marked by one or more pitch accents".

In this section, I would like to move on to the second basic type of focus, which, independent of the givenness or newness of the relevant constituent involved, specifies some relation to a contextually possible or relevant set of alternatives over which it quantifies.[81] Kiss (1998) calls this type of operator focus "identificational focus".

In yes/no questions of Mandarin Chinese, "identificational focus" in the sense of Kiss is prototypically associated either

- with the use of the "*it*-cleft" marker *shi* in combination with the sentence-final question particle *ma*, such as in (7.1a)[82], or
- with the use of the compound focus and question operator *shi-bu-shi*, such as in (7.1b)[83]:

(7.1) a. [shi [**Zhang San**]] pai ni lai-de ma?
FM Zhang San send you come-ASP QP
'Was it Zhang San that sent you to come?'

b. [shi-bu-shi [**Zhang San**]] pai ni lai-de?
FM-not-FM Zhang San send you come-ASP
'Was it Zhang San that sent you to come?'

For a better understanding, we have called the identificational focus operator *shi* the "*it*-cleft" marker *shi* up to now. This is only justified from a functional point of view. From a structural point of view, however, this is not quite correct, since no clefting is associated with the use of the marker.[84] Henceforth, I will call this type of *shi* the non-assertive "focus marker" (FM) *shi*, as opposed to the assertion marker *shi* introduced in section 5. Accordingly, the A-not-A form of this marker shall be rendered as FM-not-FM in interlinear translations.

7.1. Existential presuppositions, exhaustivity and contrastivity as defining features of identificational focus

7.1.1. One characteristic of questions like those under (7.1) and their English analogues is that they are based on existential presuppositions.[85] That is, (7.1a,b) are based on the presupposition that 'someone sent the questionee to come'. In contrast, the same ques-

[80] Drubig (1998), p. 3.

[81] Cf. Drubig (1998) and Molnár (1998).

[82] Note that 'inner ATs' can be cleft, as opposed to 'outer ATs' (cf. section 6.4).

[83] Following Kiss' notation, I use bold type to indicate identificational focus.

[84] Cf. Huang (1981/82), p. 396.

[85] Cf. Rooth (1994), p. 390.

tions without *shi* or *shi-bu-shi*, respectively, are not based on such existential presuppositions.

7.1.2. According to Kiss (1998: 245), an identificational focus "exhaustively" identifies "a subset of the set of contextually or situationally given elements for which the predicate phrase can potentially hold". This definition corresponds to Rooth's (1994: 390) claim that "clefts have an assertion or implicature of exhaustive listing".

In terms of semantics, sentences like (7.1a) are derived as follows:

According to Rooth (1996: 275), "focus has the effect of structuring the propositions denoted by sentences: the focus-influenced semantic value of a clause with a single focus is a pair consisting of (i) a property obtained by abstracting the focused position, and (ii) the semantics of the focused phrase".[86]

Applied to (7.1a), for example, this yields the following structured meaning:

(7.2) $\langle \lambda x$ [sent to come(x,q)], z$\rangle$

The property in (7.1a) is the property of being an x such that x sent the questionee q to come, while z is the individual denoted by Zhang San.

In a next step, the identificational focus marker *shi* combines with the structured meaning (7.2), yielding (7.3):

(7.3) $\forall x$ [sent to come(x,q)] $\rightarrow$ x = z

(7.3) asserts that nobody other than Zhang San sent the questionee to come. It is exactly this assertion the truth value of which is questioned in (7.1a).

Finally, as a yes/no question, (7.1a) receives the semantic form (7.4), where the question operator f is instantiated by the yes/no question particle *ma*:

(7.4) $\langle \forall f$ [f [$\forall x$ [sent to come(x,q)] $\rightarrow$ x = z]], ma$\rangle$

7.1.3. Kiss (1998: 267) posits that identificational focus is always [+contrastive] in Romanian, Italian and Catalan, while it is [+/-contrastive] in English and Hungarian.

But given that archetypal Chinese identificational focus is functionally equivalent to the *it*-cleft construction in English, I disclaim that there is any parametric variation in the feature content of identificational focus in either language. My contention is that identificational focus in Chinese and the cleft-clause of the English *it*-cleft construction are obligatorily [+contrastive].

Basically, this is not a novel idea. I refer to the 'Cleft Focus Principle' of Rochemont (1986: 133, (17)) according to which a cleft focus "must receive a contrastive focus interpretation".

According to Rooth (1985; 1992; 1994; 1996), evoking alternatives is the general function of focus. The set of alternatives, however, is restricted. In any particular case, the specific set of alternatives is "picked up from a specific discourse context or construed pragmatically in a specific situation"[87]. Related to identificational focus, this

[86] See also Krifka (1992), p. 17f.

[87] Rooth (1994), p. 389.

statement comes close to Rochemont's claim that the cleft clause of an *it*-cleft must contain material that is "under discussion"[88].

The following examples are intended to illustrate that Chinese identificational focus phrases regularly contrast with the set of alternatives given in the actual context, regardless of whether the contrast concerned is a more or less implicit or an explicit one:

First of all, consider example (7.5) below representing the case of a negative-contrastive (or replacive) construction of the type 'X, not Y'[89], where the identificational focus phrase, the constituent X ('Zhang San's opinion), is identified by exclusion of its (only) alternative, the constituent Y ('Xiao Wang's opinion'):

(7.5) Q: Zai zuotian-de hui-shang, ni [$_{V'}$ shi-bu-shi [$_{V'}$ tongyi-le **Zhang San de yijian**]], er bing-mei tongyi Li Si de yijian?
at yesterday-PART meeting-above you FM-not-FM agree-ASP Zhang San PART opinion but in no way agree Li Si Part opinion
'Was it Zhang San's opinion that you agreed with at yesterday's party?'

A1: Shide, wo zhi shi tongyi-le **Zhang San de yijian**.
yes I only FM agree-ASP Zhang San Part opinion
'Yes, it was only Zhang San's opinion that I agreed with.'

A2: Bu-shi. Wo [$_{V'}$ shi [$_{V'}$ tongyi-*le* **Li Si de yijian**]].
no I FM agree-ASP Li Si PART opinion
'No. It was Li Si's opinion that I agreed with.'

A3: #Dui, erqie wo hai tongyi-le Xiao Wang de yijian.
correct and I also agreed-ASP Xiao Wang PART opinion
'Correct, and I agreed with Xiao Wang's opinion as well.'

In this example, the identification of the subset for which the predicate holds results "in the delineation of a complementary subset with clearly identifiable elements", definitely meeting Kiss' requirement for an identificational focus that is [+contrastive][90].

Now, compare this example to the question/answer pair (5.16) reproduced below as an example for the assertive question operator *shi-bu-shi* located in F2°:

(5.16) Q: Zai zuotian-de hui-shang, ni shi-bu-shi tongyi-le ta-de yijian?
at yesterday-PART meeting-above you AM-not-AM agree-ASP his opinion
'Did you agree with his opinion at yesterday's meeting?'

A: Dui, erqie ni-de yijian wo qishi ye tongyi-le.
Correct, and your opinion I basically also agree-Asp
'Correct, and as for your opinion, I basically also agreed.'

Despite the fact that the two structures look very similar, they nevertheless realize different types of focus. Whereas the object of the verb in (5.16Q) lacks the feature of exhaustivity, as (5.16A) shows, this feature is present in (7.5Q), as (7.5A1,A2) show.

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[88] Cf. Rochemont (1986), p. 131.

[89] Cf. Drubig (1994), p. 28f.

[90] Cf. Kiss (1998), p. 268.

Additionally, an identificational focus like in (7.5) allows corrections with *shi*, as in (7.5A2), as opposed to the information focus in (5.16) which does not.
Finally, (7.5Q) is associated with the existential presupposition that the questionee agreed with somebody's opinion, while (5.16Q) is not associated with this presupposition.

Apart from this, information focus and identificational focus have distinct phonological manifestations. In contrast to identificational focus, information focus is consistent with more than one pitch accent, as we have seen in section 6 in connection with contrastive topics. The position of the identificational focus is the position of the greatest phonological prominence within the clause involved. Thus, the focused phrase in (7.5Q) is more heavily accented than the information focus in (5.16Q), for which holds: in distributing prominence between head and argument, the latter takes precedence over the former[91].

In short, the focus in (5.16Q) does not have the feature [+contrastive], whereas the focus in (7.5Q) does have it.

Next, consider example (7.6) below. Let's assume that two people are checking the temperatures of some rooms, while looking around in them:

(7.6) Q: [shi-bu-shi [**ni-de wuzi**]] youdian leng?
FM-not-FM your room a bit cold
'Is it your room that is a bit cold?'

A: Dui. Qiqu wuzi hao-duo le.
right other room hao-much PART
'Yes. The other rooms are much better.'

In (7.6Q), the identificational focus 'your room' operates "on a closed set of entities"[92] (rooms) whose members are known to the participants of the discourse, meeting Kiss' requirement for contrastive identificational foci as well. Moreover, the contrast is underlined by the answer of the interlocutor, (7.6A).

In (7.1a,b), repeated below, 'Zhang San' is identified as the exhaustive subset of a set consisting of a limited circle of people that have the right to send the questionee to the questioner. The identificational focus implicitly contrasts with this set of people:

(7.1) a. [shi [**Zhang San**]] pai ni lai-de ma?
FM Zhang San send you come-ASP QP
'Was it Zhang San that sent you to come?'

b. [shi-bu-shi [**Zhang San**]] pai ni lai-de?
FM-not-FM Zhang San send you come-ASP
'Was it Zhang San that sent you to come?'

All in all, I consider it important to stress that the borderline between "clearly identifiable elements" forming a complementary subset with which an identificational focus contrasts and "not clearly identifiable elements" is not clear-cut. This relativizes the dis-

[91] Cf. Drubig & Schaffar (2001), p. 3.

[92] Ibid., p. 267.

tinction between 'contrastive' and 'non-contrastive' identificational foci made by Kiss (1998). My claim is that contrastivity is an inherent feature of Chinese identificational focus and English *it*-cleft. To put it simply, identificational focus is always 'contrastive'.

7.2. Syntactic anchoring of identificational focus in the sentence structure

In my framework, identificational focus is operator focus whose focus feature is composed of a 'contrastivity' feature and an 'exhaustivity' feature. Whereas the former has to check a correlating <contr> feature in the head position of a functional Contrastivity Phrase (ContrP), the latter has to check a correlating <exh> feature in the head position of a functional Focus Phrase (FocP).[93] Conversely, [+contr] and [+exh] composing the complex focus feature of identificational focus must be discharged in a corresponding Spec-head agreement configuration. This kind of feature checking must take place at LF at the latest.

In the following, let's look at the anchoring of subjects, direct objects and various VP modifiers acting as identificational foci in the sentence structure of Mandarin Chinese.

7.2.1. In Chinese, only the subject of the sentence invariantly realizes the "focus ex situ" language type prototypically instantiated by languages like Hungarian and Arabic[94]. I claim that a sentence like (7.1a) is derived by syntactic movement of the focused phrase which is raised from its base position in V' to its final landing site spec-FocP via spec-ContrP:

(7.1a') $[_{FP}[_{FocP}$[shi [Zhang San]$_{[+exh,\ +contr]}]_1[_{Foc^\circ}$<exh>$][_{ContrP}\ t'_1[_{Contr^\circ}$<contr>$][_{V'}\ t_1[_{V'}$ pai ni lai-de]]]]ma]?

FM Zhang San — send you come-ASP QP

In this structure, the identificational focus operator *shi* has assigned its complex focus feature to the subject DP to which *shi* is Chomsky-adjoined, rendering the focused DP into an operator phrase. Before the operator phrase arrives in spec-FocP where its exhaustivity feature checks the correlating <exh> feature in Foc°, it has made a "stopover" in spec-ContrP in order to check <contr> in Contr° by its [+contr] feature. Thus, structures like (7.1a') do not include an IP.

7.2.2. Direct objects acting as identificational foci realize neither the "focus ex situ" nor the "focus in situ" type. At the level of S-structure, they may occur in two different positions:

First, they may appear in their postverbal base-position. Examples like (7.5Q) and (7.5A2) above instantiate this case in which neither the *shi* operator in (7.5A2) nor the *shi-bu-shi* operator in (7.5Q) is adjacent to the identificational focus they are associated with. As a result of this, both operators cannot assign their (complex) focus feature to the object DP at issue. Nevertheless, both the [+contr] feature and the [+exh] feature must be discharged at LF. Consider (7.5A2) as an example for the LF operations triggered by the identificational focus marker *shi*:

---

[93] As for the relative position of both phrases with respect to each other, cf. ou r sentence model (1.1).

[94] Cf. Kiss (1998) and Drubig & Schaffar (2001).

(7.5.A2') [$_{FocP}$ [$_{Foc°}$<exh>] [$_{IP}$ wo [$_{ContrP}$ [$_{Contr°}$<*contr*>] [$_{V'}$ *shi*$_{[+contr,+exh]}$ [$_{V'}$*tongyi-le* **Li Si de yijian**]]]]].

I FM agree-ASP Li Si PART opinion

While [+*contr*] checks <*contr*> in Contr°, [+exh] checks <exh> in Foc°, in both cases by 'sister-adjunction' to the relevant features.

Second, they may occur in spec-ContrP, thereby checking <contr> with [+contr]. See example (7.7):

(7.7) Ni shi-bu-shi **zhe ben shu** bu yao?
you FM-not-FM this CL book not want
'Is it this book that you do not want to have?'

(7.7') [$_{IP}$ ni [$_{ContrP}$ [shi-bu-shi [**zhe ben shu**]$_{[[+contr][+exh]]}$]$_2$ [$_{Contr'}$[$_{Contr°}$ <*contr*>] bu [$_{V'}$ yao$_1$ [$_{V'}$ t$_2$ t$_1$]]]]]?

you *FM-not-FM this CL book* not want

At LF, the exhaustivity feature of the operator phrase must undergo raising to Foc° where it becomes 'sister-adjoined' to the correlating <exh> feature.

Actually, spec-ContrP is a contrastive sentence position available not only to identificational focus phrases (subjects as well as objects) but also to 'object preposing' without any markers as depicted by Qu (1994), Shyu (1995), Ernst & Wang (1995), N. Zhang (2000), and others. For our purposes, it suffices to say that preposed objects share the feature of contrastivity but not that of exhaustivity with identificational focus.

7.2.3. VP modifiers marked by identificational *shi* or *shi-bu-shi* normally remain in situ. In the following example, *shi-bu-shi* can appear in every position marked by the symbol $^{\vee}$, taking narrow scope over the modifier directly following it[95]:

(7.8) Xiao Wang $^{\vee}$zuotian $^{\vee}$zai zhen-shang $^{\vee}$yong jiangjin $^{\vee}$gei nü-pengyou mai-de jiezhi?
Xiao Wang yesterday in town-above with premium for girl friend buy-ASP ring

Since only one *shi-bu-shi* operator can appear in one and the same sentence, (7.8) has four different identificational focus readings, depending on the actual position of *shi-bu-shi*[96]. Moreover, (7.8) reflects the basic order of VP modifiers with respect to each other:

(7.9) temporal > locative > instrumental > benefactive
with > for 'preceding + dominating'

It follows from our approach that, at LF, both the contrastivity feature and the exhaustivity feature carried by an VP modifier are attracted by a correlating feature in Contr° and Foc°, respectively.

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[95] As for (7.8), cf. Zhang and Fang (1996), p. 79.

[96] 'Was it yesterday that Xiao Wang...?', 'Was it in the town that Xiao Wang...?' etc.

In fact, the claim that focused adjuncts must undergo LF movement has already been made by Huang (1982: 532f.). Huang refers to the ungrammaticality of structures like (7.10), which exhibit typical Island effects:[97]

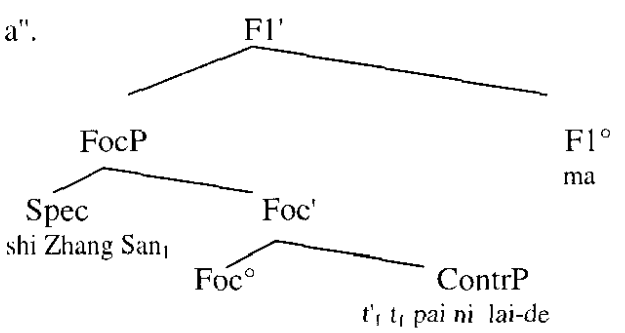
(7.10) *[$_{NP}$[$_{S}$ Zhangsan shi zuotian mai] de shu] hen hao. Huang 1982: 533, (32))
Zhangsan FO yesterday buy DE book very good
*'The book that it was yesterday that Zhangsan bought is very good.'

Alternatively, at least locative and temporal VP modifiers marked by identificational *shi* or *shi-bu-shi* can be raised to spec-FocP via ContrP. This applies to our examples (6.9) and (6.15) given in section 6.

7.2.4. Assertive *shi-bu-shi* as treated in section 5 and identificational *shi-bu-shi* share the property of possessing a question feature. Yet whereas the question feature of assertive *shi-bu-shi* is discharged within F2P before 'Spell-Out', the question feature of identificational *shi-bu-shi* must be discharged by attraction at the level of LF. That is to say, the question feature [+Q] conveyed by identificational *shi-bu-shi* is attracted by an abstract feature, <Q>, located in F1°.

A problem connected with this LF operation is that [+Q] cannot be 'sister-adjoined' to <Q>, because the Force1 Phrase of Chinese is head-final. This typological peculiarity of Chinese most clearly manifests itself in the sentence-final position of the yes/no question particle *ma*. Compare (7.1a)/(7.1a') above with the tree structure (7.1a"):

(7.1) a".



Now, let's consider the LF of (7.1b) where F1° is not directly accessible to the [+Q] feature of the operator phrase marked by *shi-bu-shi*.

Chomsky's checking theory requires that feature checking takes place within the 'checking domain' of the head whose features are being checked. A checking domain of a head X° includes anything adjoined to the head, to X' or XP.[98]

Therefore checking theory permits that the question feature of the operator phrase under discussion is Chomsky-adjoined to F1'. I opt for this solution, following Whitman (1997: 4) who claims that right-headed X'-structures necessarily lack a Spec position, because Spec-head agreement requires adjacency between the head element and its Specifier.[99] Assuming this to be true, the LF of (7.1b) must be (7.1b'):

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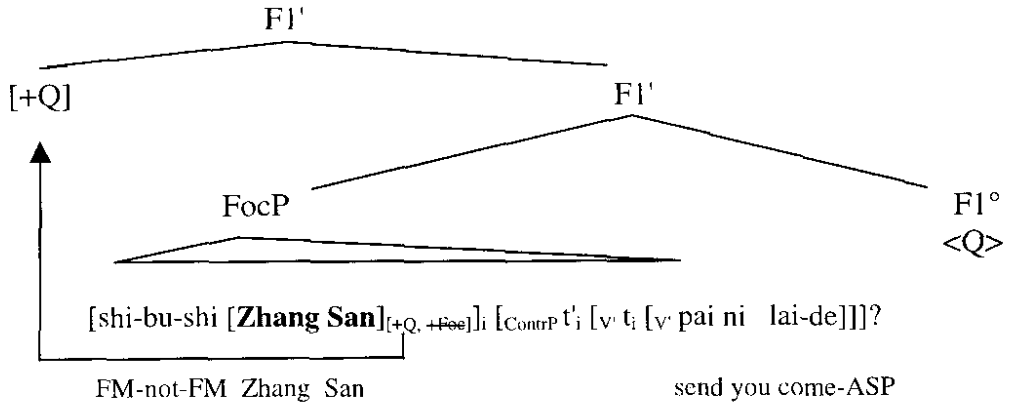
[97] See also Chiu (1993: 130ff.) who cites this and other examples.

[98] See also Han (1998: 5f.).

[99] By contrast, Kayne (1994) presupposes a left-headed clause structure across languages. Based on this assumption, he claims that "final complementizers reflect the leftward movement of IP into Spec, CP" (p. 53). Kayne's proposal is problematic insofar as it conflicts with natural 'economy principles' in the derivation and representation of sentences, suggested by Chomsky (1995: 198): "The system tries to

(7.1) b. [shi-bu-shi [**Zhang San**]] pai ni lai-de?
FM-not-FM Zhang San send you come-ASP
'Was it Zhang San who sent you to come?'

(7.1) b'.



As soon as [+Q] is adjoined to F1', it is able to check the correlating <Q> feature c-commanded by it.

7.2.5. Referring to Li (1992), Schaffar & Chen (2001: 861) observe that the indefinite reading of wh-expressions in subject position is licensed by the *shi-bu-shi* operator not only in (7.11) but also in (7.12):

(7.11) Shi-bu-shi shenme ren xihuan ta?
FM-not-FM what man like he
'Does someone like him?'

(7.12) Shei / shenme ren shi-bu-shi xihuan ta?
who / what man FM-not-FM like he
'Does someone like him?'

Schaffar & Chen conclude that Li's explanation that the binding of a wh-word is achieved via c-command cannot be correct, since the wh-word in subject position can in fact be bound independently of the position of *shi-bu-shi*. Schaffar & Chen admit that they "cannot explain in detail how this binding is achieved".

In our system, this binding is achieved by the requirement that the question feature of the *shi-bu-shi* operator must undergo LF-raising. Once Chomsky-adjoined to F1' along the principles outlined above, the question feature [+Q] c-commands the wh-expression in subject position. Thus, (7.12) does not falsify Li's and our claims.

8. Pragmatic use of yes/no question sentences

8.1. Neutral and non-neutral contexts

Linguists such as Chao (1968), Li & Thompson (1981), Yuan (1993), Xu & Shao (1998), Chu (1998) and B. Zhang (1999) hold the view that A-not-A questions are pro-

reach PF 'as fast as possible', minimizing overt syntax." But see D. Xu (1997) and N. Zhang (1997), who uncritically apply Kayne's proposal to Chinese.

totypical yes/no questions, pure information questions used in neutral contexts in which the questioner does not make any assumptions about the possible answer in advance, whereas *ma* questions are predominantly used in non-neutral contexts, and include weak negative (or, in special cases, positive) pre-assumptions about the possible answer.

B. Zhang (1999: 298f.) observes that *ma* questions often come close to rhetorical questions, expressing an attitude of total disbelief, or a sceptical attitude, if they contain additional affirmative or negative particles. Even a *ma* question asked in an absolutely neutral form can express doubts – for example, if someone in a student's mess hall asks an about fifty-year old man:

(8.1) Ni shi xuesheng ma?
you be student QP
'Are you a student?'

On the other hand, Zhang does not deny that *ma* questions can be put in neutral contexts, such as (8.2) asked as a purely informational question:

(8.2) Q: Bisai jieshu-le ma?
match finish-ASP QP
'Has the match finished?'

A: Jieshu-le. / Hai mei you jieshu. / ?Shi-de.[100]
finish-Asp Yet not Asp finish. yes

Discussing A-not-A questions from a pragmatic point of view, Shao (1996: 120ff.) convincingly proves that they, just like *ma* questions, can be combined with positive or negative pre-assumptions:

(8.3) Nin shuo zhe ren ke'e-bu-ke'e? Wo ting nin-de hua,
you say this man repugnant-not-repugnant I hear your words
gang yi gen ta shangliang, ta jiu hengzhe lai le!
only just with he discuss he already become abusive PART
'Now you tell me, isn't this person repugnant? I heard what you said; you had hardly started discussing things with him before he became abusive.'

(8.4) Zhe ge xiaoxi yaoshi chuanchuqu, wo zhe ge guan hai dang-bu-dang?
this CL news if get out I this CL official still perform-not-perform
'If this news gets out, will I be able to keep my job?'

8.2. Concluding remarks

To summarize, both *ma* questions and A-not-A questions can serve as neutral information questions, and both types of question can be used in non-neutral contexts associated with negative or positive pre-assumptions about the answer. In this respect there is little difference between them.

However, *ma* questions have the decisive advantage of their question operator having scope over the whole sentence. This makes them adaptable to different types of focus, i.e., it makes them consistent with both information focus and identificational focus, as

[100] Note that neutral information questions are commonly answered by repeating the verb in its affirmative or negative form.

we have seen in this paper. And it also makes them compatible with (core) adjuncts operating over propositions.

By contrast, the question operator of A-not-A and A-not questions has a scope that is restricted to the predicate. Yes/no questions of this type are incompatible with identificational focus and Ernst's core adjuncts, because their question operator does not undergo LF-raising to F1' (or "Comp"), as we have shown. Instead, they are typed clause-internally in F2°.

Perhaps, it is this semantic-pragmatic advantage of *ma* questions that leads the younger inhabitants of Shanghai to increasingly prefer the sentence-final question particle *va* to the sentence-internal question operator *a* mentioned in section 5.[101]

If I am on the right tack concerning the reasons for the decline of the use of the sentence-internal question particle *a* and the increase of the use of the sentence-final particle *va* in Shanghainese, then we have a very natural explanation for an intriguing fact discovered by Lü Shuxiang (1954, vol 2, p. 249)[102]: the fact that the negative particle *wu* of Classical Chinese which appeared in the sentence final position of yes/no questions has evolved into the yes/no question particle *ma* of Modern Mandarin Chinese. Conversely, this means that the modern question particle *ma* can be traced back to one of the V(O)-not patterns of Classical Chinese.

For us, the decisive phenomenon is that the evolution of both the negative particle *ve* in Shanghainese and the negative particle *wu* in Classical Chinese into pure yes/no question particles was accompanied by the extension of the scope of these particles over the whole sentence. I come to the conclusion that this evolution was evoked by the pragmatic requirements of language use.

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[101] Cf. Yuan (1993: 108) and Xu & Shao (1998: 88). Interestingly enough, according to Shao (1996: 113), the sentence-final particle *va* of Shanghainese has evolved out of the negation particle *ve* used in sentence-final position plus the modal particle *la*, i.e., *ve+la* → *va*.

[102] See also Wang Li (1958), vol. 2, p. 452.

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Clausal Tripartition, Anti-Locality and Preliminary Considerations of a Formal Approach to Clause Types*

Kleanthes K. Grohmann
J.W. Goethe-Universität Frankfurt am Main & ZAS Berlin
grohmann@zas.gwz-berlin.de

We will see how it is reasonable to speak of a minimum distance that an element must cross in order to enter into a well-formed movement dependency. In the course of the discussion of this notion of *anti-locality*, a theoretical framework unfolds which is compatible with recent thoughts on syntactic computation regarding local economy and phrase structure, as well as the view that certain pronouns are grammatical formatives, rather than fully lexical expressions. The upshot will be that if an element does not move a certain distance, the derivation crashes at PF, unless the lower copy is spelled out as a pronominal element. The framework presented has a number of implications for the study of clause-typing, of which some will be discussed towards the end.

1. Introduction

In a recent ZASPiL-contribution, I presented a tripartite clausal system with special reference to the left peripheral of the clause (Grohmann 2000c). The hypothesis was that the intricate syntax of the left periphery (topic, focus, Wh, left dislocation etc.) is licensed largely by discourse properties, and that the highest domain of the clause (the C-domain qua an articulated Comp) is responsible for such encoding – without too much CP-internal reordering. Apart from motivating this idea, we saw the direction one would have to take to analyze other phenomena under such a tripartition. In this paper I am going to revise and expound on the formal implementation of this clausal tripartition, and briefly consider a systematic approach to other classes of pronominal elements as well as consequences for a syntactic approach to clause-typing. The formal clausal tripartition proposed here is of interest to the latter issue in two ways. First, as a general point, given that the model makes particular reference to spelling out sub-structures of the derivation and integrating the (LF and PF) interfaces into a dynamic conception of phrase structure, issues pertaining to the interaction of the syntax with other components (arguably needed to formally derive different clause types) are relevant for obvious reasons. Second, and more specifically, some proposals that have been made in the recent syntactic literature to license clause types in the syntactic component will have to be reevaluated in terms of redundancy and structural well-formedness. We will touch on both issues in the latter part of this paper.

The initial question I am going to ask is the following. Given that dependencies between two positions are subject to locality conditions (as an upper bound on distance, usually captured by a Shortest Move or Minimal Link condition), does the converse

* This paper is a substantial summary of the basic idea of my dissertation work (Grohmann 2000b) and could not have been conceived without the support from and discussions with Cedric Boeckx, John Drury, Norbert Hornstein, Anna Roussou, Ian Roberts, Juan Uriagereka, among many others. I am also grateful to the audience of the *Workshop on Sentence Types and Definiteness* in Berlin, from which the current version derives, and audiences in College Park, Frankfurt, Minneapolis, New York, Philadelphia, Santa Cruz, Stony Brook, Trieste, and Vienna for valuable feedback.

Of course, one could point to the Theta Criterion and argue that it alone suffices to rule out a derivation such as (1b). After all, if θ-roles are exhaustively assigned at D-structure (the component before applications of Move take place), movement into a θ-position is ruled out by force. One of the premises of minimalism is to get rid of superfluous levels of representation. It has been argued – quite successively, we might add – that the levels of D- and S-structure can be dispensed with on conceptual and empirical grounds (Chomsky 1993, 1995; see Hornstein, Nunes and Grohmann, in progress for extensive discussion). The "true" interface levels, LF and PF, are all we need, and any filters, constraints, or conditions imposed on the grammar should follow from "bare output conditions" – that is, reflect conditions on LF and PF only.

If this is so, the Theta Criterion must be reformulated. Presumably, the gist of it can be integrated into a minimalist view of the grammar, most elegantly within a framework provided by Hale and Keyser (1993). However, if the minimalist spirit is to seek, point out and eliminate redundancies, we should take the issue more seriously. One such attempt can be found in recent work by Norbert Hornstein.[1] It turns out that movement into θ-positions can nicely account for a number of (at first glance) unrelated phenomena. The upshot is that there is reason to believe that ruling out movement into θ-positions from the start is too strong an assumption. The Theta Criterion as originally formulated can be dispensed with, alongside D-structure. This is doubly minimalist: not only can the (theory-internal) level of D-structure be eliminated completely; we also can dispense with the Theta Criterion as not following from "bare output conditions." If all formal conditions on lexical items and the computation (such as "features") are evaluated at LF and PF only, this remnant of D-structure, whose only intention was to filter out ill-formed configurations at D-structure, has no place in the grammar.

2.2. Anti-locality in agreement dependencies

Of course, this take on the Theta Criterion is not the only one imaginable, and within the minimalist program not the only one pursued. However, a similar effect can be found outside the verbal or thematic layer. Consider (2) from German, a language which can arguably analyzed as overtly raising all arguments into the middle field:[2]

(2) a. **Den Vater mag sein Sohn.*
the.ACC father likes his.NOM son
intended: 'The father likes his son.'

b. #[$_{TP}$ den Vater [mag-*v*-AgrO]$_i$-T [$_{AgrOP}$ ~~den Vater~~ t_i-AgrO [$_{vP}$ ...]]]

The ungrammatical output (2a) could be derived by a hypothetical, but ill-formed, derivation whose relevant steps are shown in (2b). The thematic subject of the sentence could move to the object Case position, check accusative, and then move on to the grammatical subject position, where it could enter the relevant subject-verb agreement relation and check nominative Case. We could further imagine that only one Case is marked on the DP (here, accusative), and the object DP could be licensed by some form of default Case (which happens to be nominative in German).

But the fact that (2a) is ungrammatical suggests that this derivation is ruled out. The traditional explanation comes in form of the Case Filter, whose update into current

[1] See, for example, Hornstein (2000) for alternative approaches to reflexivization, control phenomena, relativization, and other predication structures. We will return to this briefly below. (The idea of movement into θ-positions goes back to Bošković 1994.)

[2] Without further ado, I adopt the SVO-approach to German syntax; see e.g. Zwart (1993, 1997).

criterion-approach suffers from the same conceptual dilemma as the above-mentioned cases that hold on to formal conditions on the grammar in the form of a Theta Criterion or a Case Filter. And rather than invoking non-syntactic explanations, a formalized version of anti-locality could take care of all these unwanted derivational steps in one fell swoop. An articulated Comp, as assumed here, can be seen as encoding (mainly) discourse-relevant properties, and I will hence refer to this as the discourse layer.

2.4. Plain proposal

Above we have seen initial evidence that points into the direction of an anti-locality condition, as loosely understood so far. In the following, we will explore a formal understanding of anti-locality and consider theoretical and empirical consequences of the approach, which invariably make use of a formal tripartition of the clause.

A first shot at anti-locality is the hypothesis given in (4), instances of which were illustrated above:

(4) *Anti-locality hypothesis*
Movement must not be too local.

We now have to find a way to express a too local dependency. What is the metric that measures this distance? As the above discussion suggests, movement within the thematic layer of the clause seems to be out, and so does movement of the same element within the agreement layer, and within an articulated Comp-layer. On the other hand, we want movement across these layers, such as argument-raising to an agreement position (to check Case and/or ϕ-features) and Wh-fronting, of course.[5] In other words, anti-locality seems to be the restriction that an XP may not move to a position directly part of the same layer, or domain. We will identify these domains properly in a moment. For now, the following estimation suffices for illustration. Two positions are in the same domain if both share, what we might call *contextual information*. On the basis of the above discussion, we can identify three types of contextual information relevant to the clause (see fn. 7 below), uniquely identifying the projections within each of these parts: thematic context (making room for further internal projections, in terms of VP-shells or separate *v*/V-projections), agreement context (vis-à-vis split Infl: AspP, AgrP, TP etc.), and discourse context (viz. an articulated Comp, hosting TopP, FocP, CP and so on; see also fn. 4).

This view of contextual information in the clause structure and the concomitant ban on domain-internal movement is indicated in (5), where $|\alpha|$ is the representation of a context value, standing for the three clausal contexts just discussed: $|\theta|$ (thematic context), $|\phi|$ (agreement context) and $|\omega|$ (discourse context), respectively. Without touching more on the issue, we can think of $|\alpha|$ to be a lexical property of V, T, C etc.

Basically, this is the idea behind anti-locality: the lower bound on locality forces dependencies to span across a minimum distance, namely across – but not within – a given domain of sorts. Next, we will consider the concept of such contextually defined domains in more detail (in terms of Prolific Domains), lay out the reason why domain-internal movement is ruled out (for PF-reasons), and why it only concerns maximal phrases, as opposed to heads (which will also follow from PF-conditions).

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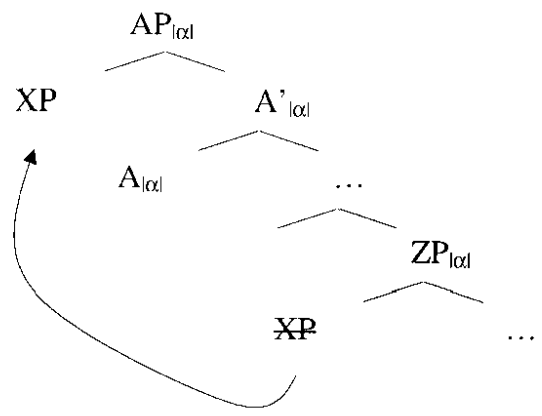
[5] In Grohmann (2000b), I suggest that movement into the agreement layer is driven by the need to check ϕ-features, as opposed to Case. Case is taken to be an epiphenomenon, for reasons that do not play a role here (such as the assumption that feature-checking is unique; see fn. 8, also fn. 11). (Cf. Branigan 2000, who also views Case "parasitic" in nature rather than a trigger for movement.)

(5) #



3. Capturing anti-locality: Prolific Domains and Exclusivity

The concept of a contextually defined layer or domain in clausal structure laid out so far is reminiscent of earlier conceptions of clause structure.[6] (6) is the structure of the clause as it was basically understood in the *Barriers*-framework (Chomsky 1986):

(6) [COMP [INFL [VP]]]

Over the past two decades, much effort has been put into a finer articulation of each of these projections. Starting with Larson (1988), it became obvious that VP must contain more than just one specifier and one complement position. Traditional X'-theory had no elegant way of implementing double object constructions, and with the rise of the Predicate-Internal Subject Hypothesis (cf. Kuroda 1988, Koopman and Sportiche 1991), room was needed to integrate the thematic position of "agent" (the thematic subject). Whether we assume Larsonian shells or the more recently made popular approach of a light verb *v* heading its own projection on top of VP (cf. Hale and Keyser 1993, Baker 1997), the thematic layer arguably consists of more material than a single projection.

Likewise, much research has targeted what I call the agreement layer of the clause, in the spirit of Pollock's (1989) original Split Infl hypothesis. Infl is standardly assumed to host an array of functional projections (see especially Cinque 1999, and the overview provided by Belletti 2001). Again, the exact number and positions of these are not crucial; what is important is an extension of Infl into the layer or domain containing TP, AgrP, AspP etc.

And regarding the left periphery, finally, Rizzi (1997), among many others, has suggested to finer articulate Comp into various projections whose function is to check those formal features that we take to yield (largely) discourse effects, hence the reference to a discourse layer (cf. also fn. 4; for further reference to recent work on typologically very different languages, see e.g. Aboh 1998, Poletto 2000, Puskás 2000).

[6] Please bear in mind that there is nothing novel or revolutionary about a tripartite clausal structure. It is intuitive as it is obvious, perhaps even necessary (especially in the light of the "contextual information" I suggest). While tacitly assumed for a long time, I simply try to capture this intuition in a more formal way and contemplate some of its consequences (see also Platzack 2001 for a very similar conception of clause structure in terms of three domains bearing remarkably similar names, but without the formalized tripartition envisioned here and laid out below).

3.1. A clausal tripartition into Prolific Domains

Let us now work out a formal way to implement the concept of anti-locality into the grammar. We have seen some motivation to collectively understand certain positions to be related to one another in terms of affiliation with one contextually defined layer or domain. Two thematic positions (such as "theme" and "agent" in (1)) can thus be thought of as belonging to the thematic domain, two Case-/ϕ-positions (e.g. "subject" and "object" or nominative and accusative, as in (2)) to the agreement layer, and two Comp-positions (e.g. topic and Wh; cf. (3)) to the discourse domain. One condition that seems to hold of all positions within the same domain is that movement from one to another is ruled out, as we have seen above. But before we can investigate this hypothesis further, let us formulate the intuitive idea of a contextually defined domain.

Let us call each of the proclaimed domains a *Prolific Domain*:[7] 'domain', because the relevant area captures material which exclusively belongs to a specific part of the clause (thematic, agreement, discourse), and 'prolific', because each such domain consists of more articulated structure (viz. VP, *v*P, AgrP, TP, Top, FocP etc.).

(7) *The concept of Prolific Domains (ΠΔ)*
   i. *θ-domain:* part of derivation where theta relations are created
   ii. *ϕ-domain:* part of derivation where agreement properties are licensed
   iii. *ω-domain:* part of derivation where discourse information is established

Beyond the descriptive content of (7), we can define a Prolific Domain as in (8):

(8) *Prolific Domain*
   A Prolific Domain ΠΔ is a contextually defined part of the computational system, (i) which provides the interfaces with the information relevant to the context, and (ii) which consists of internal structure, interacting with derivational operations.

By assumption, the context value |α| from (5) contributes contextual information, defining the three parts of the clause. We return to clause (8i) momentarily; first we will tend to clause (ii) of (8). One type of interaction with derivational operations we have seen so far is the restriction that Move may not apply to a given XP within a Prolific Domain, which uniformly rules out unwanted derivational steps without the need to invoke additional, stipulated filters on the computation.[8] We declared at the outset that

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[7] Note that the current work only deals with the role of Prolific Domains in the clause. I do not want to exclude the possibilities that there exist similar domains, with similar properties, elsewhere (e.g. in the nominal layer). At the current point, however, this remains to be worked out.

A note on the terminology: while the choice of 'θ' and 'ϕ' is presumably obvious, 'ω' as the label for the C-layer is invented, not so much as to confuse but to be uniform. Moreover, as the C-layer is the highest part of the clause, capping it off, the last letter of the Greek alphabet might be an appropriate choice. There is a metaphorical mnemonic for 'ω' which might be useful, too, derived from the Greek word *ωριμότητα* 'ripeness, maturity, full growth'.

[8] Admittedly, the data coverage from section 2 is only a first stab and might be considered insufficient to conclusively prove the point. However, the idea behind it, and the tendency of such reasoning, should be clear, as should the logic behind the current approach in a minimalist setting (for reasons of economy, parsimony etc.). If on the right track, "standard" analyses of a number of phenomena must be reconsidered, a task too big for the current article. Relevant cases that come to mind are instances of participle agreement in Romance (cf. Kayne 1989, Belletti 1990) on the empirical, or Chomsky's (1995) treatment of object Case-/ϕ-feature-checking and "multiple subject constructions" on the theoretical side. Space does not allow a more elaborate discussion, but given unique feature-checking

such a ban should be a direct consequence of bare output conditions, otherwise there would be little improvement over previously assumed conditions, criteria, filters etc. Given that we now have the well-defined notion of a Prolific Domain, I posit the following condition holding on the computational system, expressing anti-locality:

(9) Condition on Domain Exclusivity (CDE)
An object O in a phrase marker must have an exclusive Address Identification AI per Prolific Domain ΠΔ, unless duplicity yields a drastic effect on the output.
i. An AI of O in a given ΠΔ is an occurrence of O in that ΠΔ at LF.
ii. A drastic effect on the output is a different realization of O at PF.

Anti-locality, then, is a well-formedness condition on the computational system in terms of exclusivity: at certain, natural steps in the derivation, (the Condition on Domain) Exclusivity must be observed. In essence, the CDE says that a linguistic expression (i.e. a maximal phrase XP; see section 3.3 below), which obviously needs to be interpreted at the (LF and PF) interfaces, may only occur once in a given Prolific Domain; this occurrence is picked up by LF, so that the expression gets interpreted, and it is picked up by PF, so that it gets pronounced. Any copy of this XP, i.e. each "non-distinct occurrence" of an element in the phrase marker (in the sense of Chomsky 1995, Nunes 1995), would also show up at LF – but, if nothing special happens to its PF-matrix, it could not be uniquely identified. In other words, movement within a Prolific Domain is ruled out as a consequence of bare output conditions.

This leads us to clause (i) of (8), also dealing with (the determination of) the "natural steps in the derivation" just mentioned. As already mentioned in passing, we could envision the tripartite clause structure in terms of multiple feeding of the interfaces. Such a conception of the role of the tripartite structure directly implements current thinking on spelling out parts of the phrase marker as the derivation unfolds, directly feeding the interfaces; cf. Uriagereka's (1995, 1999) framework of "Multiple Spell Out" or Chomsky's (2000, 2001) recent proposal of cyclic "phases." Surely, there are differences (see section 3.3), but the emerging picture is conceptually very similar.

Let us represent this picture as in (10), where each Prolific Domain is evaluated locally, and where such "evaluation" consists of marking the relevant LF- and PF-material. Convergence of the derivation yields exactly then, when the syntactic computation is exhausted and the locally licensed interfaces are well-formed (see Grohmann 2000b, in progress for more discussion). In the following, we concentrate on the interplay of computation and feeding of the interfaces.

Regarding the "drastic effect on the output," clause (9ii) already indicates that PF is relevant. We know that deletion of moved copies takes place for PF-reasons (Nunes 1995). The argument runs as follows. Copies of the same element (here, "O") are non-distinct (in terms of precedence) and subject to the Linear Correspondence Axiom. However, no element can precede and follow itself at the same time, hence one copy must be deleted (see Kayne 1994, Chomsky 1995, Nunes 1995, 1999 for discussion). Under the standard operation Move, it is the lower copy that is deleted – for economy reasons: the higher copy has a more complete set of checked features than the lower.

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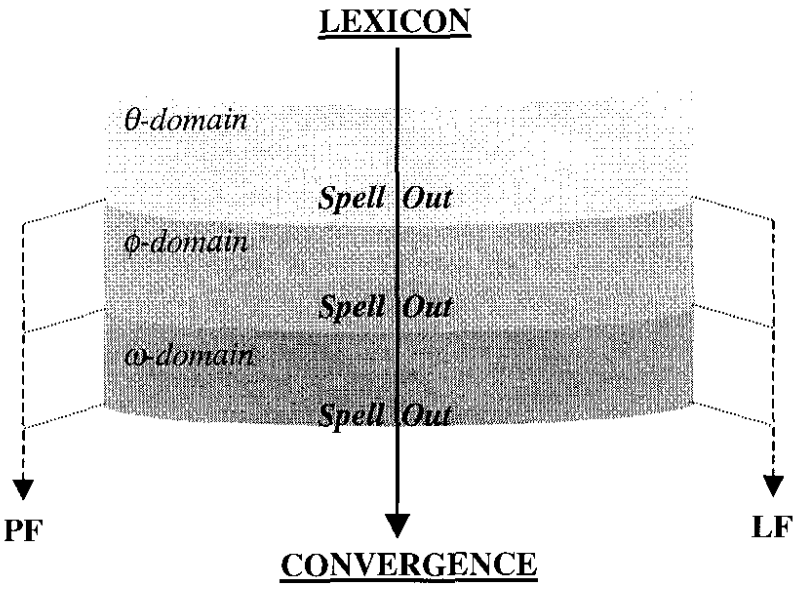
per projection, as argued for in Grohmann (2000b), an implementation of a feature scattering approach (à la Giorgi and Pianesi 1997) could be a feasible means to handle such cases. These issues are dealt with in more detail in Grohmann (in progress).

(10)



For the present discussion, we can assume that deletion of the lower copy, as in regular instances of movement, is not an option – otherwise, (1)-(3) should all constitute well-formed structures. In fact, the CDE basically says "Don't move within a locally designated area, unless it has an effect on PF." The lower copy must then "look different." We can think of five possibilities what it means to "look different:"

(11) Two non-distinct copies look different on PF if we
- a. delete the lower copy,
- b. #delete the higher copy,
- c. spell out the lower copy,
- d. #spell out the higher copy,
- e. create a new PF-matrix of the moved element.

We can immediately rule out possibilities (11b,d), as the higher copy needs to be kept (more complete). Option (11a) is not a possibility if the two copies occur in the same Prolific Domain – this is the quintessential property of anti-locality. (11e) will be illustrated in section 3.3; it basically implies (head-)adjunction, something irrelevant in the current context. This leaves us with (11c): spelling out the lower copy. We can represent this application of "Copy Spell Out" as in (12a), where '⊃' stands for spelling out the lower copy of the object that moves within one Prolific Domain (i.e. O) by some other, yet to be specified, material X. We can summarize the state of affairs as follows:

(12) a. *Copy Spell Out:* $[_{\Pi\Delta}\ O \ldots \Theta \supset X \quad \ldots]$

b. *#Anti-locality:* $[_{\Pi\Delta}\ O \ldots \Theta \quad \ldots]$

3.2. Exclusivity: an empirical implementation

In section 2, we saw cases that illustrate the hypothesis that movement of one expression within a given Prolific Domain is not allowed. However, (9ii) suggests that there are instances in which such movement is allowed – namely, if the two copies show different PF-realizations, as just discussed. Can such cases be found?[9]

[9] Space does not allow a more thorough discussion. Hence, I restrict myself to a very basic presentation of some of the material developed in detail in Grohmann (2000b, in progress).

Looking at the lowest level of the clause first and adopting a particular hierarchy in the θ-domain (roughly following Baker 1997), three options of potential movement within this domain pertain between the (up to three) XP-positions available:

(13) a. $[_{vP}$ AG v $[_{VP}$ ~~TH~~ V GO]]

b. $[_{vP}$ AG v $[_{VP}$ TH V ~~GO~~]]

c. $[_{vP}$ AG v $[_{VP}$ TH V ~~GO~~]]

Ungrammatical sentences such as (1a) suggest that these options are not found – at least, not as easily. There is an alternative, however: if VP and *v*P form one Prolific Domain (namely, the θ-domain, licensing thematic relations), the move should be legitimate – if it is followed by Copy Spell Out of the lower XP, that is if the struck through element in (13) is not deleted, but replaced by 'X' (cf. (12a)).

Going back to Lees & Klima (1963), Hornstein (2000) has recently proposed a derivational analysis of local anaphors (also Lidz & Idsardi 1997). This analysis treats certain pronouns as grammatical formatives rather than true lexical expressions, subject to Last Resort (Aoun & Benmamoun 1998, Aoun & Choueiri 1999, Hornstein 2000, Aoun, Choueiri & Hornstein, in press; cf. also "Avoid Pronoun" of Chomsky 1981, Aoun 1985). As such, these pronominal elements are not part of the numeration which nourishes the derivation, but are introduced in the course of the derivation. Introduction of material forced by Last Resort implies that something is only inserted if nothing else works. A by now natural way to capture such an implementation of Last Resort and a derivational analysis of anaphors would be in terms of the CDE: Copy Spell Out. If this approach is on the right track, we would have identified 'X' as a local anaphor. This would generate (14) as the updated version of (13), corresponding to (12a):

(14) a. $[_{vP}$ AG v $[_{VP}$ ~~TH~~ ⊃ X V GO]]

b. $[_{vP}$ AG v $[_{VP}$ TH V ~~GO~~ ⊃ X]]

c. $[_{vP}$ AG v $[_{VP}$ TH V ~~GO~~ ⊃ X]]

The following examples suggest that this approach is indeed plausible, in that it correctly predicts the possible ways of reflexivizing locally:[10]

(15) a. $[_{vP}$ John introduced-v $[_{VP}$ ~~John~~ ⊃ himself ~~introduced~~ to Mary]]
b. $[_{vP}$ John introduced-v $[_{VP}$ Mary ~~introduced~~ to ~~John~~ ⊃ himself]]
c. $[_{vP}$ John introduced-v $[_{VP}$ Mary ~~introduced~~ to ~~Mary~~ ⊃ herself]]

The basic analysis as just presented is further extended in Grohmann (2000b, ch. 3) to cover other instances of local anaphors, namely reciprocals. Comparing the different local anaphors (in English), we can observe differences in interpretation, of course: we have to distinguish identical referents from (sub-)sets of referents between the moved

[10] This is a first stab. It goes without saying that a discussion of languages with different patterns (e.g. with the help of a reflexivizing morpheme or via incorporation) cannot be treated here.

and the spelled out copies. In other words, there is an apparent choice of pronominal filler element that gets pronounced (our 'X').

For illustration, take two relatively straightforward constructions:

(16) a. John likes himself.
b. John and Bill like each other.
c. John and Bill like themselves.

It is not unreasonable to suppose that this "semantic" distinction is encoded on the originally merged lexical item. In order for *John* to be merged into TH-position and subsequently move into AG-position (followed by Copy Spell Out; cf. (14a)), it needs two sets of θ- and ϕ-features. If this is all it has, Copy Spell Out will be one expressing full identity. Noteworthy, though, is the fact that singular referents cannot receive a reciprocal meaning. Reciprocity presupposes a plural referent set. Following Schein's (1993) proposal that a plural noun phrase basically expresses the coordination of all possible events involving the relevant argument structure, the rough LF of (16b) looks like (17a), while that of (16c) would be something like (17b):

(17) a. $\exists e_1[\text{Likes}(e_1, \text{John}_i, \text{Bill}_j)] \,\&\, \exists e_2[\text{Likes}(e_2, \text{Bill}_j, \text{John}_i)]$
b. $\exists e_1[\text{Likes}(e_1, \text{John}_i, \text{John}_i)] \,\&\, \exists e_2[\text{Likes}(e_2, \text{Bill}_i, \text{Bill}_i)]$

Thus, merging a noun phrase denoting a multiple member set, the internal structure to [$_{DP}$ John and Bill] presumably has these relations encoded. In that case, if the relevant information is one of conjoining self-liking events, the filler is a reflexive, and if it is one of conjoining transitive liking events, it is a reciprocal.[11] (See Grohmann 2000b, ch. 3 for discussion on inherent reflexives and *pro*.)

This analysis also accounts for reflexive ECM-subjects. Following Koizumi (1995) and Lasnik (1999), a plausible analysis of ECMed subjects in Checking Theory involves the Agr-position of the matrix clause. Coupled with the proposal that movement into θ-positions is permissible (Bošković 1994, Hornstein 2000; also, see section 3.3), (18a) would receive the structural analysis of (18b): the point of reflexivizing *Mary* is the matrix ϕ-domain, when *Mary* moves from one ϕ-position (SpecAgrP) to another (SpecTP). As far as I can tell, we cannot tease apart all possible points of reflexivization; this seems a plausible option.

(18) a. Mary expects herself to win the race.
b. [$_{TP}$ Mary T [$_{?}$ expects$_i$ [$_{Agr}$ ~~Mary~~ ⊃ herself t_j [$_{vP}$ ~~Mary~~ t_i [$_{VP}$ t_i [$_{TP}$ to-T [$_{vP}$ ~~Mary~~ win$_j$-*v* [$_{VP}$ t_j the race]]]]]]]

We now have an instance of Copy Spell Out forced by the CDE for the ϕ-domain. Regarding the ω-domain, one construction that comes to mind – especially after the previous examples of CDE-driven Copy Spell Out involving pronominal elements – is left dislocation. We can roughly distinguish three types of left dislocation, illustrated in (19): Hanging Topic Left Dislocation (HTLD, illustrated by English), Contrastive Left Dislocation (CLD, German) and Clitic Left Dislocation (CLLD, Greek):

[11] These facts suggest that the choice of the filler, restricted as it is, depends on information internal to the noun phrases. If we tied that information to ϕ-features, we would yield a further possible argument in favor of ϕ- rather than Case-driven movement (see fn. 5 above). Insertion of a formative in the relevant circumstance (saving a CDE violation) must be licensed by C_{HL} and a ϕ-projection (Agr) seems a reasonable place to do so.

(19) a. This man, I don't know him. [HTLD]
b. *Diesen Mann, den kenne ich nicht.* [CLD]
this.ACC man that-one.ACC know I not
'This man, I don't know [him].'
c. *Afton ton andra, dhen ton ksero.* [CLLD]
this.ACC the.ACC man.ACC not 'm.ACC know.1SG
'This man, I don't know ['em].'

A plausible analysis for topicalization moves the topic to the left periphery (a position that could be identified as TopP within a finer articulated CP). The German topic-construction corresponding to (19b) – that is, minus the resumptive pronoun – would then look like (20a), where the topic (here, XP) undergoes the rough movements sketched in (20b), checking its thematic, agreement and discourse features overtly:

(20) a. *Diesen Mann kenne ich nicht.*
b. $[_{\text{TopP}}$ XP Top^0 ... $[_{\phi\Delta}$ ... ~~XP~~ ... $[_{\theta\Delta}$ ... ~~XP~~ ...]]]]

Comparing HTLD and CLD with topicalization, we can observe that only the latter shows straight parallels: only the left-dislocated XP of the CLD-type is Case-marked, unbounded, island-sensitive, and may reconstruct – just like topics, but unlike hanging topics.[12] Regarding the latter, we find the absence of Weak Crossover and Condition A effects, the presence of Condition C effects, the possibility of left-dislocating idiomatic chunks, and the impossibility of left-dislocating multiple XPs.

While all these are good arguments in favor of movement (of the left-dislocated XP), previous approaches had no straightforward way of encoding the resumptive pronoun in (19b). In the present framework, the obvious solution sticks out. Given that the resumptive in CLD, but not HTLD, is in topic position, the left-dislocated XP must occupy a position further left. If it has moved to this sentence-initial position via TopP (to account for the parallels with topicalization), it would have touched down twice in the ω-domain and thus violate the CDE. Copy Spell Out of the lower copy in TopP is then employed to rectify this move. This is illustrated below:

(21) $[_{\text{CP}}$ XP C $[_{\text{TopP}}$ ~~XP~~ ⊃ RP Top ... $[_{\phi\Delta}$ ... ~~XP~~ ... $[_{\theta\Delta}$ ... ~~XP~~ ...]]]]

XP, the left-dislocated element in CLD, is part of the initial numeration, while RP (the resumptive pronoun) is not; this element is the spelled out copy of XP. In HTLD, on the other hand, the RP is part of the numeration and does not form a movement dependency with the hanging topic (viz. absence of reconstruction effects and lack of Case-marking on the hanging topic, for example).

Interestingly, CLLD shares the main properties with CLD, again clearly different from HTLD (e.g. Cinque 1977, 1990, Anagnostopoulou 1997, Villalba 2000). What we can observe is that the resumptive element in these cases, the clitic, occurs lower than the topic position. One possible route of explanation, in line with the current proposal, would introduce the clitic as a spelled out copy of the to be left-dislocated phrase in a lower Prolific Domain, such as the ϕ-domain (see Grohmann 2000b, in progress).

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[12] See, for example, the collection of papers in Anagnostopoulou et al. (1997) for recent (and not so recent) discussion of these constructions in a variety of languages, their different properties and possible approaches. In Grohmann (2000a, 2000d), I develop the arguments for Copy Spell Out in case of CLD in detail. The arguments for the resumptive to be a spelled out copy of the left-dislocated element also hold independently of the present framework (cf. Grohmann 1997).

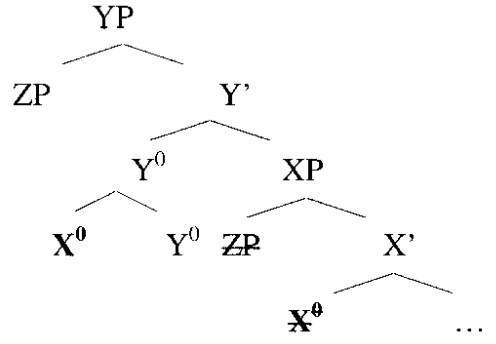
In sum, while the general observation that maximal phrases may not move within a locally defined area seems to be correct, a handful of apparently exceptional cases can be accounted for if we allow introduction of grammatical formatives in the course of the derivation. If, furthermore, the form of these formatives can be predicted by context or make-up of the moving element (cf. reflexives vs. reciprocals), we do not have to say too much about such instances of Copy Spell Out. In particular, I want to maintain that the idea to introduce such material derivationally does not constitute a violation of the Inclusiveness Condition (Chomsky 1995: 228). It is not the case that a new object gets inserted. All formal features (thematic role, agreement properties, discourse function) are present – in the initial numeration as well as subsequent computation. What changes is the PF-matrix, a change that is straightforward if feature bundles are kept separate. Zwart (1997), for example, argues that formal features should be differentiated from semantic features and from phonetic features. Copy Spell Out concerns the latter, and it is plausible that these get inserted late anyway (cf. Distributive Morphology à la Halle and Marantz 1993 and follow-up work, for example). The long and short of this discussion, brief as space allows, is that the concept of Copy Spell Out does not jeopardize Inclusiveness, contrary to Kayne (2001).

3.3. Exclusivity: some concepts and consequences

In this section, I want to address some theoretical aspects of the framework of Prolific Domains, that go beyond the discussion above, and point to some possible directions this framework could go, in comparison to other, recent proposals.

We have noted earlier that Exclusivity regards XPs only. Let us now see why this should be so. Head movement differs from XP-movement in being adjunction to a head, rather than substitution. Take (22) and concentrate on the relevant objects, ZP and X^0:

(22)



As suggested above, movement of ZP is only allowed if the landing site is part of a different Prolific Domain, otherwise the two (non-distinct) copies of ZP could not be interpreted at PF. This PF-violation would be due to the identity of PF-matrices of both copies of ZP. This identity, in turn, is the result of XP-movement as substitution.[13] If another movement operation could render the moved element PF-distinct from the lower copy, one would expect the result well-formed, even if it takes place within the

[13] In Grohmann (2000b, ch. 3), I argue that XP-movement must be substitution, i.e. adjunction to maximal phrases (as popular GB-analyses suggest for topicalization or scrambling, for example) cannot be the result of movement. The reasons for, and the theoretical and empirical consequences of, this postulate should not concern us here (see also Grohmann 2001), but the emerging typology distinguishes XP-movement, XP-adjunction and X^0-movement straightforwardly. That is to say, we lose a reason, why head movement should be suspect and eliminated from the grammar and replaced by a pure PF-operation, as argued by Chomsky (1995, 2000, 2001) – see also Zwart (2001) for interpretive effects of head movement as well as phonological consequences.

same Prolific Domain. This is arguably the case with head movement. Moving X^0 in (22) adjoins it to the next highest head, Y^0, resulting in the complex head $[X^0\text{-}Y^0]\text{-}Y^0$. In this case, the newly formed complex head has a different PF-realization from the original X^0 by virtue of bearing more morphological material. Given that all functional heads manifest phonetically in some language, we can assume relatively safely that all morphological material related to any given functional head always has some intrinsic PF-matrix, regardless of whether this material is actually pronounced. In other words, moving an XP (into a specifier position; see fn. 13) does not enrich its phonological make-up, but moving a head does. In this sense, two copies of a head within a Prolific Domain are distinct and can be interpreted at PF, conforming to the CDE.

We are now dealing with essentially the following (im)possibilities of movement dependencies:

(23)	a.	$\#[_{\alpha\Delta}$	XP	Y^0	...	$[_{\alpha\Delta}$ ... ~~XP~~ ...]]	*(anti-local movement)*
	b.	$[_{\alpha\Delta}$	XP	Y^0	...	$[_{\beta\Delta}$ ... ~~XP~~ ...]]	*(XP-movement)*
	c.	$[_{\alpha\Delta}$		$X^0\text{-}Y^0$	...	$[_{\alpha\Delta}$ ... ~~X^0~~ ...]]	*(head movement)*

Returning to the "bigger picture" of the current framework, as depicted in (10), it is worth noting that such a dynamic conception of the computation is not novel, nor is it the only one around. Modifying Uriagereka's (1995, 1999) concept of cyclic Spell Out, Chomsky (2000, 2001a, 2001b) also splits up the clause into formal sub-parts and sends these off to the interfaces as the derivation unfolds. In this model, the relevant parts ("phases") are slightly different – and subsequently, the consequences of a phase-driven framework diverge from the consequences of a domain-driven framework. Nevertheless it is interesting to note how they differ, and to observe that these differences do not per se argue in favor of one over the other; rather, the choice of phases or Prolific Domains depends on other assumptions on the structure and mechanisms of the grammar one wants to hold on to. Here is a basic comparison of some of these differences:

(24) Comparing phases (PH) with Prolific Domains (ΠΔ)
- i. propositional PH vs. contextual ΠΔ
- ii. PH and ΠΔ are convergent (Spell Out)
- iii. Phase Impenetrability Condition vs. Condition on Domain Exclusivity
  - a. Attract/Agree vs. Move (local evaluation)
  - b. multiple vs. unique specifiers (no edge)

The first point regards the licensing of the relevant sub-parts. Chomsky (2000) suggests that phases are propositional, and as such identifies *v*P and CP as the only phases of a clause. In the present framework, we basically identified *v*P, TP and CP as Prolific Domains, identified by contextual information. Both phases and domains are convergent sub-parts, that is, they are both locally evaluated and spelled out cyclically. Theoretical implications arise in respect to point (24iii), where the two models diverge. As we have seen here, it is a property of the moving element that forces displacement (i.e. Move), whereas the "classical" minimalist approach of Chomsky (1995, 2000) pinpoints the trigger in the attracting head (by movement viz. Agree or without, namely through Agree). Another formal difference is that a phase-based system depends on multiple specifiers, to create "escape hedges" for material to get out of a phase. This is done via an "edge," the only possibility for a higher phase-inducing head to attract the relevant material and thus closing off the lower phase. By not assuming multiple specifiers (Grohmann 2000b, 2001; see also fn. 13), this difference is by far not

detrimental for a domain-based system: a Prolific Domain is evaluated at the point of creation, while a (strong) phase is then closed off when the next highest phase enters the computation. In other words, these properties of the two different systems have to do with the fact that two different well-formedness conditions are at work. Movement out of a phase is restricted by the Phase Impenetrability Condition, whereas movement within a Prolific Domain is subject to the Condition on Domain Exclusivity. The upshot of this comparison is that the framework of Prolific Domain fares prima facie no worse than a phase-based system in conception or empirical coverage. In order to decide for one of the two, a number of background assumptions have to be teased apart.

One final empirical aspect I would like to consider here is the determination of possible landing sites for two types of movement, movement within a clause ("intra-clausal") and across clauses ("inter-clausal"). Given that each full clause consists of a hierarchically structured tripartition, $\omega\Delta >> \phi\Delta >> \theta\Delta$, movement within a clause cannot jump across one of these, that is, intra-clausal movement must always target the next highest Prolific Domain. This is a direct consequences of building up the interfaces cyclically: if XP has an interpretive presence at one point of evaluation (i.e. in a Prolific Domain, say, at the θ-domain), it must be present at the next highest also (ϕ-domain), when it finally occurs at the highest level (ω-domain). In essence, this forces topicalized arguments, for example, to move through an agreement position, before landing in the discourse layer. We can illustrate a straightforward case with simple Wh-questions:

(25) *Intra-clausal movement*

a. $[_{\omega\Delta} \ldots \text{XP} \ldots [_{\phi\Delta} \ldots \sout{\text{XP}} \ldots [_{\theta\Delta} \ldots \sout{\text{XP}} \ldots]]]$

b. $[_{\omega\Delta}$ who did $[_{\phi\Delta}$ John ~~who~~ $[_{\theta\Delta}$ kiss ~~who~~$]]]$

It has long been noted that successive-cyclic movement differs from clause-internal movement in that it targets the same projection in the higher clause. The classical example is Comp-to-Comp movement, as in long Wh-movement, for example. Another instance of this type of movement is subject raising, where the theta-marked subject of an embedded clause moves to the grammatical subject position of that clause (SpecTP), before moving successive-cyclically to the matrix SpecTP. If this element is a Wh-phrase, it must move on to the matrix Wh-position (e.g. SpecCP or SpecFocP) – crucially, it does not move to a Wh-position below the matrix clause.

What this means in the current framework is that inter-clausal movement always targets the next highest Prolific Domain of the same type, as in (26):

(26) *Inter-clausal movement*

a. $[_{\omega\Delta}$ XP $\ldots [_{\phi\Delta} \sout{\text{XP}} \ldots [_{\theta\Delta} \ldots [_{\omega\Delta} \ldots [_{\phi\Delta} \sout{\text{XP}} \ldots [_{\theta\Delta} \ldots$
$[_{\omega\Delta} [_{\phi\Delta} \sout{\text{XP}} \ldots [_{\theta\Delta} \sout{\text{XP}} \ldots]]]]]]]]]$

b. $[_{\omega\Delta}$ who $[_{\phi\Delta}$ ~~who~~ seems $[_{\theta\Delta} [_{\omega\Delta} [_{\phi\Delta}$ ~~who~~ to be $[_{\theta\Delta}$ likely
$[_{\omega\Delta} [_{\phi\Delta}$ ~~who~~ to $[_{\theta\Delta}$~~who~~ kiss Mary]]]]]]]]]

This line is compatible with Bošković's (2000) take on the EPP and Hornstein's (2000) analysis of raising and control. Regarding the latter, we have observed in (18) already that in order to spell out an ECM-subject as a reflexive, this subject must have moved into the thematic domain of the matrix verb. Hornstein applies this movement as the standard operation that underlies control structures, which thus differ from raising in involving movement into a thematic position. Just as (26) is an instance of inter-clausal movement from a ϕ-to a ϕ-position, these cases (control à la Hornstein or ECM from

(18) are instances of θ-toθ-movement – all conforming to the hypothesis that inter-clausal movement targets the same type of Prolific Domain in the next highest clause.

4. A note on clause-typing

Now that we have sketched the framework of anti-locality in syntax, I would like to look at one particular consequence for the study of grammar. The general consensus is that all clauses need to be formally licensed, or typed (see in particular Cheng 1991). In a minimalist setting, one could envision this clause-typing to be done by checking of formal features. Naturally, a number of other factors play a role – and this is not the appropriate place to discuss the theory of clause typing in detail – so that one would have to decide, for example, if other, plausibly non-syntactic factors (relating to mood or speech act) should be integrated into the syntax, and how so. Another question regards the exact locus of where clause-typing should be done; while CP seems a plausible candidate, more has to be said, a point we get back to presently.

What I want to do now is go over some light that the framework of anti-locality throws on Cheng's clause-typing hypothesis. This brief discussion concerns the typing of Wh-interrogatives. The particular proposal of Cheng's is that clause-typing (with respect to Wh-question formation) is enforced by a criterion-like condition (Cheng 1991, ch. 2): all clauses are typed either by Spec-head agreement of a fronted Wh-phrase in the CP-projection or by the presence of an interrogative particle (in C).

Given what we have said so far, Cheng's condition must be revised.[14] Among the questions we have to settle in order to implement or develop Cheng's hypothesis is the finer articulation of CP (in the wake of Rizzi 1997, for example). The Comp-layer now consists of more than a single projection – which was the locus of clause-typing for Cheng. Does this mean that any C-projection can license clause types? It is plausible to assume that only one projection is responsible for typing the clause, such as the highest C-projection – aptly called ForceP by Rizzi.[15] But if only one (such as the highest) C-projection can type the clause, we have to avoid movement via another, lower C-projection.

Referring to the highest clausal Prolific Domain as the ω-domain (viz. "discourse") suggests already an area of the clause that could involve formal syntax-discourse properties, such as needed to encode speech acts/illocutionary force (if so desired – possibly via other mechanisms tying in the pragmatics of language). But an XP satisfying one formal property cannot also then check another, if both are (broadly) discourse-related. This is what we have already seen in (3) above. A regular Wh-phrase cannot also act as the topic of the sentence, being required to check a [Top]-feature as well as [Wh]. This restriction follows from the CDE.[16]

Let us now turn to the puzzle of an articulated Comp-layer in the context of the clause-typing hypothesis and the framework of anti-locality. One question is whether Wh-movement is syntactically or semantically driven. Under the view that the Wh-operator (or interrogative clause-typer) sits on the Wh-phrase, the prevalent view is that

[14] I will not discuss the empirical adequacy of Cheng's hypothesis (see e.g. Sabel 1998, Boeckx 1999 for some discussion).

[15] As the highest position of the clause, everything beneath would be in the "scope" of the clause-typing element, thus suggesting that Force or C is a plausible locus for typing a clause's force.

[16] There are arguments that take certain Wh-phrases to be topics, in which case the [Wh]-property is not formally checked, such as in contexts of D-linking (see Grohmann 1998, Cho & Zhou 1999, Citko & Grohmann 2000, den Dikken & Giannakidou 2000, for example).

all Wh-phrases must move to SpecCP at some point. This approach goes back to Huang (1982) who proposes LF-movement of Wh-phrases in Wh-in situ languages. There is an alternative, namely that another element types the clause, possibly independent of the Wh-phrase. Baker (1970) suggests a Q-morpheme, elaborating an idea by Katz & Postal (1964), which was developed further by Cheng (1991). Under the latter analysis, all that is needed to license a question is Q in C, and languages allow either one of two strategies: (i) move a WH, which by default contains Q, to SpecCP or (ii) generate Q in C, which comes in the form of a Q-particle.

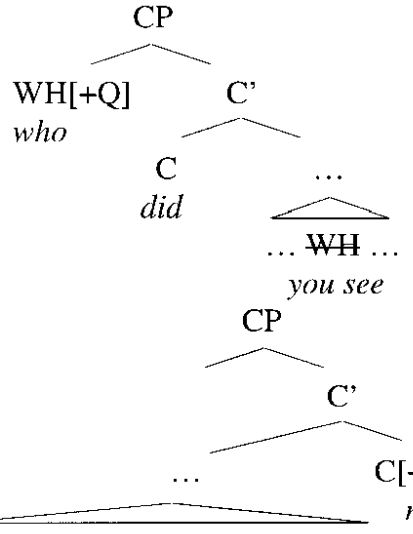
This Q can be a phonologically pronounced morpheme such as Japanese *no* in (27a) or an unpronounced, empty morpheme, asd would have to be claimed in (27b) for Chinese, another Wh-in situ language. An implementation of this approach need not postulate LF-movement of the Wh-phrases.

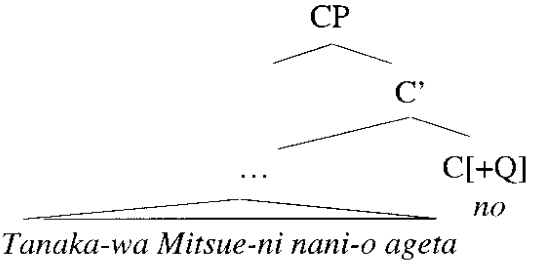
(27) a. *Tanako-wa* *Mitsue-ni* *nani-o* *ageta* *no?*
Tanako-TOP Mitsue-DAT what-ACC gave Q
'What did Tanako give to Mitsue?'

b. *Zhangsan* *mai-le* *shenme?*
Zhangsan buy-ASP what
'What did Zhangsan buy?'

The Q-typing approach can be sketched as follows. Q could sit on the Wh-phrase in SpecCP, as in (28a) for English, or in C, as in (28b). The latter can be covert, as in Chinese (in which case it would have to move), or overt, as in Japanese, for example.

(28) *Q-typing approach*

a.


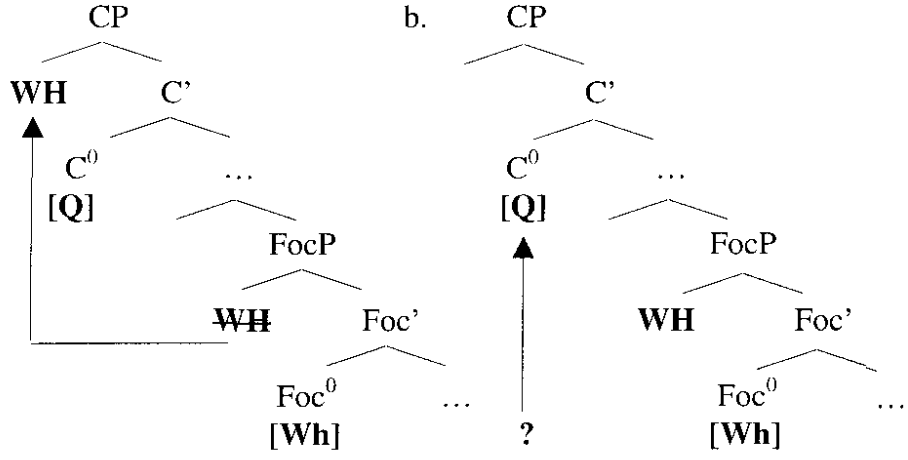
b.


I suggest that Wh-movement is independent of interrogative force. Rather, the clause is typed interrogative by a question morpheme, the Q-particle (overt or covert). We can thus integrate Cheng's approach into a more articulate structure of CP (à la Rizzi 1997), here understood as the ω-domain. But the present approach does not require Wh-phrases to move to yield a well-formed question, not even in languages that do not make a Q-particle available (see also Hagstrom 1998).

Displacement of Wh-phrases takes place for an additional discourse effect, driven by a special feature, the feature [Wh], which might be related to "focus." By separating [Wh] from [Q], we can license the interrogative clause across all languages without resorting to any kind of movement of Wh-phrases, and no necessity to move at LF either (see also Brody 1995, Hornstein 1995, Kayne 1998 for arguments against covert A'-movement). If Wh-phrases move, they do so for other reasons. It has been argued that languages that move a Wh-phrase to a C-related position (or ω-position), canonically target FocP. One argument comes from the complementary distribution of displaced Wh-phrases and displaced focus phrases (Horvath 1986, Brody 1990).

The problem for the "strict" clause-typing hypothesis is obvious: if moved Wh-phrases canonically target FocP, they cannot then move on to CP to type the clause. We now face the following (im)possible constellations to license Wh-interrogatives. Given Exclusivity, (29a), where WH represents the moved Wh-phrase, cannot be the right way to type clauses – but it should be if we wanted to hang on to Cheng's requirement that a Spec-head constellation needs to be created tom license clause-typing.

(29) a. #



b.

Merging the particle with C^0 in (29a) is no problem, but [Q] cannot then be checked by XP-movement. Thus, Q must type the clause by virtue of being in C. If, however, only Q ends up in C – by movement (from '?' in (29b)) or by base-generation – we can modify the condition that clauses must be typed: Wh-interrogatives are universally typed by the Q-morpheme in C; Q may directly merge into C or move from the Wh-phrase (see Bošković 1998, Hagstrom 1998, Grohmann 2000b for details).

5. Conclusion

In this paper, I have sketched a framework that takes into account that locality on movement dependencies does indeed seem to have a lower bound as well as the traditional upper bound. Such a conception allows us to rule out ungrammatical cases which otherwise would have to invoke a number of additional conditions, mainly in the form of criteria and filters. Moreover, all these additional conditions have to be separately formulated for the different cases. By following a research agenda that aims at eliminating superfluous conditions – those not driven by bare output conditions – we can capture this "lower bound" or anti-locality effect in a different way. The framework presented here does so in terms of an Exclusivity condition, that bans movement within a designated area of the clause. We identified three such areas, which we call Prolific Domains, correlating to contextual information licensed within each of them: a thematic

domain, an agreement domain and a discourse domain. Naturally, such a model has far-reaching consequences on the analytical level. One such consequence arises for theories of clause-typing. I suggested that in the case of Wh-questions, Wh-movement should be dissociated from clause-typing. This is achieved by distinguishing Wh-features, that drive movement of a Wh-phrase into the ω-domain, from a Q-morpheme, which types the clause. In order for the framework of Prolific Domains laid out here to go through, other analytical consequences have to be tackled, some of which we have mentioned in the text. One particularly interesting topic – interesting not only from the perspective of the present model, but also from a general, formal point of view – is the issue of clause-typing, beyond the little spiel on Wh-interrogatives we have seen. By denoting Q as a quintessential clause-typing morpheme, the door has been opened to find other such (abstract) morphemes for other clause types as well and proceed with a technical implementation along the lines provided towards the end of this paper. These and other issues have to be left open for future, fruitful research.

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From Simple Predicators to Clausal Functors: The English Modals through Time and the Primitives of Modality*

Remus Gergel
Universität Tübingen
regel@web.de

1. Introduction

The ultimate goal of this paper is to find a representation of modality compatible with some basic conditions on the syntax-semantic interface.[1] Such conditions are anchored, for instance, in Chomsky's (1995) principle of *full interpretation* (FI). Abstract interpretation of modality is, however – be it "only" in semantic terms – already a hard nut to crack, way too vast to be dealt with in any comprehensive way here. What is pursued instead is a case-study-centered analysis. The case in point are the English modals (EM) viewed in their development through time – a *locus classicus* for a number of linguistic theories and frameworks. The idea will be to start out from two lines of research – continuous grammaticalization vs. cataclysmic change – and to explain some of their incongruities. The first non-trivial point here consists in deriving more fundamental questions from this research. The second, possibly even less trivial one consists in answering them. Specifically, I will argue that regardless of the actual numerical rate of change, there is an underlying and more structured way to account for the notions of change and continuity within the modal system, respectively.

The main claim is that two primitive relations must have characterized the EM at all linguistically reconstructible times: central vs. non-central coincidence. If the spell-out presented here proves to be correct, then, in broader terms, it will fit Hale's (1985) *world view*(s). According to such views, a principle of coincidence with two possible features (central vs. non-central) underlies a series of *prima facie* unrelated linguistic phenomena, as for instance locational prepositions and temporal predicates in (1), but also many others (cf. Hale 1985, Demirdache and Uribe-Etxebarria 2000). Starting from the premise of a quantificational representation of the EM, I will claim that there is a case for representing modality as a similar predicate, once we have defined the coincidence relations. The phrase-markers in (1) show that two sets of locations and times, respectively, coincide.

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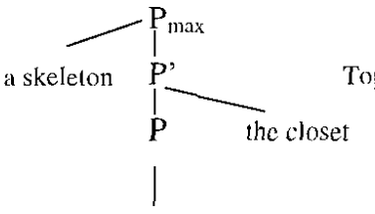
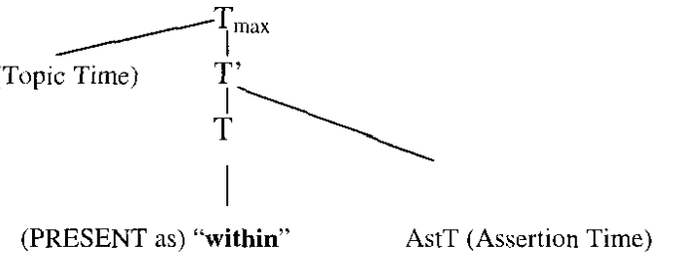
[1] On the semantic side of the interface, I assume, for simplicity, the standard classification of modality as exposed in Palmer (1986) and going back at least to Hofman (1976) – in particular, this entails the epistemic vs. root distinction – up to one significant difference: I consider alethic modality part of human language and not only of logical systems. Cross-linguistic back-up for this view can be adduced from Cinque's (1999: 78) study of functional heads. For English examples – both from present usage and diachronic ones – see below.

(1a) locational central coincidence



(1b) temporal central coincidence



Turning back to modality, consider the sentences in (2), where (2b) would not be grammatical today, but where we have abundant evidence that there were such sentences at earlier stages of the language, say, from Shakespearean texts.

(2) a. William, you must write us a sonnet.
(2) b. William, thou must to the queen.

What the present paper attempts to account for is an explanation of why both a functional element base generated in an inflectional node of the sentence (2a) and a lexical element generated in the verbal head (2b), can have similar interpretations at an interfacial level. Both (2a) and (2b) convey the notion of obligation, a clear case of deontic modality. The relation of coincidence in the case of modality will connect two sets of possible worlds. In (2), these two sets are the one related to the speakers, or the commanders, and the one related to William, the commandee, respectively. Pursuing a slightly modified analogy to current tense theories, I will call the first set the topical world set (TopW), and take it as the external argument of the modal relation, and the latter assertion world set (AstW), its internal argument. The set TopW does not necessarily have to be related to the speaker, it can by all means be related to another "controller" present in discourse – e.g. a set of possible worlds in the AstW of a higher clause. By contrast, in all deontics, AstW will denote the set of possible worlds related to the commandee and the ordered/allowed event as above. *Mutatis mutandis*, in evidential or epistemics, AstW will denote the inferree and the inferred event.

Closely linked to the representation of modality, a further diachronic generalization will be derived as the argument unfolds. Particularly, it will be argued that positing a Predicate Phrase (PrP or Pr_{max}) for the whole diachronic development of the EM from OE through ModE is a refinement of Roberts' (1993) sudden-diachronic-reanalysis theory of the modals from V to T. I will take the Pr-node to be situated between T and V as in Bowers (2001). In addition to the motivation given therein for the existence of PrP, I will investigate a further argument for the existence of PrP. The argument is based on VP-ellipses (Warner 1992, Winkler p.c.) in OE, which provide complementary evidence for Pr directly pertaining to the predication of modality (and tense). I will argue that a predicate node has strong explanatory potential for the diachronic issues dealt with in this paper. One benefit of the tense-modality parallelism will be the prediction that modal verbs carry both tense and modal features which they check either by merger with PrP in ModE or by movement in OE/ME.

2. Facts, theories, problems

2.1. The modals of English: old and new meaning

Speakers of ModE following their intuitions may occasionally be confronted with an intriguing experience while reading OE or ME texts and processing the semantics, syntax and morphology of the precursors of *may*, *must*, *shall*, and *can* as shown in (3)-(7).

(3) We magon eow sellan halwende geþeahte, hwæt ge don magon. (Bede, 28.12)
we can you give sound advice, (as to) what you do may

(4) ...(þat) alle Cristus wordus mote nede be trewe. (Wycliff, [94], 15)
that all Christ's words must necessarily be true

(5) ...who this book shall wylle lerne...
...he-who this book shall wish learn... (Denison's 1993: 310 example 121)

(6) Method hie ne cuþon. (Beowulf, 180)
Creator they not knew

(7) forðy is betere þæt feoh þætte næfre losian ne mæg ðonne þætte mæg 7 sceal.
'therefore better is the property which can never perish [lit. never perish not can] than that which can and will.' (Warner's 1992 example 5a)

In the linguistic space occupied by the modals, it becomes an intricate problem how to map an old meaning into a new one. In a translation, one and the same item can – and in fact must – be rendered in some cases by its modern correlative and in others by another member of the class as the two occurrences of *magon* in (3) make clear.[2] In (4), an objective deontic *mote*, reinforced by the adverbial *nede* (the latter originally an inflected noun coming close to instrumental meaning) corresponds in ModE to its former preterite form, which has substituted the lost present form. Considering the religious context, and the additional reinforcement, *mote nede* turns out to have alethic meaning. In (5), we understand the modal *shall* more easily but at least as speakers of Standard ModE we are puzzled by the fact that something resembling a second modal comes right after it. In (6), we cannot bring the modal and the DP *method* together at all given that the pronoun *hie* already checks nominative, so we assume that *cuþon* had rather the significance of knowing in this context. The comparative construction in (7) is noteworthy for two reasons. First, negation precedes the modal *mæg*, and second, there seem to be two instances of VP ellipsis licensed by each of the modals *mæg* and *sceal* in the final relative clause.

Direct or oblique objects (for instance with prepositions) as well as adverbials often give us the first clues on the meaning of the modal cognates in ME and OE. In addition to this and to the general context, some approximating translations generally agreed

[2] The necessity of a certain translation cannot be absolute; it is rather imposed by the context to a certain extent. For example, equating both instances of *magon* with *may* does not make the sentance itself ungrammatical, but semantically mostly improbable in the context it is taken from, where it is essential for the spekears to convince the addressees that they truly are in a position to impart some good advice. Therefore *can* seems the more appropriate choice in ModE.

upon in the literature can offer a first orientation. The following paraphrases for some OE premodals are for instance adapted from Traugott (1992):

(8) a. *magan* = be strong, sufficient, in good health, be able to; especially for physical ability, whereas *cunnan* is rather used for mental faculties;
b. *motan**[3]= be allowed to; be obliged to;
c. *sculan**= owe; be necessary.

If we take these approximating mappings of meaning to be correct, we have to handle two main issues. How do we explain the syntactic and semantic differences to modern usage? And how can we account for the OE synchronic discrepancies, notably for the two diametrically diverging root meanings of *motan* in (8b)? A further question would be whether the two problems are interrelated. Traugott (1992:197) rounds up the difficult descriptive task by giving a characterization in terms of the ability to express epistemic meaning. In such terms *cunnan, magan*, and *agan* are posited to lack any trace of epistemicity. On the other hand, *magan, sculan, beon*, and *willan* are reported to display some "marginal epistemic colouring". A stronger epistemic coloring is apparently only to be encountered amid impersonal constructions. The hint is helpful as a categorization, but does not answer the questions raised above.

Visser (1969) sheds some light onto the issues by attempting to explain etymological links, sometimes traced back up to Indo-European. Take the two opposing meanings of *motan* for example. Two possibilities are considered. The first one is that *motan* of obligation developed out of the homonym expressing permission. The alternative story for the genesis of the discrepancy, and also the one preferred by Visser (pp.1791, 1797) is that both the permission and the obligation reading evolved from an original **med-* (related to Gothic *gamut*) and meaning something like *to have it measured out for oneself, to find room*. However, theoretical backup from modal logic, and more importantly, synchronic evidence from ModE show that such seemingly contradictory overlaps as the first possibility presented by Visser are by all means possible in natural language. For instance *may not* and *must not* can still be truth-functionally equivalent in ModE. Furthermore, and in relation to the first co-incidence, negation of alethic *must* in ModE is taken over by *cannot* although *can* is otherwise less common as an alethic. If it seems difficult to reconstruct the exact relationship between the two readings of *motan* at different stages of the language, then it is noteworthy that the two meanings share a deontic character, and we can only expect worse from the rise of epistemic readings out of the deontic ones.

Traugott (1989) treats the issue of metaphorical extension as a potential generator of new meaning among the modals. She does not rule such extensions out when it comes to the transition of one root reading to another. For instance *sculan* in its original form of *owe*+DP (e.g. *debts*) may have spread out metaphorically to mean *owe*+DP/VP (e.g. *certain behavior*). But a theory of change from the concrete to the abstract as claimed for instance cross-linguistically for verbs of perception (a standard example being *see*) is rebuked in the case of the transition from root to epistemic modals. This rejection appears to be consistent with a stronger categorial difference in the syntax of root and epistemic modals, respectively – as proposed by Drubig 2001. Traugott, however, only mentions a process of "pragmatic strengthening". She claims a conventionalization of

[3] The two starred infinitives are not attested. Henceforth I will use them as simple props when not referring to any particular form in the paradigm of any of these verbs.

implicature, but the evidence presented is rather scarce and a clear picture of how pragmatic strengthening might work does not arise.

2.2. Arguing for PrP: the syntactic and semantic shifts of the EM

Both Roberts (1993) and Roberts and Roussou (1999) notice that the different approaches to the diachronic development of the modals need not be at conflict as much as it seems – the null-hypothesis they entertain is that only the focus of research is varied. Before proceeding with a closer scrutiny of this hypothesis let us review some of the facts. Leaving aside the issues regarding the speed of the change and any alleged causality of the change, we get a visible change of grammatical status for the modals at the latest in the post-Elizabethan age (Roberts 1999:1023 dates it to the 1520s). The most conspicuous indications are given in (9).

(9) Changes in the modal system of English (16th century)
- a. at the level of l-syntax: loss of argument structure or rather loss of the ability to take any objects (this seems to a facilitating, sufficient condition, cf. van Kemenade's 1999 overview on the topic, although Roberts 1993 stresses its necessity).
- b. morphological make-up: the EM had previously been part of the preterite-present verb class, a morphologically distinct status, which they originally shared with other verbs. The inflectional poverty was exacerbated with loss of 2nd p. sg. (infinitives had always been rare, and the textual evidence even more rare; cf. OED, Visser 1969, and fn. 3)
- c. behavior with respect to s-syntax: most prominent syntactic feature: alongside *have* and *be*, the modals remain unique movables into T in ModE after the 1660s. Pollock's (1989) tests with respect to question formation, negation, and adverbs hold.

The cataclysmic theory, which roughly states that all relevant morpho-syntactic changes occurred at one point, is due mainly to Lightfoot (1979). Let us now briefly review, what the gradual version of grammaticalization theory says. Goosens (1987) argues for instance for a grammaticalization scale parallel to a desemanticalization process. Whereas Traugott, following Coates (1983), takes polysemy to be structured in terms of fuzzy, but distinct sets – such as, say, the deontic and the epistemic – Goosens favors a theory of continuous transition through time from one meaning to another as in (10a) and (10b).

(10) a. Grammaticalization Scale (Goosens 1987:118)
Full Predicates > Predicate Formation > Predicate Operators

b. Desemanticalization Scale (Goosens 1987:118)
Facultative > Deontic > Epistemic > Futurity, Conditionality, etc

Full predicates are reported to be verbs with thematic structure of their own, i.e. which do not need an infinitive as an intermediate construction to take a DP complement. An example would be *cunnan* in (6) above. Deontics are also included into this class. Predicate operators are defined as verbal forms lacking an independent thematic structure and used for functional purposes, i.e. possessing a temporal or conditional

character. *Should, will,* and *would* in ModE would be typical examples. Such a binary distinction would correspond to a wide-spread taxonomy of main vs. auxiliary verbs, or more generally, to one distinguishing functional vs. lexical categories. The question, however, arises whether there was an intermediate stage of predicate formation and which verbs it contained. Goosens (1987) defines the items belonging at some point to such a putative group as a class containing verbs which do not assign argument roles and takes epistemics to be a prototypical member. This choice is not too fortunate, as the investigator himself recognizes. Goosens seems to be on the right track here, but there is one important amendment to be made. I will argue that a predicational phrase PrP in its own right and extant at all stages of the language is the least stipulatory solution for the diachronic development and for synchronic variation.

Even if continuity as proposed by Goosens is probably not be the ultimate answer to the transitions in the modal system, the idea of incremental loss of meaning accompanied by an increasingly outstanding grammatical status has more than just intuitive appeal and it will be specified less idiosyncratically and with more explanatory potential in due course. The idea of rapid reanalysis à la Lightfoot (1979), elegant as it may be, also has a number of critical points. First and foremost, there is a hard theoretical problem. Given that within this scenario we would account for reananlysis within the range of one generation, the following question comes to mind: Is a learner's internal grammar sufficient to account for historic change? If, in accordance with standard assumptions about UG, children are always able to recover the parents' grammar from their output, which is occasionally defective and never complete, then we should not get syntactic diachronic change at all.[4] Second, despite the obvious fact that the EM system has restructured in a number of ways (*magan* is generally expressed by modern *can*, *cunnan* by modern *know*; arise of epistemics), such basic notions as volition, obligation (and marginally epistemicity in *magan*, *sculan*, *beon*, and *willan*, according to Traugott 1992) are expressed within the system from OE through ModE.[5] Granted the various shifts of the modal class from within, how are we to account for the overall still class-internal transmission of these basic semantic notions? A third problem is the need for an explanation of the semantic conditions on grammaticalization. It is standardly assumed that grammaticalization of lexemes goes hand in hand with bleaching (see van Kemenade 1999). Is then bleaching just an unstructured loss of meaning formed around phonological material? If not, what is then the common semantic skeleton around which so-called bleaching occurs? One argument of this paper is that Pr is precisely in charge of this skeleton from the point of view of interpretable features. Fourth, the lexical roots of the core modals have remained generally the same: the examples (3) through (7) display just a very restricted sample. If the verbal nuclei

[4] The case of creoles and language contact is trivially different since children reconstruct the closest possible approximation of a grammar if the output they get is non-consistent. Some problematic aspects of the reanalysis approach are also reviewed in Kroch (2001).

[5] *Know* is one of the few exceptions, where a meaning previosly expressed within the system has been pushed out of it. In fact, there is an interesting development of *know* in the immedite post-Elizabethan period noted in Gergel (2000). Although historically not belonging to the preterite-present class, much less being a premodal in the sense of Lightfoot (1979), *know* may have been "wrongly mapped" into the class of verbs still undergoing verb movement (i. e. in good company of the modals) at a time when do-support was already the overwhelming rule and not the exception (cf. Ellegard 1953, Roberts 1993). An amazing exemplification of this fact can be found in the diary of Samuel Pepys. In Gergel (2000) the explanation goes as follows: Being semantically a verb expressing modality (both dynamic and evidential, depending on context) the verb *know* has initially also been tricked into joining the same syntax as the other, "established" modals.

are the same, then we might wonder whether a cataclysmic reanalysis from a purely lexical status (V) to a fully functional head position (T) might have occurred overnight. A final problem is the following: Admitted the morphological change of the modals (e. g loss of 2nd sg. ending at the beginning of the 16th century, cf. Arnold 1995: 69, loss of gerunds and infinitives) once we look closer in any pre-theoretical syntactic terms, it turns out that in many cases (we are glossing over double modals here) it were more the other verbs' co-occurrence properties changing (e.g. no verb movement after the 1660s) than those of the modals (e.g. appearance in subject-verb inversions both before and after Shakespeare).

In addition, Warner (1992) argues for a special auxiliary-wordclass status of the modals as early as OE based on impersonal constructions and ellipses. This evidence, drawing on various additional corpora as well, poses a problem for what we may call the classical V-to-I reanalysis theory as it stands. An overall dyadic shape of modality – whether in T or in V– may contribute to our understanding of the continuity in terms of syntactic auxiliaryhood. Moreover, the fact that the modals could engage into licensing verbal ellipses just as in modern usage (see Warner's discussion for viable criteria distinguishing genuine ellipses from cases of argument reduction) forces us to posit a functional head position above the omitted verb phrase, but also below negation. That is, sentences like (7) are direct evidence for a structure as [TP[NegP[PrP[(VP)]]]], where the modal can license the omitted VP from the head position within PrP.

In sum, if we want to depart from the behaviorist null-hypothesis and entertain the admittedly more interesting UG-view of perfect language acquisition, then we should be able to come up with a more refined account of modality in our particular case. The interesting alternative hypothesis we want to pursue is furthermore also notoriously known to hold true in the general case: Syntax is significantly more change-resistant than the other language modules.

Motivated by the historical issues mentioned above, we also obtain the following more general questions :

(i) Is a discrete notion of syntactic category tenable for the English modals/ for modals and modality in general given the variation of syntactic height as observed by reanalysis advocates? From a GB model of language, an affirmative answer seems desirable. From a minimalist computational perspective, even more so.

(ii) Assuming there is such a discrete category, what is its representation? Moreover where is it situated within the clausal domain? Is it to be assumed around V as in OE or rather in T as in ModE?

(iii) How does syntactic representation correlate with semantic interpretation? How come both OE/ME and ModE modals – although in syntactic terms generally different – map onto the same modal semantic structure at LF?

(iv) A further question pertaining to the modals is their relationship to predication processes (i.e. saturation of properties as in Chierchia 1985 inter alia). Are the EM predicates in any sense? Or are they – at least partly – outside the propositional domain? (McDowell 1987 and Drubig 2001 claim T-status for deontics and a C-related position for epistemics.)

By concluding from the evidence adduced in this section that Pr is present in the clause, we can disentangle the problem of where the modality features are located and where they must be checked from the issue of different modal base-generating sites at different stages of the language. Both in pre-modern and in present usage of English, the interpretable tense and modality features are checked in the predicational node. Thereby the issues raised above would be solved in a straightforward way. The

representation of modality is on this view indeed discrete, its interpretation is regulated via the interpretable (hence non-deletable) features in Pr, and modality and predication work in quite similar ways. The checking processes will be explained in more detail in 4.1 and 4.2. What remains to be done is in fact an account for the precise types of features involved in the predication of modality.

3. A characterization of the EM in terms of semantics and syntax

3.1. A sample semantic basis for the modals (Mc Dowell 1987)

One of the main claims of the present investigation is that modal predicates have a dyadic nature with essentially two feature specifications. Positing binary feature specifications for the English modals means that this duality corresponds to their actual distribution. I will base my argument on McDowell (1987), a study which shows precisely such a distribution based on an item-by-item inspection conducted for most of the EM. Let us see how her methods work for *must*, a representative which turns out to display a deontic/epistemic ambiguity in sentences as (11a) with the two paraphrased readings (11b) and (11c).

(11) a. John must be a Democrat
b. (Necessarily) John is a Democrat
c. John is forced/commanded/obliged to be a Democrat

Negation takes wide scope in both readings, as it can easily be checked. Regardless of the correlation existing between the various readings of other modals and the scope of negation, this single counterexample shows that testing for scope cannot generally disambiguate the readings. The essence of the tests for ambiguity used instead is rendered in (12) and (13).

(12) For p and q to be ambiguous, p∧q has to be grammatical and non-redundant.
(13) For p and q to be ambiguous, p∧¬q has to be true (i.e. not a contradiction).

To illustrate this consider substituting the afore-mentioned sentence (11b) by p and (11c) by q. Then the two tests give a positive answer concerning ambiguity. It is worth bearing in mind that (11b) and (11c) share the same core proposition (cp) *John be a Democrat*. If the first reading of (11a), i.e. the epistemic one, quasi-asserts the cp, what does the second, deontic one do to it? Since we do not have any other options in the framework proposed by McDowell, we would (theoretically) expect (11b) to quasi or fully assert it – these being the two main illocutionary acts used in her study. Practically, it is self-evident that neither is the case. McDowell argues that it (fully) asserts a proposition as (14), i.e. an entirely new proposition, obtained from the same core, and therefore related, but not identical to the original.

(14) There exists a/the command [*that* ..(cp)..].

Following the line of research along the concepts of assertion and quasi-assertions in more detail, one gets a useful machinery to distinguish between epistemics and deontics pragmatically, but a common denominator for modality in general is not to be expected. Such a generalization can instead be given – with a few caveats – via Lewis' well

known model of possible worlds. The following overview is adapted from McDowell (1987:195) and shall only be used as a fix point to illustrate a number of general facts about the EM.

(15) Worlds and quantifiers for the English modals

	W* (epistemic)	**K** (compatibility)	**F** (future)	**N** (normative)	**C** (commands)
must	∀				∀
may	∃		∃		∃
will			∀		
can		∃			
should				∀	
"inevitable"		∀			

There are two conspicuous entries we might miss from this table. McDowell posits the non-existence of English duals in the case of *can* and *should* as quantifiers over K and N, respectively. The universal counterpart in the case of compatibility is speculated upon along the lines of a predicate as *inevitable*. Certainly, most readings of *must* occurring in English do not convey this meaning as it becomes clear from the foregoing discussion – i.e. they are epistemic or, in its root meaning, subjective deontic. Nonetheless, it appears that alethic *must* comes very close to it.

Inserting the universal quantifier to check this reading – in McDowell's framework – we obtain: For the set K of compatible worlds the triple (s, p, K) is true iff for all $w \in K$, $w \in p$. So the theory of quantification sustains such a claim too. As for the dual of *should*, sentences as in (16) may come to mind.

(16) a. After such an accident, exchanging phone numbers is the least you could do.

b. After the accident last night, giving me her phone number would have been the least she could have done.[6]

The normative character paralleling *should* is intuitively clear, and could easily be double-checked logically. There are two possible reasons why this duality may not have been considered. *Could* is not included into the main classification in McDowell, but is rather derived via its affinity to *can*. However, with all due attention paid to the still existing correlation between the two related forms, it seems that *could* has earned its autonomous status among the English modals in numerous contexts.[7] The fact that it patterns dually with *should* in cases as above, may in fact lead us into including it.

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[6] The only reason I am considering a pseudo-cleft structure with a preposed circumstantial PP is that it seems to convey the normative meaning in a more straightforward , i.e. non-ambiguous way. Except for the fact that one would have to disambiguate again, there is no other reason against any other non-cleft pattern.

[7] For instance in (16a) we may substitute *can* for *could*, and there is no resulting temporal shift. The reason why I suggested *could* instead of *can* as a completion for *should* in McDowell's model is that in (16b) the same substitution makes the sentence ungrammatical. One could of course argue for *can* as the real counterpart in normative contexts by claiming *could* in (16b) as its inflectional form. At any rate the issue would have to be investigated more thoroughly than can be done here. The point I am making about the presence of an existential normative modal in English would be valid in either of the two cases.

A more serious objection would be that the two examples (16a), (16b) should be pragmatically derived from the fairly broad sense of operator of compatibility of *can/could*. In fact, even though this objection is justified, it may even be slightly misplaced as such, since it
can be raised to a more general criticism of the model of possible worlds – at least in the present version. Compatibility (K) may be too general as a term, so that almost any other possible worlds would also fall under its domain, i.e. not only the normative (N) as represented by *could* and *should*, but also F, and possibly also C and W*. On the other hand, if we accept the division into worlds as done by McDowell, then a completion of (15) as noted above holds. Moreover, the classification is not extensive either. To name just one possible gap consider the well-known quantificational readings of some modals.

(17) Cocktail parties can be boring.

(17) is mentioned and quickly done away with in McDowell as a "sporadic aspectual" (p.142). This misses the point that such a reading would have to be considered in a quantificational approach before any other since it represents quantification per se, i.e. without an apparent additional restriction besides the explicit one where the set of cocktail parties is the restrictor. An LF equivalent would be (18).

(18) Some cocktail parties are boring.

(19) Generally, a spouse will have a car. That way you will have two cars in the family. (from an AFN radio-show on " Reasons to get married")

Now consider (19), where *will* seems to complement the quantificational reading of *can*. Here, the intended meaning is not existential as in (18). Furthermore it is neither the common future interpretation nor a "bare" quantificational interpretation as paraphrased in (20a) and (20b) respectively.

(20) a. At some interval in the future, the event [a spouse have a car] holds.
b. Every spouse has a car.

If the presence of *will* in (19) is to fit a quantificational schema for modals, and particularly to take over as the universal quantifier where *can* works as the existential in (17), then we need an additional restriction. This restriction is indeed present in the sentence as an adverb, namely *generally*.[8] The prediction that under the consideration of this restriction, *will* operates as $\forall$ is borne out in (21) which correctly paraphrases (19).

(21) In the general case, <u>every</u> spouse has a car.

Can also fits this slightly restricted scheme, and is at any rate the weaker form of the two modals. Thus one may consider *will* and *can* as duals in a traditional sense and thereby extend the table (15) by one column with the heading, say, G for generic modal quantification.

[8] Cf. Cinque (1999) for the exact syntactic relationship between adverbs and functional heads as carriers of modality in the sentence: specifier-head.

Having filled a gap in McDowell's model both within its own categories – with *could* as dual for *should* in normative readings – and by extending it by one additional category, we may still be far away from an extensive classification of the modals. Besides, the absence of mutual exclusiveness has also been mentioned.[9] Nonetheless, the semantic contribution made by classifications of this kind, and also the methods applied deserve to be kept in mind for their strong general character. The main result is the binary modeling schema for the EM.

There are also serious linguistic and psycholinguistic factors which show that an opposed-features concept (binarity) is close to the empirical facts of naturalness in human language.[10] I remain neutral with respect to such general claims, the crucial point for the scope of this paper being the striking binary nature of the EM, which shall be translated with the notions of central and non-central coincidence. The way this two dual notions are presently understood in the literature (Hale 1985, Demirdache and Uribe-Etxebarria 2000) makes them more appropriate as tools than a strict quantificational approach to the modals. In section 4 we will take up this idea again and claim it to be a close approximation on the conditions reigning at the syntax-semantics interfacial processing of modality.

3.2. Additional semantics with respect to diachrony: a visibility parameter

Bybee, Perkins and Pagliuca (1994:176) propose that we should give up finding the right semantic definition for modality within synchronic frameworks altogether. The alternative argued for is that "mood is best viewed as a set of diachronically related functions, and... a real understanding of modality would emerge from a study of these diachronic relations".

This strong claim about the role of change in language for the understanding of modality shall not be represented here. More than anything else, modality is a synchronically present phenomenon affecting both the truth values of the utterances it is involved in and the syntactic structure (merging into the T-node) in ModE and probably in more ways than we can find out at all stages of the language. However, there is a practical point to be made here, without any claim about its being a definition. We may call it *diachronic visibility*, and maintain it simply as an observation and working tool.

(22) The diachronic visibility function
The predicational relations instantiated by the EM are a function of their diachronic development, which can be evaluated at all synchronic stages.

3.3. A minimalist glimpse at EM syntax

Following Lightfoot (1979), Roberts (1993, and previous research), Roberts and Roussou (1999) recast the lexical-to-functional reanalysis theory for the modals in minimalist terms. The crucial syntactic point is, however, still the same as in Roberts

[9] For a more thorough discussion of the possible-worlds approach, accessibility, and also of related problems cf. Lewis (1986).

[10] Cf. Jackendoff (1990) for a more skeptical view concerning binary modelling, at least with respect to certain conceptual structures which according to him seem to be harder to classify in binary terms, but see Dressler 2000 for a recent oveview on naturalness and the claim that binary structures underly language conceptualization.

(1993): due to their zero-inflection and to the loss of the infinitive they were taking as a complement, the modals reanalyzed from V to T. In fact Roberts (1993) already has a strong minimal-effort motivation – in terms of traces saved by such an analysis. The facilitating factors considered are: the morphological loss of the subjunctive, the opacity of tense, especially on epistemic modals (cf. *might* in ModE), and as we have already seen, the loss of thematic argument structure. The bottom line of the new economy considerations is that merge is the preferred operation over move: Whereas in OE/ME the strong feature of T in English was satisfied by movement, in ModE it came to be satisfied by merger of one of the brand-new reanalyzed items belonging to the modal class. The criticism raised in 2.2 above still holds. Even though the syntactic reanalysis is undeniable, there are many issues relating to continuity within this theory which ask for an explanation.

4. The primitive elements of modality

4.1. Central vs. non-central coincidence in modal metric

In this section the binary semantic classification of the EM (section 3.1.) and the diachronic reanalysis (2.2. and 3.3.) are claimed to correlate with a syntactic representation of modality as abstract predication in terms of features of central and non-central coincidence. The diachronic visibility function is be taken as corroborative evidence.

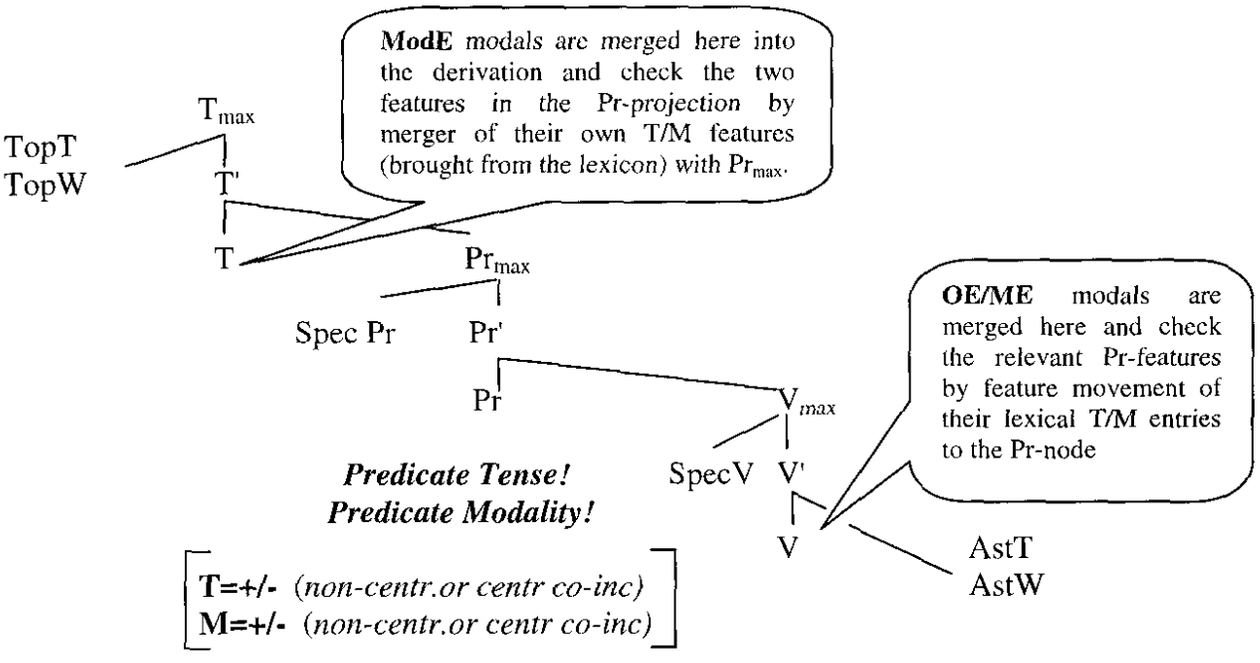
The answer to the questions about the EM raised in section 2 can be completed by considering a decomposition into primitive elements of modal semantics and syntax. This can be done in a manner related to current analyses of tense and aspect (e.g. as exposed in Stowell 1996, Demirdache and Uribe-Etxebarria 2000), by means of two adposition-like abstract dyadic predicates. The crucial difference will be to understand the non-linearity of modality and hence the different meaning of the otherwise similar predicates of central and non-central coincidence. More precisely, I will argue that the primitives of modality are modeled by human language close to AFTER and WITHIN, but that this two prepositions are to be understood with respect to a modal metric This is the main problem with many accounts trying to bring modality onto the same denominator with tense: more often than not, they get the right structural similarity, but neglect the different semantic metric which underlies tense and modality, respectively (Iatridou 2000, Gergel 2000).

Different kinds of spatio-temporal relationship have often been invoked in the literature. It should be noted, however, that even for the simple translation from time to space (i.e. without even dealing with possible worlds or any other approach to modality yet) the analogy fails unless space is seen as on an one-dimensional line, which corresponds to Hale's (1985) "trajectory." There is for instance no general metric for establishing which of two pairs of two-dimensional co-ordinates is the bigger and which one the smaller one – the real numbers are an ordered set, the complex ones are not, as math will have it. With time, however, since it is an ordered one-dimensional set, AFTER and WITHIN make sense, in fact, even more straightforwardly than with locations – i.e. where the analogy has originally been taken from – where we have the one-dimension restriction as above.

In order to illustrate the distinction with respect to syntactic representation and semantic interpretation, let us assume three co-ordinates of meaning for any given truth-functional calculus. So we shall consider triples <s, w, t>, where s stands for the speaker, w for the world, and t is the time the proposition is to be evaluated at. While

the variable t seems to behave linearly in our conceptualization of language, w does not, so we need a different feature for modality. Building on the possibility of modeling most modals as duals of some other modal, I argue that the computational system C_{HL} only has to read off the lexical entry which feature should be fed into the Pr-node (central or non-central coincidence). This can be done from different locations in the syntactic phrase marker as the diachronic visibility function reassures us. The following representation sums up the main ideas.

(23) The modals of English – General syntactic schema



One is tempted to introduce the constraints *Predicate Tense* and *Predicate Modality* as a generalization independent of the diachronic development of the language. Its fulfillment is, however, parametrically different for present usage and pre-Elizabethan registers.

4.2. Two scenarios for expressing modality in English

4.2.1. A modal enters the numeration in ModE

In minimalist vocabulary, we might say that an item *modal* (*may, must, etc.*) will be base-generated in T (following the insight from Roberts 1993), and it will eventually be mapped to LF in the conglomerate of the final syntactic object with a feature matrix containing similarly designed, but distinct, entries for tense and modality. I take central coincidence as the non-marked value both for tense and for modality. For tense, this means that PRESENT yields the unmarked ("minus") interpretation for TENSE, while necessity (NEC) yields the unmarked interpretation for modality. This double prediction is indeed borne out in natural language. On the one hand, not only do we not have a present operator in intensional logic, but present tense is morphologically unmarked in English, and also tends to go unmarked in many other languages. On the other hand propositions which are necessarily true are also left unmarked in English and other languages. The clearest case of this phenomenon is represented by alethic modality,

which for instance in the reading of "neutral-necessity," can optionally be left out or inserted. Thus *two plus two must equal four* is truth-functionally equivalent to *two plus two __ equals four*. The modal entry in the feature matrix of *modal* will be otherwise free to be epistemic, deontic, and what not, depending on the finer specification of the predicational head. In standard dialects of English it will be, however, unique. This is a clearly syntactic, not a semantic constraint (uniqueness of the T position).

4.2.2. A "modal" verb entering an English derivation long time ago (in OE/ME)

The same specifications with respect to markedness hold. Take central-coincidence as unmarked. Just as in the previous case, it will have different meaning at LF for tense and modality, but it will go through the syntactical machinery, Chomsky's (1995) C_{HL}, in the same guise. As a dyadic predicational structure. With respect to modality it relates the topic w-variable to the assertion w-variable. Stowell (1996) proposes a very similar procedure for tense as a (cross-linguistic) abstract predicate. The predication process itself is the same as in modern times, Pr being in charge. We can predicate tense and modalities via merger with Pr – once the full VP merges with the Pr-head the relevant features will be checked and will not be deleted since they are all interpretable at the interface to LF. The parametric difference is accounted for in syntactic terms: The base-generating host of *modal* is different on the two scenarios. However, it can get into a checking relationship with Pr in both cases. Also parametrically different is the following fact: We do not get the uniqueness constraint in this scenario on *modal* items, since the premodals now come from VP and interact with PrP "from below" – while T was unique per clause above, V is not, i.e. multiple premodal strings are predicted, and there are such cases attested (see sentence 3 for one).

We may now see for a moment whether central and non-central co-incidence can also be made sense of intuitively. As a diacritic, we can take the unmarked value of central coincidence to have the approximate meaning of WITHIN. In the case of tense, WITHIN means that the assertion time is within the topic time. With aspect, which is, roughly speaking, an embedded tense, it means that the assertion time is within the event time, in which case we get the progressive. With modality, we only get the structural parallelism of dyadic predicate if we are not oblivious with regard to the co-ordinate we are dealing with. Therefore, while the notion of topic time is now fairly wide-spread in the literature (Klein 1994), there are good reasons to make a concept of topic world just as fashionable. Just as with time, it can be influenced by discourse or by an embedding context. It will simply be the external argument of our celebrated dyadic predicate.[11] For an embedded clause, it is controlled by the event time of the higher clause. In the case of a matrix clause, is controlled by the set of worlds involved in the speech act. This too follows closely the parallelism to tense pointed out in Stowell (1996).

Furthermore, there are lexical indications for the realization of the abstract predicate of coincidence from prepositional phrases in intensional adverbial expressions in a number of languages.[12] At this juncture, Cinque's (1999) correlation of adverbials and

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[11] Stowell (1996) makes a similar point with respect to time. Stowell's terminology makes use of "reference time" for such a time which can be controlled either by discourse (default option) or by an embedding context. I refrain from this term since it may cause confusion with Reichenbach's (1947) reference point R – from which it is radically different.

[12] I make use of the term adverbial as a syntactic object following Mc Cawley (1995) – where adverb would be just the more restricted, morphological term.

functional projections can be observed to work. Adverbials and (modal) functional heads are in in a position of functors semantically, and following Cinque also in a syntactic Spec-Head relation. For instance, in English we have an (evidential) modal adverbial such as *in x's opinion*, i.e. modeled with the closest lexical preposition of central coincidence. On the other hand, in the German *x's Meinung nach* (x's-*opinion-after*) evidentiality has been lexicalized as non-central coincidence.

A further piece of evidence for the dyadic nature of modal predicates can be adduced from the syntax of quasi-modals. Among other researchers Harley (1995) stresses the prepositional nature of *have*. The foundation for this fact is both internal-syntactic and cross-linguistic, many languages (in fact the majority) lacking possessive verbs and replacing them by prepositional constructions (here we may take the dative as prepositional too). However, it also turns out that numerous languages express different modalities by using something close to *have* (see for instance the overviews in Bybee et. al. 1994). As a matter of fact, one does not have to look too far for an illustration. English makes use of *have to* as a quasi-modal, in particular as a supletive form for *must*.[13] I take this to be further evidence for the dyadic (abstract) argument structure of modality. The role of *to* may prove crucial, too, indeed. In a number of other English quasi-modals such as *be to*, this element is also available. Here the suggestion can be made that *to* enlarges the otherwise poorer argument structure of *be* in English (only one, internal, argument following Harley 1995) and makes it suitable for the syntactic configuration of modality, i.e. it makes it a dyadic relation between the set of topic worlds and that of the assertion worlds.

Cross-linguistically, let us mention only one more celebrated case of preposition-like element becoming a marker of modality. Latin – at different times – is known to have had both the prepositional possessive (*mihi est*= "to me (there) is" = "I have") and the verb *habeo* (="I have"). It is worth repeating that both semantically and syntactically they can be regarded as parallel. In most Western Romance dialects *habeo* became grammaticalized as a marker of futurity. Interestingly, in a second step the futurity morpheme also came to express (epistemic) modality, e.g. in Spanish. Summing this story of indirect evidence up, a dyadic "have" became a marker of dyadic modality via dyadic tense.

4.3. Tense and modality

Keeping the different metrics in mind, we still get an ordering process according to two main relationships in both cases. This means that modality and tense possess very similarly engineered mechanisms in grammar. If true, this may be due to an economy-driven constraint. However, the principle of FI proves strong enough to require the entry for both categories, that is, in the proposal argued for here through the mediation of the predicating node. For instance, in *John may leave* the modal feature is marked as non-central coincidence (recall that *may* can be rendered by the existential ∃, and we translated this as non-central coincidence), while the tense feature is non-marked, alias PRESENT, alias central-coincidence.

Just like with tense, only one feature is obligatory per clause. If there is a further, embedded tense in a clause than this can be aspect. If there is a second modality, then this is non-alethic, and non-epistemic. That leaves us with the result that tense is to

[13] For a detailed semantic and pragmatic discussion of the quasi-modals in relationship to the core-modals, see Westney (1995).

aspect what epistemic and alethic modality are to deontics and more generally to root modals, a rough generalization given the differences between the two variables, but which holds at least in terms of embedding and necessity per clause.

Given the non-linear relationship within modal systems as opposed to tense systems, we will not necessarily expect a full parallel to a *consecutio temporum* rule, which, in essence, is a morphological linear back-shifting process to a fake morphological *past* standing for a syntactic PRESENT (notation as in Stowell 1996). Surprisingly enough, we do get a shift with respect to evidentiality in the mood system of German. After verbs of saying Standard German requires the subjunctive mood (a rather rough translation for *Konjunktiv*). By using the structural parallelism above saying tense: aspect = epistemic/alethic: deontic, we can predict the restriction that only a subset of evidential verbs can trigger the shift to the subjunctive in their complement clause. Recall that in English it is the tense of the higher clause and not its aspect which triggers the morphological back-shift rule. By the same token, in German it is the episteme feature (or at least a subset thereof) which triggers the *Konjunktiv*, the shifted type of mood.[14] Once we rely on Palmer's (1986) views that mood is a grammatical reflex of modality it becomes clear that we are dealing with morphologically shifted modality – so the phenomenon might be close to a *consecutio modorum* – where all the warnings afore-mentioned still hold that a *consecutio* is hard to make sense of for modality in the first place .

5. Conclusion

The present account had the objective of shedding some light onto the history of the EM including the modern stages of the standard dialects. The key-tools have been two simple devices: First, the relational nature of modality and the existence of a predicational node at all recorded stages of English. Second, the prepositional nature of any modal node. In particular, the Pr-head has been supported by semantic arguments starting off from the dual nature of most modals in English in section 3.1. By viewing meaning as a function with a three-coordinate domain (s, t, w) and with an eye on theories of tense, I have investigated an adaptation of such theories from the second to the third variable pointing out to significant differences, but also to striking similarities, which have given support to a generalization of Stowell's (1996) concept of abstract predicates. Further evidence for the idea of the relational nature of modality consisted in applying Harley's (1995) account of *have* to quasi-modals such as *have to*.

The hypothesis concerning the existence of the predicational projection assumed the syntactic work reviewed in Bowers (2001) complemented by four pillars of diachronic evidence. First, a uniform syntactic form and locus have been given to the relational nature of modality. Second, Roberts' (1993) reanalysis theory has been taken up and refined both syntactically and with respect to interface interpretation through the predicational phrase. Third, some criticism of the Lightfootian theory has equally been accommodated and systematized (for instance Goosens' 1987 conjecture about predicate formation). Fourth, data from Warner (1992) concerning elliptical VPs as

[14] Clearly there are radically different types of mood and mood-selection, e.g. the English mandative subjunctive, or the subjunctive in Spanish, which cannot be dealt with here. Whether they pose a problem for the present account or whether the two systems can be modelled so that they ultimately converge, is for further research to find out.

early as in OE have suggested the need for a syntactic licensing head position above the elided VP and also strictly below negation since the OE modals are generally preceded by negation.

Moreover, a framework for discussing both epistemic and deontic modality in the vein of the frameworks able to deal with grammatical aspect and tense at the same time has been put forth by using cross-categorial features. The schema proposed here explains to a certain extent different grammaticalizations of modality, since the older and more recent forms of English can be regarded as different parametric options for UG. Using the two main concepts proposed here, we may have an idea why modality and tense often ride on the same vehicles (cf. the samples in Bybee et. al. 1994, and for a quick check-up, simply the modals in English). Related to this, we also have an account for why certain lexemes often change from tense to modality and vice versa such as English *will*, originally a volitional marker of root modality, today mostly a futurity and epistemicity marker. This is precisely supported by the related design of the two specifications.[15] Although not explored here, I suspect that the proposal made here is able to handle counterfactuality, as a special combination of mood and tense, a view compatible with the approach advocated in Iatridou (2000).[16]

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[15] Cf. Bybee et. al. (1994). Cf. Trask (1996: 144) for a further example closely resembling English *will* and *shall*: The Latin volitional *volui* and *obligational debeo* have developped into the standard markers of futurity in Romanian *voi* and Sardinian *deppo*, respectively.

[16] The ExclF feature used there is a pariticular case of the more general non-central concept presented above.

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Sluicing Phenomena*

Kerstin Schwabe
(Universität Leipzig/ZAS Berlin)
schwabe@zas.gwz-berlin.de

The paper shows that in various sluicing types, the wh-phrase in the sluicing sentence as well as its relatum in the antecedent clause must be F-marked, and it explains this observation with Schwarzschild's (1999) and Merchant's (1999) focus theory. According to the semantics of the wh-phrase, it will argue that the relatum of the wh-phrase is an indefinite expression that must allow a specific interpretation. Following Heusinger (1997, 2000), specificity will be defined as an anchoring relation between the discourse referent introduced by the indefinite expression and a discourse given item. Because specific indefinite expressions are always novel, contexts like the scope of definite DPs, the scope of thematic matrix predicates, and the scope of downward-monotonic quantifiers which all exhibit non-novel indefinites do not allow sluicing.

0. Introduction

Sluicing constructions present a lot of interesting problems that are related to ellipsis, specificity, and sentence types. Thus, it is a worthwhile topic to show the interface between syntax, semantics and pragmatics as well as to discuss the status of information structure within these three domains.

Before we formulate the problems associated with sluicing constructions like (1) and try to handle them, let's first see what is meant by the notion of *sluicing*.

(1) Peter is reading, but I don't know what __.

A sluicing construction consists of two conjoined sentences with the first one being the *antecedent sentence* (AS) and the second one the *sluicing sentence* (SS). The latter consists of a matrix clause (MC) and an embedded wh-clause. And what is characteristic for sluicing is that the wh-clause, we call it *sluicing clause* (SC), contains merely a wh-phrase. The antecedent sentence includes the *antecedent clause* which renders the antecedents for the deleted material in the sluicing clause. And, in most cases, it introduces the discourse referent the wh-phrase is related to. We will call the linguistic expression that denotes this discourse referent *relatum*. The clause that contains the relatum we label *relatum clause*. Usually, but not always the antecedent and the relatum clauses coincide. Cases where the relatum of the wh-phrase is not contained in the sentence that immediately precedes the sluicing sentence are the following - cf. Merchant (1999):

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(2) a. There was a party yesterday. Do you know who was at this party?
BETH was there, but I don't know who else.

b. Sheila has some cats and dogs. Do you know how many dogs and cats she has?
She has five CATS, but I don't know how many DOGS.

Here, the antecedent sentences are non-exhaustive answers to contextually given questions that relate to a sentence that introduces the relatum of the wh-phrase in the sluicing clause. The stress on the subject in (2a) or on the object in (2b) in the sentence that precedes the sluicing clause indicates that there are alternatives given by the discourse.

Sluicing clauses are mostly embedded in a matrix clause but can also occur alone:

(3) a. A: What is Hans doing?
b. B: Hans is reading a book.
c. A: Which one?

Many authors who are concerned with sluicing phenomena, for instance Chung/Ladusaw/McCloskey (1995) and Romero (2000), have observed that the wh-Phrase may escape *islands* in a sluicing construction - cf. (4a) whereas it cannot in the corresponding full fledged version - cf. (4b).

(4) a. Sandy was trying to work out which students would be able to solve a certain problem, but she wouldn't tell us which one$_i$ ~~she was trying to work out [which students would be able to solve t_i]~~

b. *Sandy was trying to work out which students would be able to solve a certain problem, but she wouldn't tell us which one$_i$ she was trying to work out [which students would be able to solve t_i]

That the wh-Phrase seems to be channeled or sluiced through syntactic islands within these constructions was the reason that such constructions were labeled as *sluicing*. But, as we will see below, there is no need to assume islands with respect to sluicing constructions and therefore it would be better to call these constructions *wh-ellipsis*. But let's be indulgent like we are when we use the term *atom*, which means indivisibility, to designate something that is divisible.

The paper will show that and why the wh-phrase in the sluicing clause as well as its related constituent in a preceding sentence must be focus-marked. Furthermore, it aims to determine the possible linguistic contexts for the relata of the wh-phrases. It will turn out that such contexts must allow for a specific reading of the relatum. The notion of specificity will be based on von Heusinger's (1997, 2000) theory of indexed epsilon terms.

As to the structure of the paper, we will give an overview of sluicing types and their syntactic and semantic properties in section one. In section two, we will explain the information structural properties of sluicing constructions on the basis of Schwarzschild's (1999) and Merchant's (1999) focus theory. And finally in section three, we will turn to the context conditions for the relatum of the wh-phrase and its referential properties.

1. Syntactic and semantic properties of sluicing constructions

With sluicing constructions it is useful to distinguish between constructions where the antecedent sentence and the sluicing sentence are conjoined asyndetically and those where both are conjoined by a connective. Both types have in common that the wh-phrase in the sluicing sentence is related to a relatum that is implicitly or explicitly expressed by a linguistic item in a preceding sentence or that is contained in a proposition that can be derived from a preceding sentence. In most cases, the relatum as well as the antecedents for the deleted material in the sluicing clause are given by the antecedent sentence:

(5) a. Hans is reading a book (and) I would like to know which one.
b. Hans is reading. Guess what!
c. Hans is reading a book. Do you know which one?

That the antecedents and the relatum are contained in a proposition that is derived from the preceding sentence show the following examples:

(6) a. Go and buy a book (and) then tell me which one!
b. Go and buy a book (and) if you will have bought one, tell me which one!
c. #Go and buy a book (and) tell me which one!

The interpretation succeeds if it is possible to derive a proposition from the first imperative This proposition is supposed to be true by the attitudinal subject of the sluicing sentence. That the anticipated proposition 'the addressee buys a book' is considered to be true in some situation is expressed by *then* in (6a) and by the conditional in (6b). The interpretation fails when both conjuncts are interpreted as being only a sequence of imperatives as in (6c). The reason is that it must be possible to derive a judgement from the imperative sentence that states that the addressee has bought a book. This judgement introduces a relatum that is accessible for the wh-phrase. The same holds if the antecedent sentence is a yes/no-interrogative like (7):

(7) a. Did Peter buy a book and do you also know which one?
b. #Did Peter buy a book and do you know which one?

In (7a), the wh-phrase in the sluicing clause has access to the discourse referent introduced by the indefinite expression in the antecedent sentence because *also* relates the sluicing sentence and thus the wh-phrase to the positive answer of the yes/no-question. In (6b), on the other hand, the wh-phrase in the sluicing sentence has hardly access to a discourse referent because a positive answer to the interrogative is not implicated.

The only difference between asyndetic and syndetic sluicing constructions is that the former ones allow for the conjunction of different sentence types (cf. (8)) whereas the latters allow only for the conjunction of identical sentence types.

(8) a. Hans is reading a book. I would like to know which one.
b. Hans is reading a book. Guess which!
c. Hans is reading a book. Do you know which one?
d. Hans is reading a book, but which one?

That syndetically conjoined sluicing constructions allow only for the conjunction of identical sentence types is due to the categorial properties of the conjunction, which coordinates only conjuncts of the same semantic type. This connective may be the neutral conjunction *and*, adversative conjunctions like *but* and *however* and subordinating conjunctions like *because* and *so that*. Depending on the structural properties of the antecedent sentence and the sluicing sentence, sluicing constructions may have different shapes.

The antecedent and the sluicing sentence can be conjoined root clauses:

(9) a. Hans reads a book, but I don't know which one.
b. Hans reads a book and I even know which one.

The antecedent sentence can be subordinated whereas the sluicing sentence is a main clause.

(10) a. They want to hire a linguist who should speak a Balkan language, but they don't tell us which. Merchant (1999)
b. Peter got stressed because his boss wants a list, but he doesn't tell us which one. Merchant (1999)
c. Hans told us that Maria will come, but not when.

We will see later that although the antecedent sentence is subordinated, it behaves asif it were a root clause, which means that it may function as a speech act by itself.

The sluicing sentence can be subordinated as well, namely as an adverbial or relative clause in a complex sluicing sentence:

(11) a. Paul saw that John killed a girl and because he knew which one, he didn't go to the police.
b. Peter has bought a car and I am sad because he didn't tell me which one.
c. Paul will come tomorrow. The person who knows with whom will get the prize.
d. Peter wants some money. If he doesn't tell me what for I won't give it to him.

Finally, there are cases where both, the antecedent and the sluicing sentence are conjoined and subordinated:

(12) a. Hans left after his mother had cooked something and he didn't want to tell us what.
b. Hans got stressed because his boss wanted a detailed list and didn't want to tell him how detailed. Merchant (1999)
c. They hired someone who speaks a Balkan language and doesn't tell us which.
d. If someone meets a student of his class and does not tell us which one, he is impolite.
e. Paul told me that he had met a girl and had not known which one.

Notice that the adversative connectives *but* and *however* are impossible if the sluicing sentence is subordinated as in (11) and (12) and that in these cases the sluicing sentence

can hardly be interpreted as an indirect wh-interrogative. That such sluicing sentences do not allow adversative coordination and an indirect wh-interrogative interpretation will be explained in section two once we know more about the relation between the antecedent and the sluicing sentence.

The following coordinative sluicing schemes are meant to summarize the short overview on sluicing types. Recall that 'AC' stands for the clause that contains the antecedents for the deleted material in the sluicing clause and that 'SS' labels the sluicing sentence (matrix clause plus sluicing clause).

(13)	i.	AC & SS	(9)
	ii.	$[_{AS}$ .... [AC]] & SS	(10)
	iii	AC & [[SS] ...]	(11)
	iv.	[... [AC & SS] ...]	(12)

These schemes tell us that the antecedent clause and the sluicing sentence need not be conjoined symmetrically in that each of them can be subordinated and that the sluicing sentence is always adjacent to the antecedent clause.

1.1. Properties of the sluicing sentence

As already mentioned in the introduction, a sluicing sentence consists of a matrix and a sluicing clause and that there are cases like (3) where the sluicing clause is a simple interrogative sentence with a deleted IP.

If the complex sluicing sentence is a root clause, adversative conjunctions are possible. Due to the semantics of these conjunctions, which always combine categories of the same type, as well as to the fact that the antecedent sentence has declarative sentential force or must allow to derive a judgement, the sluicing sentence cannot be a wh-interrogative sentence and thus a direct question act. If the sluicing sentence were an interrogative sentence, it should allow a wh-phrase in SpecCP. This is not possible as we see in the following German example:

(14) *Hans sagte, dass er eine schöne Frau kennengelernt hat, aber welche
Hans told that he a beautiful women met but which one
zögert er zu sagen (dass er kennengelernt hat).
hesitates he to say (that he met)
'Hans told us that he met a beautiful women, but which one he hesitates to say.'

If we neglect the full-fledged version of (14), it seems to be well formed. But as we see in (14'), it is not the wh-phrase that is moved to SpecCP, but the topicalized sluicing clause.[1]

[1] That it is the sluicing clause that is moved to SpecCP of the matrix clause was also shown by Merchant (1999: 55) who goes back to Ross (1999). They use this observation to argue that wh-clauses are CPs but not fragments.

(14') Hans sagte, dass er eine schöne Frau kennengelernt hat, aber welche
Hans told that he a beautiful women met but which one
(er kennengelernt hat), zögert er zu sagen.
(he met) hesitates he to say
'Hans told us that he met a beautiful women, but which one (he met) he hesitates to say.'

That the sluicing sentence has declarative sentence force is further supported by the fact that it can be negated and/or referred to by a sentential pronoun as in (15):

(15) a. A: Hans told us that he has met a beautiful woman but he hesitated to say which one.
b. B: This is not true since he did say which one.

That the sluicing sentence does not allow the wh-phrase to be in its SpecCP, that it can be negated, and referred to by a sentential pronoun makes it clear that it is a declarative sentence and does not indicate interrogative sentence force. It is, however, without doubt that it can perform an indirect interrogative speech act.

As to the internal structure of the sluicing sentence, the matrix clause, as Ross (1969) already mentioned, allows for all and only predicates that s-select questions and c-select CPs. Adversative cases additionally need predicates that are adversative and/or must be within the scope of an adversative conjunction or particle:

(16) a. Peter has bought a book, but I don't know which one.
b. Peter has bought a book and I ask you which one,
c. Peter has bought a book and I even know which one.
d. Peter has bought a book and he hesitates to say which one.

The sluicing sentence can contain conjoined sluicing clauses as in (17), or it embeds two wh-clauses with the first one supplying the antecedent for the sluicing clause – cf. (18).

(17) A girl has got dirty a table-cloth and I want to know which girl and which table-cloth.

(18) a. This report details WHAT IBM did and WHY.
b. I know that Maria will come and also why.

The following schemes summarize the internal structure of the sluicing sentence:

(19) i. $[_{SS}$ MC $[_{SC}$ whP$_i$ $[_{IP}$ ... t$_i$ ...]]] (16)
ii. $[_{SS}$ ... [SC & SC] ...] (17)
iii. $[_{SS}$ ... [AC & SC] ...] (18)

The sluicing clause itself consists of a whP or whPs in SpecC and a phonologically empty IP – cf. (19i). We may state that every wh-phrase can function as a sluice.

If the relatum of the wh-phrase of the sluicing clause is in the scope of an universal QP, the sluicing clause contains either an anaphorical expression or a QP that relates to

this QP as indicated within the brackets in (20a) and (20b).[2] Or it contains two wh-phrases as in (21). In both cases, a pair-list answer corresponds to the sluicing clause:

(20) a. A: Every boy was dancing with a girl last night, but I cannot tell you with which girl (they were dancing each/every boy was dancing).
B: Peter was dancing with Maria, Paul with Petra, ...
b. A: If John has guests, he cooks, but I cannot tell you what (he always cooks on these occasions/if he has guests).
B: On Monday he makes pasta, on Tuesday paella, ...

(21) Every boy was dancing with a girl last night, but I cannot tell you which boy with which girl.

The same happens if there is an implicit relatum in the antecedent clause:

(22) Every boy was dancing last night, but I won't tell you with whom (they were dancing each/every boy was dancing).

That the sluicing clause with a non-overt relatum may contain an intervening operator phrase as the whP in (21) or the distributing operators like *each* or *always* in (20) contradicts Romero's (2000: 197) claim that an operator of any kind cannot intervene between the sluiced wh-phrase and its trace. We will come back to this in section 3.2..

Additionally, it is not true that implicit indefinites must always have narrowest scope. There are cases where also implicit indefinites may have wide scope, as the following example shows:

(23) A: Every child in the kindergarten is dancing, but I do not know with whom.
B: With Agnes, I believe.

For all examples handled so far, we may state that the wh-phrase as the only overt element of the sluicing clause is focus marked.

As to the phonologically empty IP, all empty material in it must be *given*. This means that we consider the IP to be internally structured – cf. Merchant (1999, 2001) and Schwabe (2000). The structure of the IP resembles the structure of the IP in the antecedent clause except for the focus marked elements. Unlike Chung et al. (1995) and Romero (2000) and like Merchant (1999), we regard the IP of the sluicing clause to be the copy of only the antecedent clause, this means of the IP that immediately dominates the antecedents of the phonologically empty material in the sluicing clause. In that the sluicing clause is not a copy of the whole first conjunct, there is no need to explain why wh-phrases may escape islands - cf. the discussion centring on example (3).

1.2. Properties of the antecedent sentence

We already know from the previous sections that the antecedent sentence must have declarative sentence force or allow to derive a judgement. Thus it supplies directly or

[2] The anaphorical expression *they* refers to a discourse referent that results from the semantic operation Abstraction. This operation applies to discourse referents in the scope of an operator as *every* in (20) - cf. Kamp & Reyle (1993). Thus the plural pronoun *they* refers to the set of objects that are boys and that were dancing.

indirectly the relatum for the wh-phrase and the antecedents for the phonologically empty material in the sluicing clause.

We also know that the relatum may either be *given* explicitly as by an indefinite DP,

(24) Hans reads a book and I even know which one.

and it can be *given* implicitly by the unspecified argument provided by the argument structure of the verb:

(25) She is writing, but I can't imagine where/why/with whom.

The semantics of verbs such as *write* provides argument variables and/or variables for modification that are not specified by the sentence meaning. As we will see in section three, these variables are similar to specific indefinite DPs in that the discourse referents they introduce are anchored to linguistically or contextually *given* individuals. In all cases, the relatum for the wh-phrase must always be focus-marked.

The form of the relatum is determined by the semantics of the wh-phrase in the sluicing clause. Thus *who*, *what*, *where*, *when*, *why* and *in what way* need an unspecified argument or modifier variable as relatum, whereas *whichX* and *whatX* relate to an indefinite DP.

There are certain contexts that prevent the wh-phrase from having access to its potential antecedent. Contexts of this kind are for instance the description of definite DPs (26) and (27), complements of thematic matrix predicates (28) and (29), the scope of downward-monotonic quantifiers (30) and (31), and the dependency on non-specific indefinite DPs (32).

(26) a. *They found the man yesterday who has murdered a women, but they won't tell us which one.
*Yesterday, I bought the book about a politician, but I've forgotten about which one.

(27) Yesterday, I saw the boy who was reading, but I cannot say what.

(28) a. *Ramon is glad that Sally was dancing with a boy, but I don't remember with which one.
b. *They regretted that they were talking to some girls, but I don't know to whom (they talked). (Romero 2000)

(29) a. *Ramon is glad that Sally was dancing, but I don't remember with whom.
b. *They regretted that they were reading, but I don't know what.

(30) a. *They hired few people who spoke a lot of languages – guess how many! (Merchant 1999)
b. *Joan rarely read any book, but I don't know which one.
c. *They hired no people who spoke a lot of languages - guess how many!
d. *John never makes any joke when he has guests, but I don't know which one.

e. *John rarely sings any song when he has guests, but I don't know which one.
*Paul didn't want to read any book, but I don't know which one.

(31) a. *Few kids ate, but I don't know what. Romero (2000: 200)
b. *Joan rarely fed my fish, but I don't know with which product.
c. *They met no people who were reading, but they did not tell us what.
d. *John never cooks himself when he has guests, but I don't know what.
e. *John rarely cooks himself when he has guests, but I don't know what.
f. *Paul didn't want to read, but I don't know which book.

(32) They are looking for some linguist who has written a thesis, but they cannot tell you which one.

That sluicing constructions are not felicitous if there is a thematic matrix predicate or a downward-monotonic quantifier was also observed by Romero (2000). She attributes her observations to the above mentioned constraint that in the sluicing clause of antecedentless sluicing, no operator can intervene between the wh-phrase and the trace of this wh-phrase. In that she investigates only antecedentless sluicing, she suggests that this a special property of antecedentless sluicing. But as we can notice with respect to (26), (28), and (30), also antecedent clauses with overt relata exhibit this context restriction. As already mentioned above, Romero's explanation of this restriction cannot be maintained because there are operators that intervene between the wh-phrase and its trace - cf. (20) and (21).

The observations made so far, that the relatum as well as the wh-phrase must be focus-marked, that the sentence that contains the relatum must always be declarative or allow to derive a judgement so that the discourse referent the wh-phrase relates to becomes accessible for the wh-phrase and that certain contexts of the relatum do not allow for sluicing, result in the following questions:

i Why must the relatum and the wh-phrase be focus-marked?
ii Why must the relatum sentence always be a judgement?
iii What are the referential properties of the relatum and how do they determine the respective context?

As we will see below, the answers to these questions will follow from Schwarzschild's (1999) focus theory and its modification by Merchant (1999), from the semantics of the wh-clause and of the relatum. The latter we will base on von Heusinger's (1997, 2000) theory on indexed epsilon terms.

2. Information structure of the antecedent clause and the sluicing clause

According to Schwarzschild (1999), F-markers are freely assigned and subject to constraints such as *FOC*, *HEADARG*, *GIVEN*ness, and *AVOIDF*. *FOC* demands that a F-marked phrase contains an accent if it is not immediately dominated by another F-marked node whereas. *HEADARG* regulates that a head is less prominent than its internal argument. *AVOIDF* prevents F-marking more phrases than necessary whereby *GIVEN*ness must not

be violated. The latter constraint says that a constituent that is not F-marked must be *given*. As to Schwarzschild's definition of *given* see (33):[3]

(33) (i) *Definition of Given* (informal version)
An utterance U counts as *GIVEN* iff it has a salient antecedent A and
if U is of type e, then A and U corefer;
otherwise: modulo ∃-type shifting, A entails the Existential Closure of U.

(ii) *Existential Closure of U* (F-clo (U))
The result of replacing F-marked phrases in U with variables and existentially closing the result, modulo existential type shifting

It follows from Schwarzschild's theory that only *given* constituents must be licensed and that F-marked constituents may be either *novel* or *given*. Turning to the possibility of ellipsis as in the sluicing clause, Merchant (1999) has shown that Schwarzschild's focus theory must be extended to ensure the semantic identity of the phonological empty material with the antecedent material it corresponds to. Thus, the IP in the sluicing clause can only be deleted if the sluicing clause satisfies e-*GIVEN*ness.

(34) e- *GIVEN*ness (Merchant 1999)
An expression E counts as e-GIVEN iff E has a salient antecedent A and, modulo ∃-type shifting,
i A entails F-clo(E), and (cf. Schwarzschild 1999)
ii. E entails F-clo(A).

Note that 'F-clo' corresponds to Schwarzschild's Existential Closure in (33). As we may see with respect to (35), the matching of the information structural properties of the sluicing and the antecedent clause with e- *GIVEN*ness entails that the whP as well as its relatum must be F-marked and that the antecedent clause must be propositional.

(35) They hired a linguist who speaks a [BALKAN language]$_F$ but I do not know [which one$_F$ ~~he speaks~~]

Here the antecedent clause is the relative clause of the first conjunct - cf. (13ii) - where only the object *a Balkan language* is F-marked. Because the IP in the sluicing clause is *given*, it must fulfill e-*GIVEN*ness. According to the definition of e-*GIVEN*ess in (34i), the antecedent clause entails the existential F-closure of the sluicing clause (35'i). And, vice versa, according to (34ii), the proposition derived from the interrogative sluicing clause by existential type shifting entails the existential F-closure of the antecedent clause (35'ii). We get the existential F-closure of the sluicing clause by binding the variable that is given by the focused wh-phrase existentially.[4]

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[3] Schwarzschild (1999) defines existential type shifting as raising expressions to type t, by ∃-binding unfilled arguments.

[4] Following Stechow & Zimmermann (1984) and Krifka (2001a), we consider a question to be a function which results in a proposition if it is mapped onto the meaning of its answer:

i.	A: Who does Hans love?	λx ∈ PERSON [love (hans) (x)]
	B: Anna.	anna
	question mapped onto the answer:	λx ∈ PERSON [love (hans) (x)] (anna)
		= love (hans) (anna)

(35') i. He speaks a Balkan language → ∃x [speak (he) (x)]
(= [[AC]])
ii. ∃x [speak (he), (x)] → ∃x [speak (he) (x)]
(= [[SC]])

In that the antecedent clause must be a proposition, it is a non-restrictive relative clause. This means it cannot be interpreted as a restrictive relative clause, since the latter is of type <<e,t><e,t>>. Additionally, it is a judgement because the adversative sluicing sentence can only be related to a proposition that is asserted.

The next example shows what happens if the whole IP of the antecedent sentence is F-marked.

(36) They hired a linguist who [speaks$_F$ a Balkan language$_F$]$_F$ but I do not know [which one$_F$ ~~he speaks~~]
i. He speaks a Balkan language → ∃x [speak (he) (x)]
ii. ∃x [speak (he), (x)] → ∃x ∃Q [Q (he) (x)]

IP-ellipsis in the sluicing clause is possible because e-*GIVEN*ness is satisfied. That the relatum of the wh-phrase must be F-marked follows, as we may see in (35ii) and (36ii) from (ii) in e- *GIVEN*ness (34).

E-*GIVEN*ness also explains why the VP must be F-marked if the relatum is expressed implicitly. According to (34ii), it must be F-marked so that the existential F-closure of the antecedent clause can be entailed by the sluicing clause.

(37) She is writing$_F$, but I can't imagine what$_F$.
(i) She is writing → ∃x [write (she) (x)]
(ii) ∃x [write (she), (x)] → ∃Q [Q (she)]

That the relatum of the wh-phrase can also be an unspecified argument of a relational noun can be seen in the next example:

(38) Maria has [$_F$ bought$_F$ tickets$_F$], but she doesn't tell us for which film.

Up to now, the antecedent for the sluicing clause was always a proposition that was expressed by the antecedent clause. But, as we already know from the examples (6) and (7) in section one, there are cases where the sluicing clause relates to a proposition that must be derived from the antecedent clause of the sluicing clause – cf. Merchant (1999: 239):

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ii A: Does Petr read a book? λf [f (read (p) (b))]
B: Yes. λp [p]
question mapped onto the answer: λf [f (read (p) (b))] (λp [p])
= read (p) (b)

iii. A: Does Petr read a book? λf [f (read (p) (b))]
B: No. λp [¬p]
question mapped onto the answer: λf [f (read (p) (b))] (λp [¬p])
= ¬read (p) (b)

(39) a. Sandy was trying to work out which student solved a certain problem, but she wouldn't tell us which one. Merchant (1999: 239)
b. Peter told me who Mary met and why.
c. Did Peter buy a book and do you also know which one?
d. Go to the party, but do not tell me with whom!

Similarly to our discussion with respect to (5) and (6), the propositions that are to be derived are something like: 'The student that Sandy has identified solved a problem' for (39a), 'Mary met somebody' for (39b), 'Peter bought a book' for (39c), and 'Hearer goes to the party' for (39d). Following Schwarzschild (1999: 157), let's try to use existential type shifting to obtain a proposition out of the interrogative antecedent in (39a) by binding the free variable there by an existential operator and checking whether e-*GIVEN*ness (34) is met.

(40) i. $\exists x\ \exists y\ [\text{student}(x) \wedge \text{problem}(y) \wedge \text{solve}(x)(y)] \rightarrow \exists y\ \exists x\ [\text{student}(x) \wedge \text{problem}(y) \wedge \text{solve}(x)(y)]$
ii. $\exists y\ \exists x\ [\text{student}(x) \wedge \text{problem}(y) \wedge \text{solve}(x)(y)] \rightarrow \exists y\ \exists x\ [\text{student}(x) \wedge \text{problem}(y) \wedge \text{solve}(x)(y)]$

We may observe that e-*GIVEN*ness is met in (40), where the subject in the antecedent clause, which is represented similarly to an indefinite, is copied into the sluicing clause. However, (40) does not account for the fact that the subject of the sluicing clause must be an anaphoric expression as indicated in (41):

(41) Sandy was trying to work out which student solved a certain problem,
a. *but she wouldn't tell us which (a student solved).
b. but she wouldn't tell us which one (the student she has worked out solved).

This example as well as (39b) show that we cannot gain the necessary antecedent proposition by existential type shifting of the interrogative antecedent clause, but by accommodating an answer to the question that contains an anaphoric expression such as 'the student that Sandy has identified solved a certain problem' or 'Mary met the person she met'.

Turning to (39c), we may notice that also there it is not possible to obtain the antecedent proposition for the sluicing clause by existential type shifting the yes-no interrogative.

(42) i. $\exists f\ \exists x[f(\text{book}(x) \wedge \text{read}(\text{peter})(x))] \rightarrow \exists x\ [\text{book}(x) \wedge \text{read}(\text{peter})(x)]$
ii. $\exists x\ [\text{book}(x) \wedge \text{read}(\text{peter})(x)] \rightarrow \exists f\ \exists x[f(\text{book}(x) \wedge \text{read}(\text{peter})(x))]$

The entailment relation would be invalid if the variable 'f' were instantiated by a negative proposition - cf. fn. 4:

(43) i. $\neg\ \exists x[\text{book}(x) \wedge \text{read}(\text{peter})(x)] \nrightarrow \exists x\ [\text{book}(x) \wedge \text{read}(\text{peter})(x)]$
ii. $\exists x\ [\text{book}(x) \wedge \text{read}(\text{peter})(x)] \nrightarrow \neg\ \exists x[\text{book}(x) \wedge \text{read}(\text{peter})(x)]$

Since the antecedent proposition cannot be obtained by existential type shifting, it must be derived in some other way. It can be derived by accommodating the affirmative answer to the question given by the antecedent clause. As to the imperative in (39d), the antecedent is the accommodated proposition that represents the action the addressee is asked to do.

So far we have shown and explained that and why the relatum in the antecedent as well as the wh-phrase in the sluicing clause must be F-marked with respect to examples that belong to type i and ii in (13). That Merchant's and Schwarzschild's theory also holds for the types (13iii) and (13iv) is easy to work out. Additionally, we have shown that if the antecedent clause is non-propositional, the antecedent proposition must be derived by accommodation.

In section one, we have mentioned that there are contexts that prevent the wh-phrase from having access to its potential antecedent. Now we can try to explain this with the aid of Schwarzschild's and Merchant's theory.

3. Appropriate and non-appropriate contexts for sluicing

3.1. The need for specificity

Recall that contexts that do not allow for Sluicing are the description of definite DPs (26) and (27), the description of complements of thematic matrix predicates (28) and (29), the scope of downward-monotone quantifiers (30) and (31), and the dependency on non-specific indefinite DPs (32).

(44) a. *They found the man who has kissed a woman, but they won't tell us which one.
b. *Ramon regrets that Sally was dancing with a boy, but I don't remember with which one.
c. *They hired few people who spoke a lot of languages – guess how many!
d. ?They are looking for some linguist who has written a thesis, but they cannot tell you which one.

With Heim (1982) and Schwarzschild (1999), we regard the referent of a definite DP to be an entity which is thematic or given, respectively. But to be given need not mean that it must have been mentioned in the current discourse or that it is prominent in the utterance situation. An entity can also be seen as *given* if it is anchored in the mental lexicon of the discourse participants. Then, it can be retrieved from there and introduced as a novel discourse referent into the current discourse.[5] Let us assume that as the description of definite DPs, also the description of thematic complements and the scope of downward-monotonic quantifiers are thematic, that means given. According to *AVOIDF* and *GIVEN*ness, the constituents in these contexts actually need not be F-marked.

That according to *GIVEN*ness, non-F-marked constituents must be *given* does, however, not mean that all F-marked constituent must be non-*given*. Or to formulate the

[5] That there are definite DPs that denote discourse referents that are novel with respect to the discourse is also discussed in Umbach (2001). She remarks that such definite DPs contain an accent whereas definite DPs that are given in the discourse do not. To contain an accent indicates that the definite DP is either F-marked itself or is dominated by a F-marked constituent.

question in another way: Are there given elements that can be asked for? Schwarzschild (1999: 158ff.) shows that there are cases like (45) where a *given* constituent must be F-marked to satisfy *GIVEN*ness.

(45) *Who did John's mother praise?*
A: She praised [HIM]$_F$

Here, the object in the answer must be F-marked because the existential F-closure of the answer must be entailed by the type shifted question. If it were not F-marked, existential F-closure could not take place. Now we may ask whether the *given* definite DP can be F-marked. The answer is yes, as long as it can be asked for and thus the *GIVEN*ness effect (33) can obtain.

To demonstrate this, we take (46a) as a contextually given questions. With this question, the whole DP in the answer (46b) must be F-marked.

(46) a. They have found somebody, but I don't know who?
b. They found [the man who kissed a WOMAN]$_F$.

According to Schwarzschild's (1999: 170) *Foc* constraint, *Foc*-marked material must be accented. Therefore *woman* carries the pitch accent. The question that arises now is why the indefinite in thematic contexts cannot be related to by the wh-phrases in the following sluicing constructions:

(47) *They found [the man who has kissed a WOMEN]$_F$, but they won't tell us which one.

(48) *Ramon regrets [that Sally was dancing with a BOY]$_F$, but I don't remember with which one.

We suggest that an indefinite in a thematic context cannot be related to by a wh-phrase if the entity it denotes is interpreted as non-specific by the attitudinal subject of the wh-interrogative. We consider the latter to be the subject that poses the question. It can either be expressed explicitly within the matrix proposition of the sluicing sentence or be the speaker in case the sluicing sentence consists only of a wh-phrase as given in (3c).

That the relatum of the wh-phrase must be an indefinite and that this indefinite must allow for a specific interpretation for the attitudinal subject is presupposed by the wh-Phrase. Let's suppose that a wh-question is something like an instruction to choose a value for a variable out of a value set.[6] This value set is denoted by the restriction of the wh-phrase. Thus the wh-phrase presupposes *first* a value set that is not a singleton. *Second* the wh-Phrase presupposes that the choice of a particular value out of this set is possible. Both is necessary to get a coherent answer for the question. As to the antecedent clause for a question, the value set is denoted by the description of the relatum DP or by the semantics of the verb in that clause. This DP can only be an indefinite DP because the value set for an indefinite DP is not a singleton and because indefinites allow the choice of a particular value for the variable they introduce. If there is a choice of a particular value for a value set, we speak, following Farkas (2001), of a specific

[6] As to the notion of 'value set' see Farkas (2001).

interpretation of the indefinite or, to be short, of a specific indefinite. A definite DP, on the other hand, has a value set that is a singleton. This prevents it from serving as the relatum for a wh-phrase.

Let us return to contexts as in (44) that do not allow a specific interpretation of the indefinite *a woman* for the attitudinal subject *they*. Notice that the antecedent of the attitudinal subject is not contained in the thematic antecedent clause, but in the non-thematic matrix clause. Now the question arises why the attitudinal subject of a non-thematic sentence cannot have access to a discourse referent introduced by an antecedent clause as in (44a-c) which contains given or thematic material.

If an indefinite is given, a discourse referent with the same description has been introduced before and has not been assigned a value, and has thus become existentially bound. This happens if the discourse referent is not relevant to the subsequent discourse. If it is not relevant, it, metaphorically speaking, logs out or goes offline, respectively. Then it can go lost and it can hardly be retrieved anymore.[7] A discourse referent goes online when it is introduced or logged in by an indefinite expression in a particular sentence (see Heim's (1982) Novelty condition). If the discourse referent is needed for the ongoing discourse as in the sequence of an antecedent clause and a sluicing clause, this means transsententially, it must stay online and thus be anchored to the discourse. It is then anchored to a further discourse referent and thus accessible to the attitudinal subject of the sluicing sentence. As we can see with respect to the complements of the thematic predicates in (44a-c), they only consist of one clause which means that within this thematic context, the discourse is not continued. It follows that the discourse referent introduced by the indefinite is not anchored to the discourse and thus not accessible to the attitudinal subject of the sluicing sentence.

But what happens if the discourse proceeds in thematic contexts? The next examples show that sluicing is possible also in thematic contexts. Sluicing only obtains there if the attitudinal subject is in this thematic context as well.

(49) a. They found [the man who has kissed [a $\text{women}_{\text{the man}}$]$_F$ and who didn't tell us which on]$_F$

b. *They [found the man who has kissed a $\text{women}_{\text{they}}$]$_F$ and I won't tell you which one.

(50) a. Ramon [regrets that Sally was dancing with [a $\text{boy}_{\text{sally}}$]$_F$ and that she didn't remember with which one]

b. *Ramon [regrets that Sally was dancing with a $\text{boy}_{\text{ramon}}$]$_F$ and he doesn't remember with which one.

In (49a) and (50a), the discourse referent introduced by the indefinite can only be anchored to the subject of the embedded antecedent clause and not to the subject of the matrix clause or to the speaker. If it is anchored to the subject of the embedded relative

[7] Krifka (2001b) terms given indefinite NPs as "non-novel indefinites". He discusses them in the context of adverbial quantification and information structure, in examples like (i) and (ii). An indefinite NP in the background is marked as non-novel (=NN). The difference in information structure determines the domain of quantification as in the paraphrases illustrated:

(i) [A freshman]$_{NN}$ usually wears a BASEBALL cap. "Most freshmen wear a baseball cap"

(ii) A FRESHMAN usually wears a [baseball]$_{NN}$ cap. "Most baseball caps are worn by freshmen"

or complement clause, it can be specific for the attitudinal subject of the sluicing sentence.

From this we may conclude that the discourse referent introduced by the indefinite in thematic clauses can only be anchored to a discourse referent that is introduced by this thematic proposition. If, on the other hand, the respective proposition is non-thematic, it can be anchored to a discourse referent either introduced by this proposition as in (51a) or by an embedding proposition as in (51b). Or it even can be anchored to the speaker as shown in (51c).

(51) a. Peter told us that Karl kissed a $woman_{karl}$, but he_{peter} cannot tell you which one.
b. Peter met a boy who kissed a $woman_{peter}$, but he_{peter} cannot tell you which one.
c. Peter wants to read a Norwegian $novel_{speaker}$, but I don't tell you which one.

That the relatum of the wh-Phrase must allow a specific interpretation for the attitudinal subject also holds for the relatum of the *whatP* as in (52), which is often thought to be non-specific.

(52) A: Peter is reading a book, but I do not know what kind of book (the book he is reading is).
B: The book he he is reading is a BORING one.

The *whatP* asks for a property of a specific DP, this means it asks for a further predication of an online discourse referent. This is attested in (52) by the full-fledged version of the sluicing clause and by the definite expression in the answer

Let's conclude: On the one hand, the relatum of a wh-Phrase must be specific for the attitudinal subject of the sluicing sentence. It only can be specific if it is online for the attitudinal subject. On the other hand, an indefinite DP in a thematic context cannot be interpreted as being specific if the attitudinal subject of the sluicing sentence is outside this thematic context. Then the information structural status of the indefinite tells the attitudinal subject of the sluicing sentence that there is a *given*, but offline discourse referent. That this discourse referent has gone offline is due to its irrelevance for the discourse. This irrelevance is passed on the subsequent discourse so that the discourse referent introduced by the indefinite in thematic contexts has no choice but to log out. This contradiction explains why the discourse referent that is introduced by an indefinite in a thematic context is not accessible to an attitudinal subject and thus for the wh-phrase outside the thematic context.

In the following section, we will see how the notion of specificity given up to now pretheoretically is modelled in Heusinger's (1997, 2000) theory.

3.2. The representation of specificity in sluicing

As von Heusinger (1997, 2000) explains, indefinite DPs can vary in their referential properties along (at least) two dimensions: scope and specificity. To represent these independent properties appropriately, we take von Heusingers (1997, 2000) theory, in which indefinite DPs are represented as indexed epsilon terms. This is illustrated in (53):

(53) a painting: $\varepsilon_i x$ [painting(x)]

The epsilon operator is interpreted as a choice function that assigns to each (non-empty set) one of its elements. In other words, the referent of an indefinite DP is found by the operation of selecting one element out of the set that is described by the description. The selection depends on the context in which the indefinite is located. This treatment is similar to that of discourse representation theories (Heim 1982; Kamp 1981), where indefinites introduce new individual variables or discourse referents. One of the main advantages of using choice function variables instead is the following: Indefinites need not be moved or raised for expressing different dependencies. They remain *in situ*, whereas the choice function variable can be bound by different operations, e.g adverbs of quantification, existential closure, etc. This causes different scope readings of the indefinites.

Specificity is taken as an independent referential property of indefinite DPs (see Fodor & Sag 1982, Enç 1991, Farkas 1995 and 2002). Following von Heusinger (2001), we assume that a specific indefinite DP is "referentially anchored" to a discourse item. This can be the speaker or some other index of the utterance context, on the one hand, or some introduced referent, on the other. In that the discourse referent is anchored to some discourse participant, it can stay online and be subject to further linguistic operations.

The anchor-relation is represented by a function f from that discourse item to a certain choice function. In other words, the function f links the choice of the indefinite to the value of this discourse item. This means that the indefinite receives the same scope as the discourse item it depends on. If the indefinite DP is not anchored and goes thus offline, its context index variable is existentially bound.

Example (54) illustrates the different referential options of the indefinite. The example may be assigned a non-specific reading of the indefinite ("There is some painting by Picasso or other such that John likes it"), as in (54a). The more prominent specific reading (54b) can be paraphrased as "I can identify a picture and this picture is such that John admires it". There is another specific reading of (54), namely (54c) with the paraphrase "John has a particular picture of Picasso in mind, and he admires it, but I cannot tell which one".[8]

(54) John admires a painting of Picasso.

a. $\exists i$ [admire(john, $\varepsilon_i x$ [painting(x)])]
(non-specific)

b. admire(john, $\varepsilon_{f(\text{speaker})} x$ [painting(x)])]
(specific: *speaker*-anchored)

c. admire(john, $\varepsilon_{f(\text{john})} x$ [painting(x)])
(specific: *subject*-anchored)

(54b) and (54c) differ in that the indefinite is anchored to different discourse items.

[8] The formulations "has in mind" or "can identify" should motivate the specific reading. However, such formulations are very informal, and in certain contexts even misleading (see von Heusinger 2001 for a detailed discussion).

The different referential properties of indefinite DPs are additionally dependent on the information structure (see Lenerz 2001) and on other constructions, such as coordination (see Schwabe & von Heusinger 2001).

Having the two necessary ingredients: the need for specificity and the appropriate representational format, we can now represent the different contextual behavior of antecedent clauses.

If the relatum of the wh-phrase in the sluicing sentence must allow a specific interpretation, the context index of the epsilon operator in the semantic representation of the relatum must be substituted by a function f from some discourse item to a certain choice function. This means that the function f assigns to the discourse item a particular choice function, and thus a particular element that is assigned to the given set. In the following example the function f relates the particular choice function to the speaker:

(55) Peter is dancing with a girl, but I won't tell you with which one.
peter was dancing with $\varepsilon_{f(\text{speaker})}$z [girl (z)], but .... wh (z): girl(z): peter was-dancing-with z

If the relatum is in the scope of a universal quantifier as in (56), the function f relates the particular choice function to a particular boy – each boy has his own choice of a particular girl.

(56) Every boy was dancing with a girl, but I don't know with which one!

Every(x): boy(x): x was dancing with $\varepsilon_{f(x)}$z [girl(z)],
but ... wh (z): girl (z): Dist (x): boy (x): x was dancing-with z

The answer to such a sluicing sentence would be a pair-list answer such as *Peter was dancing with Petra, Paul was dancing with Maria, ...* This example shows that to get the specific-narrow scope reading in the sluicing clause, there must be an intervening operator between the wh-phrase and its trace. The distributing operator in (56) is necessary to prevent the cumulative reading. It distributes over the set of boys such that each boy dances with a particular girl. Contrary to Romero (2000: 197ff.), the example (57) shows that also a sluicing clause with a non-overt relatum may contain an operator:

(57) Every boy was dancing last night, but I won't tell you with whom (they were dancing each/every boy was dancing).

She bases her claim on the scope parallelism requirement between the antecedent and the sluicing clause (Chung et al. 1995) and on the observation that implicit indefinites have always narrowest scope (Fodor-Fodor 1980). In her framework, the wh-phrase in the sluicing clause has wide scope and because the implicit indefinite in the antecedent clause must have narrow scope, the parallelism requirement is not met. If there are any "apparent intervenors" as in (57) between the wh-phrase and its trace, she translates the QP into an E-type pronoun that doesn't count as an intervenor anymore. But, her proposal does not hold because a distributing operator is needed to interpret the predicate in the sluicing clause - see (56) and (57). And as we have already mentioned in section 1.1., it is not true that implicit indefinites must always have narrowest scope. There are cases like (23) repeated here as (58) that show that implicit indefinites may have wide scope:

(58) A: Every child in the kindergarten is dancing, but I do not know with whom.
B: With Agnes, I believe.

We can also construe a context where the indefinite DP in (56) has wide scope as the implicit indefinite in (58). Then the choice of the indefinite DP depends on the speaker or some other discourse participant:

(59) Every(x): boy(x): x was dancing with $\varepsilon_{f(\text{speaker})}$z [girl(z)],
but ... wh(z) : girl(z): Dist (x): boys (x): x was dancing-with z

The relatum however cannot have a non-specific interpretation like the narrow scope one in (60) or the wide scope one in (61) because it would then not be accessible to the wh-phrase in the sluicing sentence.

(60) *Every(x): boy(x): $\exists_i$ [x was dancing with ε_iz [girl(z)]], but ...
(61) *$\exists_i$ [Every(x): boy(x): x was dancing with ε_iz [girl(z)]], but ...

As we have already mentioned, the specific reading of the relatum cannot obtain if the relatum is in the scope of a definite article or a thematic predicate and the attitudinal subject of the sluicing sentence is not. Because the description of definite DPs as in (44a) and the complement of thematic matrix predicates as in (44b) are thematic or *given*, respectively, the indefinite expression in them is also *given*. To be *given* means for an indefinite DP that a discourse referent with the same description has previously been introduced, but has gone offline. That it has gone offline indicates that there wasn't any interest to anchor it. Because there is no need for its anchoring, the discourse referent that according to Heim's Novelty (1982) condition is introduced by the indefinite expression in the antecedent clause is also not anchored – cf. (62) and (63). Thus sluicing always fails in such contexts.

(62) *$\exists_i$ [They found the man yesterday who has kissed ε_ix [women (x)]] but they won't tell us which one.

(63) *$\exists_i$ [Ramon is glad that Sally was dancing with ε_ix [boy (x)]] but I don't remember with which one.

That indefinite DPs in thematic antecedent clauses cannot be specific for attitudinal subjects outside this thematic context explains why their context index cannot be substituted with a function *f* that relates a particular discourse item to a particular choice function. Their context index can only be bound existentially, which blocks them from being related to by the wh-phrase of the subsequent sluicing clause.

That thematic relata are unsuitable antecedents for the wh-phrase outside the thematic contexts can also be attested with respect to downward-monotone quantifiers. Their scope is *given* by the context as well. Thus, they can only contain non-novel indefinite expressions and not render relata for the wh-phrase.

But as Merchant (1999: 252) and Romero (2000) point out, constructions such as (64) are evaluated as well-formed by some informants.

(64) a. ?They hired few people who spoke a lot of languages – guess how many!
b. ?Few kids were reading, but I don't know what (they were reading each).

This becomes possible when these informants interpret the expression *few linguists* as a plural set and not as a downward-monotone quantifier. The plural set can be related to by an E-type pronoun in the sluicing clause (cf. Evan (1980)). But to obtain the correct interpretation of the predicate in the sluicing clause, this set must be distributed. Because the set interpretation does not presuppose *given* material, the indefinite expression *a lot of language* can be *non-given* and thus specific so that the choice function can be related to a particular discourse item.

The following example shows that an indefinite DP is not accessible to a wh-Phrase if this indefinite depends on a non-specific indefinite DP.

(65) They are looking for a linguist who speaks a Balkan language, but they cannot tell you which.
*$\exists_i$ [They are looking for ε_ix [linguist(x)] &
ε_ix [linguist(x)] speak $\varepsilon_{f(x)}$ z [Balkan language (z)]], but ...

If the first indefinite DP *a linguist* is non-specific and the reference of the second indefinite DP *a Balkan language* depends on the first indefinite, the DP *a Balkan language* inherits the non-specificity of this DP. Then sluicing is not possible.

The indefinite DP *a Balkan language*, however, can be specific if it is related to some discourse referent as for instance the speaker (66) or to the linguistically introduced discourse item *a linguist* which is related by the function *f* to the subject of the antecedent sentence (67).

(66) $\exists_i$[They are looking for ε_ix [linguist(x)&speak (x)($\varepsilon_{f(\text{speaker})}$ z [B.l.(z)])]], but ....

(67) They are looking for $\varepsilon_{f(\text{they})}$ x [linguist(x)&speak (x)($\varepsilon_{f(x)}$ z [B.l.(z)])], but ...

To sum up this section, we should record that the antecedent or relatum, respectively, of the wh-phrase must allow a specific interpretation for the attitudinal subject. For this reason, the scope of thematic predicates, the description of definite DPs, the scopi of downward-monotone quantifiers, and the dependency on non-specific indefinite DPs cannot render the needed relata if the attitudinal subject is not in the scope of thematic predicates, articles and downward-monotone quantifiers as well as of non-specific indefinites. If, on the other hand, the attitudinal subject is in the scope of the above mentioned items, sluicing is obtainable.

(68) a. Ramon regrets that Fred kissed a girl and didn't tell him which one.
b. Tom criticized the friend who kissed a girl and didn't tell him which one.
c. Noone has read a book and didn't say which one.
d. They are looking for a linguist who knows a Balkan language and doesn't tell them which one.

4. Conclusion

The observation that in various sluicing types, the wh-phrase in the sluicing sentence as well as its relatum in the antecedent clause must be F-marked was explained along Schwarzschild's (1999) and Merchant's (2001) focus theory. Furthermore, according to the semantics of the wh-phrase, it was argued that the relatum of the wh-phrase must be

an indefinite that must allow a specific interpretation. According to Heusinger (1997, 2000) specificity was defined as an anchoring relation between the discourse referent introduced by the indefinite expression and a discourse given item.

It has turned out that specific indefinite expressions are always novel or non-*given* and thus F-marked. The reason is that they introduce a new discourse referent that is contextually anchored after its introduction. If there were already a contextually anchored discourse referent, it could not be an indefinite that could be used to pick up this discourse referent, but a definite expression. Non-specific indefinites, on the other hand, can be *given* as well as non-*given*. In both cases, their context index is existentially bound, which means that the discourse referent they denote is not relevant for the discourse. A *given* indefinite merely indicates that a discourse referent with the same description has been introduced previously, has been considered to be irrelevant, and therefore has been logged out.

Because specific indefinite expressions are always non-*given*, contexts such as the scope of definite articles, the scope of thematic matrix predicates, and the scope of downward-monotonic quantifiers that exhibit *given* indefinites do not allow Sluicing.

To stay online, specific discourse referents that are introduced by indefinites must be picked up by an anaphoric expression in the next sentence. This explains why the antecedent clause must be adjacent to the sluicing sentence.

Indefinites that are in thematic contexts can be related to by a wh-phrase if the attitudinal subject of the sluicing sentence is identical with the discourse referent the indefinite is anchored to. This discourse referent can only be expressed by the proposition the indefinite is contained in. Since the proposition is a thematic context, there are no discourse referents available the indefinite could anchored to be specific for the discourse outside the thematic context.

In that, unlike Chung et al. (1995), and Romero (2000), we see specificity as decisive for well formed sluicing constructions, we get the possibility of an unified account for Sluicing with explicit and implicit relata and a more comprehensive and appropriate account for the failing of Sluicing in the above mentioned contexts. Furthermore, we could show that Sluicing is nothing more than a text relation between an antecedent clause and a wh-question where ellipsis is possible because of Merchant's e-*GIVEN*ness.

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Specificity and Definiteness in Sentence and Discourse Structure*

Klaus von Heusinger
Universität Konstanz
klaus.heusinger@uni-konstanz.de

1. Introduction

Indefinite expressions show a contrast in readings that can be informally illustrated by example (1). The indefinite NPs *a monk* and *something* have readings that contrast with the readings of *serpents*, *headless men* or *men with two heads*, besides the contrast between singular and plural. This contrast is captured by terms *specific* and *non-specific*, respectively:

(1) "But in the abbey there are rumors,...strange rumors..."
"Of what sort?"
"Strange. Let us say, rumors about **a monk** who decided to venture into the library during the night, to look for **something** Malachi had refused to give him, and he saw **serpents**, **headless men**, and **men with two heads.** He was nearly crazy when he emerged from the labyrinth..." (89)

A specific reading of an indefinite NP is pretheoretically characterized by the "certainty of the speaker about the identity of the referent", "the speaker has the referent in mind", "the speaker can identify the referent", etc. Another version of this characterization is that the referent of a specific NP is fixed or determined before the main predication is computed and that it matters which referent we select out of the set of entities that fulfill the description. It is generally assumed that specific indefinites are "scopeless" like proper names or demonstratives, i.e. they always show widest scope, and therefore are assumed to be existentially presupposed. Furthermore, the insertion of *a certain* indicates specificity.

(2) *Pretheoretical and informal characterization of specificity*
(i) certainty of the speaker about the identity of the referent
(ii) the referent is fixed / determined / not depending on the interpretation of the matrix predicate
(iii) specific indefinite NPs are "scopeless" or "referential terms", i.e. they behave as if they always have the widest scope
(iv) specific indefinite NPs are referential terms, i.e., they are existentially presupposed
(v) specific indefinite NPs can be paraphrased by *a certain*[1]

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[1] There is more lexical material that can disambiguate the contrast: Haspelmath (1997) investigates indefinite pronouns, like *someone*, *anyone*, crosslinguistically. He (1997, 38) observes that "it is not uncommon for languages to have two different indefinite series for specific and non-specific". Prince (1981) discusses the use of English *this* as an specific indefinite article.

In this paper, I argue that this informally given list of characteristics covers only a certain subclass of specific indefinites. While most theories of specificity assume all assumptions in (2), my own proposal is based on the assumptions (2ii) and (2v), while I refute assumptions (2i), (2iii) and (2iv) as too general (in many, but not all cases, these characteristics follow from the assumptions (2ii) and (2v)). In particular, I dispute the definition of specific indefinites as "the speaker has the referent in mind" as rather confusing if one is working with a semantic theory. Furthermore, I discuss "relative specificity", i.e. cases in which the specific indefinite does not exhibit wide, but intermediate or narrow scope behavior. Based on such data, I argue that specificity expresses a referential dependency between introduced discourse items. Informally speaking, the specificity of the indefinite expression *something* in (1) expresses that the reference of the expression depends on the reference of another expression, here, on the expression *a monk*, not the speaker. On the other hand, the specific reading of *a monk* in (1) depends on its anchoring on the speaker. Once we have determined the reference of *a monk* we have also established the reference of *something*. I therefore introduce the term "referential anchoring" to define the semantic function of specificity.

Some of the examples for illustrating specificity are taken from the novel "The Name of the Rose" by Umberto Eco, such as (1). The novel forms the background for the sentences under investigation and controls the referential properties of the context. I also use translations of one of the same sentences as cross-linguistic evidence for grammatical reflexes of semantic distinction (for a more detailed account toward this contrastive method, see von Heusinger 2001).

The paper is organized as follows: In section 2, I discuss the often found description of specific NPs as a subclass of indefinite NPs as "known/identifiable to the speaker" as inadequate. Modern semantic theories have shown (since Karttunen 1976) that definiteness cannot be explained with recourse to identifiability – so this should not be done for specificity. In section 3, I discuss the morphological marking of specificity in Turkish. I assume that the specificity marker in Turkish is more reliable than the indirect marking in languages such as English or Italian. In section 4, I present different instances of what are called specific cases, such as scopal specificity, epistemic specificity, partitive specificity, and relative specificity. In section, 5, I present three families of semantic approaches to definiteness and specificity: the pragmatic approach assumes that specificity is a question of scope and additional pragmatic information – from the early beginnings, this "additional" information is also represented as a semantic structure, see Jackendoff's (1972) "modal structure". The lexical ambiguity approach assumes that there are two indefinite articles, an existential and a referential, which then yield non-specific and specific readings, respectively. Discourse theories present definiteness as familiarity, but do not treat specific indefinites in particular. Extension of discourse theories try to capture the specificity contrast. However, all these theories are restricted with respect to the phenomena they describe. This is shown with data from Turkish – there are more cases of morphological marking of specificity than these theories predict.

In section 6, I present a more general theory of specificity that is based on the notion of "referential anchoring" at the level of discourse representation: a specific NP is anchored to another discourse entity. Thus, the specific expression is assigned the same scope as its anchor.

2. Specificity and definiteness

In this section, I discuss the relation between definiteness and specificity; in particular I argue first that specificity is not a simply a subcategory of indefinite NPs, but an independent category that can therefore form a cross-classification. Second I motivate that specificity is to be analyzed in terms of an additional structure which I call "referential structure" of a text.

The category "specificity" was introduced for indefinite NPs as an analogy to the category "referentiality" for definite NPs. Quine (1960, §30, 141ff) discusses the referential properties of definite NPs on examples like (3): The definite NP *the dean* behaves differently in the scope of an intensional verb like *look for*. He (1960, §31, 146ff) observes that a very similar ambiguity can be constructed with indefinite NPs, such as in (4). This contrast was later termed specific vs. non-specific (Baker 1966, Fillmore 1967):

(3) John is looking for **the dean**.
  a. ... whoever it might be [non-referential]
  b. ..., namely for Smith, who is happens to be the dean. [referential]

(4) John is looking for **a pretty girl**.
  a. ... whoever he will meet, he will take her to the movies [non-specific]
  b. ..., namely for Mary. [specific]

The intuitive concept of specificity (see (2)) extremely quickly spread over the linguistic community. However it is most often understood as secondary referential property of NPs that applies only to indefinite NPs. Additionally it has become very common to describe or define specificity in terms of identifiability by speaker and hearer, as in (5). According to this view, definite NPs are used if both the speaker and hearer can identify the referent, specific indefinite NPs, if only the speaker can identify the referent, while non-specific indefinite indicates that none of them can identify the referent:

(5) The "identifiability" criteria for definiteness and specificity

identified by	definite (+ spec)	indefinite spec.	indefinite non-spec
speaker	+	+	-
hearer	+	-	-

This view is often ascribed to Givón (1978), who however gives a more differentiated picture. First, he (1978, 293) defines specificity – what he calls 'referentiality' – in the following way:

> 1.1. Rereferentiality [= specificity, KvH]
> In the terms used her, referentiality is a semantic property of nominals. In involves, roughly, the speaker's intent to 'refer to' or 'mean' a nominal expression to have non-empty references – i.e. to 'exist' – within a particular universe of discourse. Conversely, if a nominal is 'non-referential' or 'generic' the speaker does not have a commitment to its existence with the relevant universe of discourse. Rather, in the latter case the speaker is engaged in discussing the genus or its properties, but does not commit him/herself to the existence of any specific individual member of that genus.

In this definition, specificity is defined in terms of (i) existential presupposition (cf. (2iv)) and (ii) in terms of the type of the referent (individuals vs. predicates). The latter aspect is generally taken to distinguish between particular vs. generic readings of NPs. Givón (1978, 296) also makes clear that he understands definiteness as a property of linguistic discourse structure, rather than of the world: "The notions 'definite' and 'indefinite', as far as referential nominals are concerned, are used here strictly in their discourse-pragmatic sense, i.e. 'assumed by the speaker to be uniquely identifiable to the hearer' vs. 'not so assumed', respectively." However, the definition in terms of attitudes of the speaker towards the mental representation of the hearer is quite complex, making this definition quite difficult to work with. Therefore, the simplified picture (3) is generally used. Haspelmath (1997, 46) uses the categorization (6) for distinguishing different classes of indefinite pronouns:[2]

(6) (In-)definiteness, (non-)specificity and knowledge of the speaker (Haspelmath 1997)

<table>
<tr><td colspan="3">indefinite</td><td>definite</td></tr>
<tr><td>non-specific</td><td colspan="2">specific</td><td></td></tr>
<tr><td colspan="2">unknown to the speaker</td><td>known to the speaker</td><td>known to speaker and hearer</td></tr>
</table>

The categorization in (5) is also used in the discussion of *Differential Object Marking* (= DOM from German *Differentielle Objektmarkierung*, Bossong 1985). DOM is the cross-linguistically widespread phenomenon that describes the morphological marking of a subclass of direct objects. One example of this form of object marking is discussed in section 3 for Turkish. In general, DOM predicts that case marking (of the direct object) operates on a scale. Bossong (1985, 6) proposes the "Skala der Referenzmerkmale" ("scale of referential features"), as in (7). Aissen (2000, 7) builds this scale into a larger "Definiteness Scale" (8):

(7) Skala der Referenzmerkmale (Bossong 1985)
[id ego^[id tu] > [id ego^[-id tu] > [-id ego^[-id tu]

(8) Definiteness Scale (or Hierarchy) (Aissen 2000)
Pronoun > Name > Definite > Indefinite > NonSpecific

There are two tacit assumptions of this view on the relation between definiteness and specificity that I think are incorrect: (i) definiteness is explained in terms of identifiability of the referent, and (ii) specificity is a subcategorization of indefinite NPs (which means that there are no non-specific definite NPs). There is no convincing evidence for either of the claims; rather the research has given plan evidence for the contrary. Definiteness (and thus specificity) cannot be reduced to the concept of identification, as it is illustrated by the following examples. The definite NPs *the righteous man* and *the doors* in the two fragments (9) and (10) cannot be identified by the speaker and hearer, they do not even refer to identifiable objects, and in (10) the definite NPs do not even refer to any existent object. Example (9) nicely illustrates that the NP is definite because it is anaphorically linked to a discourse item already introduced (but not necessarily to an identified referent "in the world"). The indefinite

[2] Haspelmath has the three-way distinction for indefinites: *non-specific*; *specific* + unknown to the speaker; and specific and known to the speaker. This seems to correspond to the English *anyone*, *someone* [non-specific], *someone* [specific].

NP *a secret* in (11) has a clear specific reading, but it cannot be identified by speaker or hearer (this is warranted by the plot of the story). On the other side, the two indefinite NPs *one of my monks* and *an equally terrible sin* in (12) have referents that are well-known to both the speaker and the hearer (it is the dead monk Adelmo and the sin of homosexuality, respectively). In a theory of identifiability, one would expect definite NPs instead of the indefinites. This can only be explained in the view of discourse representation: the two referents cannot be linked to a discourse referent already established – that is why indefinite NPs are used.

(9) [...] And I know that he [= the Evil One] can impel his victims to do evil in such a way that the blame falls on **a righteous man**, and the Evil One rejoices then as **the righteous man** is burned in the place of his succubus. (29)

(10) William asked him whether he would be locking **the doors.**
"There are no doors that forbid access to the scriptorium from the kitchen and the refectory, or to the library from the scriptorium." (85)

(11) The fact is, Benno said, he had overheard a dialogue between Adelmo and Berengar in which Berengar, referring to **a secret** Adelmo was asking him to reveal, proposed a vile barter, which even the most innocent reader can imagine. (137)

(12) It would already be serious enough if **one of my monks** had stained his soul with the hateful sin of suicide. But I have reason to think that another of them has stained himself with **an equally terrible sin**. (33)

There is no convincing definition of definiteness (and specificity) in terms of identifiability. I will assume here that definiteness expresses the discourse pragmatic property of familiarity (Karttunen 1976, Heim 1982, Kamp 1981, and following work in discourse semantics). The second question is then what is the nature of specificity. I assume that specificity is a "referential property" of NPs. This property cuts across the distinction of definite vs. indefinite, like genericity. Prince (1981, 231) observes that both definite and indefinite NPs exhibit different "ways of referring": [3]

(13)	a.	*A body* was found in the river yesterday.	specific
	b.	*A tiger* has stripes.	generic
	c.	John is *a plumber.*	predicative
	d.	I never saw *a two-headed man.*	attributive [= non-specific, KvH]
	e.	He won't say *a word.*	negative polarity idiom piece

[3] Prince (1981, 231: "In their most usual reading, only the italicized NP in (1a) [= (13a), KvH] can actually be said to be *specific*. The italicized NPs in (1b-e) [= (13b-e), KvH] are all *non-specific*, though of different types (generic, predicative, attributive, and negative polarity idiom-piece, respectively). However, definite NPs exhibit a similar range of understandings". My use of "non-specific" correlates to Prince's "attributive" since I assume that specific as well as non-specific NPs are "individualized", i.e. refer to one individual.

(14)	a.	*The body* was found in the river yesterday.	specific [= referential, KvH]
	b.	*The tiger* has stripes.	generic
	c.	Ronald is *the president.*	predicative
	d.	They'll never find *the man that will please them.*	attributive [= non-specific, KvH]
	e.	He doesn't mean *the slightest thing* to me. idiom piece	negative polarity

The exact nature of specificity will be discussed in section 6. Informally, specificity mirrors a more fine-grained structure of referential relations between the items used in the discourse (what Jackendoff 1972 calls "modal structure"). This structure is independent of the discourse pragmatic status of the NP (expressed in terms of definiteness) and the scopal behavior of that NP. Specificity affects definite NPs as well as indefinite NPs. A specific NP indicates that the associated discourse item is referentially anchored to another discourse item, and therefore, inherits the scopal properties of its anchor (among other properties).[4]

(15) Cross-classification of definiteness and specificity

	discourse old	discourse new
referentially anchored to discourse referents	referential or specific def. NPs	specific indef. NPs
referentially bound by operators	attributive or non-spec. def. NPs	non-spec. indef. NPs

This picture is confirmed by the early literature on specificity where often a comparison was made between non-specific indefinite NPs and attributive readings of definite NPs, on the one hand, and specific indefinite NPs and referential definite NPs on the other. (cf. Partee 1970). However, the comparison was mainly explained in terms of scope or in terms of an ambiguity between quantifiers and a referential operator (see section 4.1 and 4.2)

3. Grammatical encoding of specificity

As opposed to definiteness, there are no sets of specific vs. non-specific articles in Indo-European languages. This probably caused the assumption of the purely pragmatic nature of specificity in contrast to the semantic nature of definiteness (see section 4.1). However, there are many other languages that mark specificity lexically or morphologically. Lyons (1999, 59) summarizes observations from other languages: "Articles marking specificity, or something close to specificity, rather than definiteness are fairly widespread." Specificity is also often mentioned with respect to DOM ("differentiated object marking", see above). Bossong (1985, viii) notes that there are

[4] I assume that every NP receives an index that must be either anchored to a discourse item or bound by some discourse operator (such as negation, intensional verbs etc.). The second condition is necessary since both definite and indefinite NPs are terms which can serve as antecedents for anaphoric pronouns. In an alternative view, indefinites are predicates that can receive a "singular term"-reading contextual force. However, in such a view there is no uniformity of definite and indefinite NPs. See section 6 for more discussion.

more than 300 languages from all over the world that exhibit DOM. In the remainder of this section, I present data from Turkish where specificity is reflected in the morphological marking of the direct object (which is often subsumed under DOM) and of the subject in embedded sentences.[5]

3.1. Turkish

Turkish is an agglutinating and suffixing language. The main verb is sentence final and most suffixes are phrase-final. The unmarked word order is: subject > indirect object > direct object > predicate, as illustrated in (16):

(16) ressam biz-e resim-ler-i göster-di
artist 1pl-dat *picture-pl-acc* show-di.past
'An artist showed us picture'

Embedded clauses are realized by nominalized predicates. The subject of such nominalized predicates is in the genitive (with or without a genitive case ending – see below). The genitive shows agreement on the nominalized predicate in form of possessive suffix. Embedded sentence can be arguments of superordinated predicates, as illustrated in (17):

(17) [Türkiye'nin$_1$ büyük ol-duğ-un$_1$]-u bil-ir-im
Turkey-gen *big be-NOM-3pos*]-acc know-aor-1sg
'I know the big-being of Turkey' = 'I know that Turkey is large'

3.2. Turkish object marking

A language specific implementation of specificity is found in Turkish (Kornfilt 1997, 219ff). Turkish does not have a definite article, but an indefinite article *bir*, which is derived from the numeral *bir,* but which differs in distribution. The direct object can be realized by the absolut(ive) without case endings or by the accusative with the case ending *-I*. Thus the definite reading of *a book* is generally expressed by the accusative case ending, as in (18b), while the indefinite reading is realized by the indefinite article plus the absolutive, as in (18c). However, the combination of the markers for definiteness and indefiniteness in (18d) expresses an indefinite specific NP. (18a) expresses a reading that comes close to an incorporated one (see Lewis 1967, Dede 1986, Kornfilt 1997 among others)

(18)	a.	(ben)	*kitab*	oku-du-m		incorporated
		I	book	read-past-1sg	"I was book-reading"	
	b.	(ben)	*kitab-ı*	oku-du-m		[definite]
		I	book-**acc**	read-past-1sg	"I read **the** book."	
	c.	(ben)	***bir** kitap*	oku-du-m		[indefinite]
		I	**a** book	read-past-1sg	"I read **a** book."	

[5] This observation goes back to Kornfilt (1997). I am not aware of other work that compares DOM with the marking of subjects in embedded sentence. Kornfilt (1997) assumes that the marking of specificity is not restricted to the direct object but also to the subject. However, this is only visible in embedded subjects since the subject of the matrix sentence never receives a case.

d. (ben) ***bir kitab-ı*** oku-du-m [indef. spec.]
I **a** book-**acc** read-past-1sg "I read **a certain** book."

Direct objects with case endings can only receive a specific reading, as illustrated in (19a) and (19b) from Dede (1986, 158):[6]

(19) a. Bir öğrenci arı-yor-um. Bulan-mı-yor-um
a student look_for-prog-1sg find-NEG-aor-1sg
'I am looking for a student. I can't find him' [specific]
'I am looking for a student. I can't find one' [non-specific]

b. Bir öğrenci-yi arı-yor-um. Bulanmıyorum
a student-acc look_for-prog-1sg find-NEG-aor-1sg
'I am looking for a student. I can't find him' [specific]
(*I can't find one) [non-specific]

3.3. Turkish subject marking

A similar contrast exists for the subject of embedded sentences. The predicate of an embedded sentence in Turkish is a nominalized form that shows agreement with the subject, realized by the possessive marker *-I*. The subject is realized in the genitive, either with the case ending *-In*, or without the combination of the indefinite article *bir* and the genitive case marks a specific subject (Kornfilt 1997, 219ff, ex. (762)=(20a)). Note that the non-specific subject tends to be closer to the predicate, while the specific one appears more clause-initial.

(20) a. [köy-ü **haydut** bas-tığ-ın]-ı duy-du-m
[village-acc robber raid-Nom-poss.3sg]-acc hear-Past-1sg
"I heard that **robbers** raided the village"

b. [**bir haydut-un** köy-ü bas-tığ-ın]-ı duy-du-m
[a robber-gen village-acc raid-Nom-poss.3sg]-acc hear-Past-1sg
"I heard that **a certain robber** raided the village"

3.4. A contrastive view

Even though the data are more complex than the given picture (see footnote 7), I assume that the case marking of the direct object and of the embedded subject in combination with the indefinite article is a fairly good indicator of a specific indefinite NP. This test

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[6] Dede (1986, 157) observes that the condition for case marking of the direct object are more complex. Among other conditions, movement is marked by the case: "The direct object which is removed from its unmarked position, that is, from immediately preverbal position for some reason such as focusing or contrast of another constituent always takes the ACC case endings."

(i) Bizim ev-de çay-ı her zaman Aytül yap-ar
our house-loc tea-acc always Aytül make-aor
'Aytül always makes the tea in our family'

(ib) *Bizim ev-de çay her zaman Aytül yap-ar

Johanson (1977, cited from Johanson 1990, 181) had already observed this: „In dem Beitrag Johanson (1977, ...) wird geltend gemacht, daß die vom Akkusativsuffix getragene Idee der ‚Spezifizität' nur in der Position unmittelbar vor dem regierenden Verb systematisch realisiert werden könne und daß der Akkusativ sonst meist als reiner Objektindikator funktioniere." Therefor, I use only examples with the direct object in its base position.

is in any case more robust than the more indirect indicators in English or Italian, illustrated by the translation in (21). The context of the novel is that one monk indicates to William of Baskerville (the medieval Sherlock Holmes) that he knows something (specific!), but that he is not ready to disclose it: "[...] But in the abbey there are rumors, ... strange rumors ..." – "Of what sort?"

(21) a. i "Strane. Diciamo, di **un monaco** che nottetempo ***ha voluto*** avventurarsi in
ii biblioteca, per cercare **qualcosa** che Malachia non ***aveva voluto*** dargli, e ha
iii visto serpenti, uomini senza testa, e uomini con due teste. Per poco non
iv usciva pazzo dal labirinto ..."

b. i "Strange. Let us say, rumors about **a monk** who decided to venture into the
ii library during the night, to look for **something** Malachi had refused to give
iii him, and he saw serpents, headless men, and men with two heads. ***He*** was
iv nearly crazy when he emerged from the labyrinth ..."

c. i Garip söylenti-ler örneğin, [**bir rahib-in**$_1$ geceyarısı, [[Malachi'nin$_2$ kendine
strange rumor-pl for example, [a monk-gen midnight [[M.-gen himself-dat
ii ver-mek iste-me-diğ-i$_2$] **bir kitab-ı** bul-mak için] gizlice
give-inf want-NEG-NOM-poss.3sg] a book-acc find-inf to] secretly
iii kitaplığ-a girmey-e kalkış-tığ-ı$_1$] (...) dair söylenti-ler
library-dat enter-to venture-NOM-poss.3sg] about rumor-Pl
'There are strange rumors, for example rumors about [a monk midnights secretly into the library venturing [to find a book [that Malachi did not want to give him]]]'

The context of the novel strongly suggests that the speaker knows the referent of the indefinite NP *a monk/un monaco* but not the referent of the indefinite pronoun *something/qualcoso*. The specificity of the indefinite *a monk* is indicated in different ways: In the English translation the anaphoric pronoun *he* in (21biii) doesn't seem to be embedded under the NP *rumors*. If that is the case then the indefinite NP *a monk* must be specific, otherwise it could not serve as antecedent for the pronoun. In the Italian original the indicative mood of the relative clause (*ha voluto*) indicates that the head noun *un monaco* is specific. This is confirmed by the Turkish translation, where the subject *bir rahib-in* of the embedded sentence that ends in *kalkıhtıgı* shows double marking (indefinite article plus case ending).

Note that the Turkish translation *bir kitabı* for the Italian *qualcosa* or English *something* in line (ii) is marked as specific. The specificity of this NP is confirmed by the setting of the novel (and the lexical meaning of the word involved): Malachi (the librarian) can only refuse to give something to the monk if the monk had asked for a specific thing. In Italian, the predicate *aveva voluto* in the relative clause is in the indicative, and thus indicating that the head noun *qualcosa* is specific. In English, the relative clause modifying *something* contains the proper name *Malachi*, which again is a good indication that the indefinite pronouns is linked to the referent of that proper name. In comparing the three languages, Turkish marks specificity clearly, whereas subtle indicators in English or Italian must be looked for.

3.5. Unsolved cases

Specificity is marked in Turkish by the combination of case suffixes and the indefinite article. However, a close inspection of all those cases where we find case marking and the indefinite article reveals that we cannot always account for this marking in terms of specificity defined as "the speaker has in mind" or as wide scope of the indefinite. This was already the case in (21) with *something/qualcose/bir kitabı*. The following two cases are similar: the indefinite NP *bir kitabı* in (22b) cannot be known to the speaker (that would contradict the plot of the story) but is still marked a specific. The NP in (23) is embedded under the conditional expressed by the conditional suffix *-se*. It would not make sense to give wide scope to the indefinite or give it a referential reading, still it is marked as specific.

(22) a. The day before, Benno had said he would be prepared to sin in order to procure a rare book. He was not lying and not joking. (183)

b. Bir gün önce Benno az bul-un-ur **bir kitabı** elde etmek için
One day before B. rare find-pass-SP a book-acc procure-inf to
seve seve günah işleye-ceğ-in-i söyle-mişti.
with pleasure sin commit-fut-3sg-acc say-mih.past.
Yalan söyle-mi-yor-du; haka da yap-mı-yor-du. (261)
lie say-NEG-prog-di.past; joke also make-NEG-prog-di.past

(23) Bir rahip **bir kitab-ı** almak iste-r-se, (...)
a monk a book-acc take want-Aor-Cond (...)
'If a monk wants to take a book (...)'

These examples can, of course, be understood as showing that the combination of case suffix and indefinite article doesn't always indicate specificity. However, as long as we do not know what kind of phenomena we are ready to subsume under the term specificity we cannot resolve this problem.

4. Types of specificity

In the discussion of specificity, different kinds of specific indefinites are distinguished. The main distinction is organized into two dimensions: scope and referentiality. A prototypical specific indefinite is assumed to have wide scope and a referential reading. Depending on the theory, the one or other aspect is more focused upon. Following Farkas (1995), I present the following groups: (i) scopal specific indefinites, (ii) epistemic specific indefinite, and (iii) partitive specific indefinite. I discuss an additional group (iv) which I call "relative specific indefinites".

4.1. Scopal specificity

Classically, the contrast between a specific and a non-specific reading of an indefinite is illustrated by examples such as (24). The historical reason for this is that in the same context definite NPs show different readings (see (3) and (4) above).[7] The paraphrases

[7] It is interesting to note that many people who illustrate specificity with this example deny that it is also a category for definite NPs (see the discussion in section 2).

in (24a) and (24b) motivate the specific and non-specific readings in term of scope, respectively. (24a) can be continued with the (24a') since the pronoun *her* refers back to the existential quantifier that is outside of the scope of *want*. In (24b), the quantifier is inside the scope, thus a link to a pronoun is not possible. Therefore, we can only continue as in (24b'):

(24) John wants to marry **a Norwegian**.
  a. There is **a Norwegian**$_1$, and John **wants** to marry her$_1$.
  a'. He met her$_1$ last year.
  b. John **wants** that there is a **Norwegian**$_1$ and he marries her$_1$.
  b'. He will move to Norway to try to achieve this goal.

The interaction of the indefinite with other operators can also be illustrated with negation, as in (25), with a universal quantifier, as in (26), or it can interact with more than one other operator, as in (26) and (27). In these cases we expect three readings, which the reader can easily work out.

(25) Bill didn't see **a misprint**. (Karttunen 1976)
  a. There is a misprint which Bill didn't see.
  b. Bill saw no misprints.

(26) Bill intends to visit **a museum** every day. (Karttunen 1976)

(27) Luce expects Pinch to ask him for **a book**. (Kasher & Gabbay 1976)

Karttunen (1976, 377) observes that we can disambiguate a sentence with an indefinite and another operator by anaphoric linkage. While the indefinite NP in (28) can be specific or non-specific, it can only be specific in (29).[8]

(28) Harvey courts **a girl** at every convention.

(29) Harvey courts **a girl** at every convention. **She** is pretty

4.2. Epistemic specificity

The contrast described in the last section arises in the presence of other operators such as negation, universal quantifier or verbs of propositional attitudes. An analysis in terms of scope seems to work well. However, there are examples that show the same (intuitive) contrast, but do not contain other operators. In the specific reading of (30), we can continue with (30a), while the non-specific reading can be continued by (30b). Kasher & Gabbay (1976) mention examples (31)-(33), where they state a clear contrast between a specific and a non-specific reading. This contrast is also often described as referential vs. non-referential terms. The specific indefinite refers to its referent directly, while the non-specific indefinite depends on the interpretation of other expressions in the context.

[8] There are exceptions to this rule, if the continuation includes a similar quantifier as the antecedent sentence:

(i) Harvey courts *a girl* at every convention. *She* always comes to the banquet with him.

(30) **A student** in Syntax 1 cheated on the exam (Fodor & Sag 1982)
a. His name is John
b. We are all trying to figure out who it was

(31) I talked with **a magician** and so did Uri. (Kasher & Gabbay 1976)

(32) Olivia is married to **a Swede**, but she denies it.

(33) **A book** is missing from my library.

4.3. Partitive specificity

Milsark (1974) argues that indefinite NPs can either receive a weak (or existential) interpretation or a strong (or prepositional) interpretation. In (34) the indefinite *some ghost* receives a weak interpretation, but gets a strong interpretation in (35) (presupposing that there are other groups of ghosts.) The reading in (35) is generally called "partitive".

(34) There are **some ghosts** in this house

(35) **Some ghosts** live in the pantry; others live in the kitchen

Enç (1991, 5f) observes that this contrast between a partitive and a non-partitive reading of indefinite NPs is in the same way morphologically marked as the contrast between specific vs. non-specific indefinite (see section 3 above for the details of Turkish). Given (36) as the background knowledge for the participants, the speaker can utter (36a) expressing the partitive meaning: the two girls must be included in the named set. In Turkish this is marked by the accusative suffix *-i* on the direct object. Continuing with (36b) (without the suffix), the two girls are not included in the mentioned set. (36a) is equivalent to (37) with an overt partitive:

(36) Oda-m-a birkaç çocuk gir-di
room-poss.1sg-dat several child enter-di.past
'Several children entered my room'
a. Iki kız-ı tanı-yor-du-m [partitive]
two girl-acc know-prog-di.past-1sg
'I knew two (of the) girls'
b. Iki kız anı-yor-du-m [non-partitive]
two girl know-prog-di.past-1sg
'I knew two girls'

(37) Kız-lar-dan iki-sin-i tanı-yor-dum [overt partitive construction]
girl-pl-abl two-pass.3sg-acc know-prog-di.past-1sg
'I knew two of the girls'

Enç claims that partitives denote an unknown subset of a given set, here, two girls from the set of given girls. Partitives always exhibit wide scope since the set from which they pick some elements out is already mentioned. This means that partitives are complex expressions that are formed by an indefinite choice from a definite set. This view is

supported by the contrast between the following three partitive expressions from the novel *The Name of the Rose*: the partitive *one of my monks* in (38) has a specific reading – it refers to the monk Adelmo, who has been found dead at the beginning of the story. In (39), the partitive is rather non-specific, while in (40), it is a negative one.

(38) "It would already be serious enough if **one of my monks** had stained his soul with the hateful sin of suicide. But I have reason to think that another of them has stained himself with an equally terrible sin." (33)

(39) "In the first place, why **one of the monks**? In the abbey there are many other persons, grooms, goatherds, servants..." (33)

(40) The library was laid out on a plan which has remained obscure to all over the centuries, and which **none of the monks** is called upon to know. (37)

So it seems that partitives are rather formed by two independent referential functions: the first can be specific, non-specific, negative, etc., while the second must be definite. I therefore, do not include them in the investigation of specific indefinites proper.[9]

4.4. Relative specificity

There are indefinite NPs that are neither wide scope nor referential, but are still "specific". Higginbotham (1987, 64) illustrates this by the examples (41) and (42):

> "In typical cases specific uses are said to involve a referent that the speaker 'has in mind.' But this condition seems much too strong. Suppose my friend George says to me, 'I met with a certain student of mine today.' Then I can report the encounter to a third party by saying, 'George said that he met with a certain student of his today,' and the 'specificity' effect is felt, although I am in no position to say which student George met with."
>
> (41) George: "I met a certain student of mine"
>
> (42) James: "George met a certain student of his."

Hintikka (1986) had made a similar observation in his discussion of the expression *a certain*. In (43), he shows that the specific indefinite *a certain woman* can receive narrow scope with respect to the universal quantifier and still be specific: there is a specific woman for each man. Hintikka suggests that the specific indefinite NP is to be represented by a Skolem-function that assigns to each man the woman who is his mother. With Farkas (1997) we can describe the dependency of the specific NP *a certain woman* from the universal quantifier *every man* by the concept of "co-variation:" Farkas builds this dependency into the interpretation process: The value for the specific indefinite *woman* co-varies with the value for *man*. In other words, once the reference for *man* is fixed (during the process of interpreting the universal quantifier), the reference for the specific indefinite is simultaneously fixed. In (43b), I informally

[9] Lyons (1999, 100) expresses a similar view with respect to the partitive article in French: "The partitive article is almost certainly best regarded as a genuine partitive construction, and not as an indefinite article."

indicate this by indexing the indefinite NP with the variable bound by the universal quantifier.[10]

(43) According to Freud, every man unconsciously wants to marry **a certain woman** – his mother. (Hintikka 1986)

a. $\forall x$ [Man(x) -> Wants(x, marry(x, f(x))]
with f: Skolem function from men into their mothers

b. $\forall x$ [Man(x) -> Wants(x, marry(x, [a woman]$_x$]

These observations motivate a revision of the pre-theoretical description of specificity as the "certainty of the speaker about the referent". It was shown that a specific indefinite NP need not depend on the speaker or the context of utterance, it can also depend on other linguistic entities like the universal quantifier *every man* in (43) or on the proper name *George* in (42). This was the same dependency we have informally stated in (1), where the indefinite pronoun *something* depends on the indefinite NP *a monk*. In the following sections, I assume that specificity is a marker for an expression that is *referentially anchored* to another expression, rather than "absolutely" related to the speaker. Before I give my formal reconstruction of this idea, I present some current approaches to specificity.

5. Semantic theories of specificity

In the following I discuss three semantic approaches to definiteness and specificity: (i) the pragmatic view; (ii) the lexical ambiguity view, and (iii) the discourse semantics approach. The first two theories share the assumptions that definite and indefinite NPs are both quantifier phrases. The difference between the quantifier phrases is the uniqueness condition of the definite article. The theories differ in the conception of specificity: the pragmatic approach explains scopal specificity in terms of scope behavior of the quantifiers involved, while epistemic specificity is seen as a purely pragmatic notion. The lexical ambiguity view assumes that there are two interpretations of indefinite NPs: an existential and a referential. The latter has the same properties as other referential terms such as proper names and deictic expressions. Discourse semantics, on the other hand, perceives the difference between definite and indefinite NPs not in the uniqueness condition but in the discourse-pragmatic familiarity condition. A definite expression is linked to an already introduced discourse item, while a indefinite NP is not. Specificity is primarily treated as an irregular behavior of indefinites – indefinites that can introduce their discourse referents in any of the superordinated boxes.

All three approaches in their classical versions are unable to account for relative specific indefinites. However, there are extensions of each of the mentioned approaches that are intended to cover exactly these cases: Schwarzschild (2000) and Yeom 1997 suggest domain restrictions for the pragmatic approach, Kratzer (1998) proposes

[10] Farkas focuses on a somewhat different case, namely on indefinites in the scope of some operator. She describes then the narrow scope (= "non-specific") indefinites as "dependent indefinite". Thus, according to Farkas, dependent indefinites are non-specific. In my view, they can be specific if they co-vary with the value of an extensional operator like in (43) (see section 6 below).

dependent choice functions for the referential reading of the indefinite article; Geurts (2001) proposes accommodation for discourse semantics approach.

5.1. Quantifiers and pragmatics I

The classical theory of NPs (Frege, Russell, Montague) translates definite and indefinite NPs into quantifiers: indefinite NPs are existential quantifier phrases, while definite NPs are translated into a complex quantifier phrase expressing uniqueness of the object that falls under the description. Thus, the difference between indefinite and definite NPs is semantically expressed in the uniqueness condition. This was the background of this classical theory, as the notion of specificity was introduced in the late 60s. When the de re-de dicto ambiguity of definite NPs was applied to indefinite NPs, a similar contrast appeared in the context of verbs of propositional attitudes, negation, questions, conditionals, modals, future, and intensional verbs (see Jackendoff 1972). I illustrate this on the interaction from negation and NPs in (44)-(47):

(44) William didn't see **the book** – until he saw it in the finis africae.
a. $\forall x \exists y$ [book(y) -> x = y & ¬See(william, x)]

(45) William didn't see **the book** – he began to wonder if there is one.
a. $\neg\forall x \exists y$ [book(y) -> x = y & See(william, x)]

(46) William didn't see **a book** from the finis africae – until he saw it in the hands of Jorge de Burgos.
a. $\exists y$ [book(y) & ¬See(william, x)]

(47) William didn't see **a book** – so he knew that they had removed all books.
a. $\neg\exists y$ [book(y) See(william, x)]

Epistemic specificity, as in (48), is explained by pragmatic principles. The characterization of specific NPs as "the speaker as the referent in mind" is of purely pragmatic grounds – in the course of discourse, the speaker and hearer might get sufficient descriptive material in order to be able to uniquely identify the indefinite NP (cf. Neale 1990, Ludlow & Neale 1991).

(48) **A book** is missing from my library.

This view was disputed by Jackendoff (1972) and Fodor (1970). They argued that specificity cannot be explained in terms of quantifier scope – there must be an additional structure, what Jackendoff calls "modal structure". However, they had not the appropriate means to describe this structure in an adequate way.

5.2. Lexical ambiguity approach

Fodor & Sag (1982) propose a lexical ambiguity of the indefinite article, giving up a uniform analysis of indefinites. Indefinites have either a specific or referential reading or they have a non-specific or existential reading. They assume that the contrast between the two readings is incommensurable. They illustrate this point by the interaction of indefinites with quantifiers as in (49). The indefinite has either a specific reading or a non-specific reading. The classical approach to this contrast is by means of different

scope: the indefinite NP can get wide or narrow scope with respect to the definite NP *the rumor*, reflecting the specific and non-specific reading, respectively. However, the universal phrase *each student* in (50) cannot receive wide scope due to an island constraint. Thus, the specific reading in (49) cannot be described by a wide scope existential quantifier. Fodor & Sag propose that the indefinite NP is either interpreted as a referring expression or as an existential quantifier. The referring expression is scopeless like proper names and demonstratives, i.e. it behaves as if it always had widest scope, as in (49b). The quantificational interpretation, as in (49a), must observe island constraint like other quantifiers and accounts here for the non-specific reading.

(49) John overheard the rumor that **a student of mine** had been called before the dean.
  a. the rumor > there is a student
  b. a certain student .> the rumor ... he ...

(50) John overheard the rumor that each student of mine had been called before the dean.
  a. the rumor > each student
  b. *each student > the rumor

The theory makes a clear prediction: an indefinite is interpreted either as a referential term and always receives widest scope, or as an existential quantifier, which has to obey scope islands. We can now test this prediction on examples with two quantifiers as in (49) or (51). In both sentences, there are two quantifiers beside the indefinite, which stands in a scope island. According to Fodor & Sag's theory, we would only expect a narrow scope reading by the existential interpretation and a wide scope reading by the referential interpretation, but no intermediate reading. While judgements on intermediate readings are quite intricate, Farkas (1981) observed on examples, like (51), that intermediate readings are often very natural. (51) has a reading according to which for each student there is one condition such that the student comes up with three arguments against the condition.

(51) Each student has to come up with three arguments that show that some condition proposed by Chomsky is wrong.
  a. each student > some condition > three arguments ...

The intermediate reading (52a) of (52) clearly states that even such a radical theory of ambiguity cannot exhaustively describe the flexibility of indefinite NPs.

Kratzer (1998) defends the lexical ambiguity hypothesis of Fodor & Sag (1982). She assumes that an indefinite NP is either represented as an existential quantifier, which obeys island constraints, or as a choice function f, which is bound by the context and, therefore, has widest scope. A choice function f or Φ is a function that assigns to a set one of its elements. In other words a choice function "selects" one element out of the set that is expressed by the descriptive material. Following von Heusinger (1997, 2000) I represent indefinite NPs as indexed epsilon terms, as illustrated in (52). The reason for this is to distinguish between the logical representation (epsilon terms) and the semantic interpretation (choice functions). The epsilon operator is interpreted as a choice function

that assigns one element to each set.[11] In other words, the referent of an indefinite NP is found by selecting one element out of the set that is described by the description. Kratzer assumes that the choice function is always anchored in the context of utterance, here indicated with *speaker*. However, the intermediate reading is created by the dependence of descriptive content of the indefinite from the value for professor. The extension of the set of books recommended by x co-varies with the value of x for professor. The choice function picks different elements from different sets. Note that the set of recommended books can contain more than one book. It is the choice function that singles out one element:

(52) a condition: $\varepsilon_i x$ [condition(x)]
  a. $[[\varepsilon_i x$ [condition(x)]]] = Φ([[condition]])
  b. Φ([[condition]]) $\in$ ([[condition]])

(53) Every professor rewarded every student who read a book he had recommended.
  a. $\forall x[prof(x) \rightarrow \forall y[stud(y) \& read(y, \varepsilon_{speaker} z[book(z) \& rec(x, z)]) \rightarrow rew(x, y)]]$
  b. ||a book he had recommended|| = $\varepsilon_{speaker} z[book(z) \& rec(x, z)]$)

There are two problems with this account (cf. the discussion in Winter 1997 and von Stechow 2000). First, Farkas (1981) showed with examples like (51) that intermediate readings are possible even without variables in the indefinite NP. This problem can be accommodated if one assumes that additional material can be copied into the description of the indefinite NP (here: some condition *x finds difficult)*. Second, if the set described by the descriptive material of the indefinite is extensionally equivalent for two different choices of professors in (54a), the representation counter-intuitively predicts that they invite the same lady. Kratzer (1998), therefore, modifies her approach and indexes the choice function (here the epsilon operator) with the variable *x* that is bound by the universal quantifier. She now can predict that depending on the professor x, the choice from extensional similar sets can be different.

(54) Every professor invited a lady he knew
  a. $\forall x$ [prof(x) $\rightarrow$ invite(x, $\varepsilon_{speaker} y$[lady(y) & know(x,y)]))]
  b. $\forall x$ [prof(x) $\rightarrow$ *invite*(x, $\varepsilon_x y$[lady(y) & *know*(x,y)]))]

5.3. Quantifiers and pragmatics II

An alternative way to handle the mentioned problems is taken by Schwarzschild (2000) who keeps to the classical picture described in section 5.1. He investigates the properties of unique indefinite NPs or "singleton indefinites", such as in (55).

(55) Everyone at the party voted to watch **a movie that Phil said his favorite**.

[11] Choice functions have recently become a fashionable tool for representing indefinites (cf. Kratzer 1998, Winter 1997, von Stechow 2000, von Heusinger 2000 among others). We use the epsilon operator as the syntactic representation of the indefinite article, while the choice function is the corresponding semantic function.

Schwarzschild argues that the wide scope reading of the indefinite NP in (55) derives from the fact that its descriptive material uniquely describes one object. He then claims that all "referential indefinites" (or "specific indefinites") are singleton indefinites. In other words, it is just the descriptive material that causes the "feeling" of different scopes. He has to assume additionally implicit quantifier domain restrictions – something that is necessary for other quantifiers, anyway. A restriction can also include variables that are bound by other quantifiers in the sentence. He uses this mechanism to account for the intermediate reading (56a) of sentence (56). By domain restriction with the additional material *that they have worked on most extensively* the indefinite uniquely describes a problem for each or the linguists (assuming all of them are working on at least one problem). Thus the indefinite *some problem* behaves as having wider scope than *every analysis* It is interesting to note that the same mechanism of adding a variable to descriptive material of the indefinite is used to "widen" the scope (Schwarzschild) and to make the scope more narrow (Kratzer above). Schwarzschild is able to explain the different scope "behavior" of the indefinite NP by assuming different domain restrictions on the indefinite that can stay in situ: none for the narrow scope reading, a restriction with a variable bound by *most linguists* for the intermediate reading, and a restriction somehow connected to the speaker or to more encyclopedic knowledge.

(56) Most linguists have looked at every analysis that solves **some problem**.
  a. Most linguists – some problem – every analysis

(56') Most linguists have looked at every analysis that solves **some problem *that they have worked on most extensively***

(56) b. Most linguists...every analysis ... some problem Ø — narrow scope
  c. Most linguists ... every analysis ... some problem *that they have worked on most extensively*
  intermediate
  d. Most linguists ... every analysis ... some problem *that I find most difficult that Chomsky had announced that it is solve* — wide scope

I cannot evaluate this approach in detail, but I would like to hint at some problems: (i) the domain restriction always ends up with a uniquely identifying description – a simple domain restriction like *that they like* would not do. It is not so clear why we need singletons in examples like (51) above. Furthermore, the uniqueness condition for indefinites seems to be even more disastrous than for definites. Lewis (1979), Heim (1982), Reimers (1992) among others have convincingly shown that domain restriction to uniques is not always possible for definite NPs. Second, it is not clear what the difference between a definite NP and an indefinite NPs is if not uniqueness in the classical picture. Schwarzschild would answer that it is familiarity from the discourse representation theory, yet it is not clear what the theoretical framework is after all.

A related approach is proposed by Yeom (1998, 71), who models the "generally accepted intuition of specificity is that the speaker has something in mind." He extends the semantics of indefinites as existential quantifiers by an additional two place relation *hccw* for *has cognitive contact with* . One place is filled by the variable bound by the existential quantifier and the other must be salient in the local environment (e.g. the speaker or the subject of the sentence). The adjective *a certain* in English is the overt

expression for this relation, however, specific indefinites without *a certain* do also express this relation. Thus, he can account for cases of relative specificity (see 4.4 above) in the following way (1998, 73). Sentence (57) has two readings: in reading (57a), there is one woman such that every Englishmen adores her – here the cognitive contact is licensed by the speaker. In the second reading, every Englishman adores a certain woman – his mother (everyone potentially a different woman). Here the cognitive contact is licensed by the variable x for Englishman. Thus, woman co-varies with Englishman.

(57) Every true Englishman adores a certain woman – his mother.
  a. ∀x[true Englishman(x) -> ∃y [woman(y) & hccw(x,y) & adores(x,y)]]
  b. ∀x[true Englishman(x) -> ∃y [woman(y) & hccw(speaker,y) & adores(x,y)]]

Note that it is the same strategy as employed by Kratzer and Schwarzschild: inserting a variable into the descriptive material of the indefinite, the extension of the descriptive material co-varies with the value for the variable. However, in Yeom's approach, there is no restriction on the set that fulfills the descriptions – there could be different woman an Englishman adores. Therefore, the existential quantification looks more like a partitive construction, discussed in section 4.3 (one of the woman he has cognitive contact with). Remember, Kratzer prevents such problems by using choice functions and Schwarzschild by assuming a uniquely identifying description. If we modify Yeom's approach towards Schwarzschild's, all the problems discussed with Schwarzschild arise: (i) uniqueness is already problematic for definite NPs, (ii) if specific indefinites are also uniques, what is the difference from definite NPs then?

5.4. Discourse representation

Discourse representation theories (Karttunen 1976, Heim 1982, Kamp 1981) assume that NPs are represented as discourse referents associated with their descriptive material (or: as variables that are associated with sentences). So NPs do not refer directly to individuals but to discourse referents. The distinction between definite and indefinite NPs is that of familiarity: a definite expression receives a discourse referent that is linked to an already established discourse referent, while an indefinite receives a discourse referent that is not or cannot linked. Discourse referents of indefinite NPs are always inserted into the current discourse domain or box while referential terms introduce their discourse referents in the main box.

Kamp & Reyle (1993, 290) assume with Fodor & Sag that specific indefinite NPs are referring terms like proper names "Specifically used indefinites act as *referring terms*, terms that are used to refer to particular things, whose identity is fixed independently of the context in which the term occurs." Intermediate readings are represented by placing the discourse referent for the indefinite NP into some higher box – the exact rules for this are not given. They neither state conditions that restrict this assumed flexibility.

Geurts (2001) explains specificity in terms of backgrounding. He assumes that "Background material tends to float up towards the main DRS." Indefinite NPs are not ambiguous between a specific and non-specific reading; they always introduce variables and associated predicates. The predicates are inserted into the discourse structure according to their background status. This seems like another version of the scope theory discussed above, even though the predictions are somewhat different.

To summarize, there have been basically two ways to model relative specific indefinites: In the pragmatic approach, domain restriction is used to produce a singleton set corresponding to the indefinite NP. In the lexical ambiguity view, choice functions are replacing a referential operator and they can depend on other linguistic expressions. Choice function naturally give one individual to each set. However, here a lexical ambiguity between specific and non-specific NPs are assumed. In the next section, I preset a unified approach.

6. Specificity as referential anchoring

The main assumption of my proposal is that indefinite NPs are translated into indexed epsilon terms. The index on the epsilon term is free. It can either be bound by operators like negation or the textual closure resulting in a non-specific reading, or it can be anchored to another discourse item such as the speaker or the subject of the sentence. In the following, I give a brief sketch of my model.

Following von Heusinger (1997, 2000) we represent indefinite NPs as indexed epsilon terms, as illustrated in (58):

(58) a book: $\varepsilon_i x$ [book(x)]

The epsilon operator is interpreted as a choice function that assigns one element to each set (see above (52)-(53)). In other words, the referent of an indefinite NP is found by the operation of selecting one element out of the set that is described by the description. The selection depends on the context in which the indefinite is located. This treatment is similar to that of discourse representation theories (Heim 1982; Kamp 1981), where indefinites introduce new individual variables or discourse referents. One of the main advantages of using choice function variables instead is the following: Indefinites need not be moved or raised for expressing different dependencies.

This approach differs from other approaches using choice functions (Winter 1997, Kratzer 1998) in at least two respects. Winter (1997) assumes that the choice function is existentially bound at some level. He would only describe specific indefinite NPs by scope interactions, anything else is pragmatics. Thus he stands in the pragmatic approach to specificity (see section 5.1). Kratzer, on the other side, assumes two different representations of indefinite NPs: either as choice functions (specific reading) or as existential quantifiers (non-specific reading). I assume that there is one representation of indefinites, namely as indexed epsilon terms. The index, however, may either be bound by some operator such as negation or existential closure, or it can be anchored to some discourse item. So we can analyze the readings of (59) as the non-specific reading (59a), and the two specific readings (59b) and (59c). In (59a) the index is bound by an existential quantifier in the scope of the negation – therefore, the indefinite has narrow scope with respect to the negation. In (59b) and (59c), the index is anchored to the speaker and to the subject of the sentence, respectively. In both cases the indefinite receives wide scope with respect to the negation.

(59) William didn't see **a book**.

a. $\neg\exists i$ See(william, $\varepsilon_i x$ [book(x)])

b. $\neg$See(william, $\varepsilon_{speaker} x$ [book(x)])

c. $\neg$See(william, $\varepsilon_{william}$x [book(x)]))

There is no difference between (59b) and (59c) in terms of scope. However, if we replace the subject with a quantifier phrase as in (43), repeated as (60), we get a different picture. (60a) is the representation for the relative specific reading, according to which the choice of the indefinite depends on the value for *man*, while (60b) is the representation for a speaker specific reading – here the indefinite has wide scope.

(60) According to Freud, every man unconsciously wants to marry **a certain woman**.
a. $\forall$x [man(x) -> want(x, marry(x, ε_xy [woman(y)])] subject specific
b. $\forall$x [man(x) -> want(x, marry(x, $\varepsilon_{speaker}$y [woman(y)])] speaker specific.

The same contrast can also be represented in the absence of any other operator, such as in (61). Even though the two representations result in the same scope behavior of the indefinite NP, they express a different referential anchoring relation of the indefinite.

(61) A book is missing from the library.
a. $\exists$i missing_from(ε_ix [book(x)], the_library) non-specific
b. missing_from($\varepsilon_{speaker}$x [book(x)], the_library) specific

7. Summary

I argued that the pretheoretical characterization of specificity in (2) above as (i) certainty of the speaker about the identity of the referent, (ii) the referent is fixed, (iii) specific indefinite NP is "scopeless", (iv) specific indefinite NPs are referential terms, and (v) specific indefinite NPs can be paraphrased by *a certain*, can only describe a restricted set of specific expressions. I showed on observations from Turkish that not all specific indefinites fall under this characterization. The discussion of recent theories of specificity lead to a similar result: Specificity cannot be described in terms of wide scope behavior or in terms of rigid reference. I argued that the reference of a specific expression depends on the "anchor" expression. Once the reference for the anchored is determined, the reference for the specific term is also determined, giving a specific reading of the indefinite.

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Specifics*

Bart Geurts
Humboldt University, Berlin &
University of Nijmegen, Department of Philosophy
bart.geurts@phil.kun.nl

1. Introduction

1.1. Indefinites and scope

The principal characteristic of specific indefinites is that they have a predilection for taking wide scope (I will argue eventually that specificity has nothing to do with scope, in the grammarians' sense, but for the time being I will use the notion as an expository device for distinguishing between readings):

(1) a. After all that effort and time they now don't know where 40 per cent of it is. *(New Scientist*, 24 April 1999; the neuter pronoun refers to 182 kilograms of plutonium dumped into the Irish Sea by the Sellafield nuclear plant.)
b. All critics who were invited to comment on some poems written by a 2-year-old bonobo hailed them as mature masterpieces.

The indefinite NP '40 per cent of it' in (1a) occurs within the syntactic scope of a negation sign and an attitude verb, but it is interpreted as if they weren't there; for what the sentence means is something like: '40 per cent of the plutonium is such that they don't know where it is.' The same holds, *mutatis mutandis*, for the indefinite 'a 2-year-old bonobo' in (1b). Observations like these have been taken to show that specific indefinites always take widest scope, or even that they are referential expressions (e.g. Fodor and Sag 1982), but as examples given already by Kasher and Gabbay (1976) and Farkas (1981) demonstrate, neither claim is correct:

(2) a. Now, after all that effort and time, they say they don't know where 40 per cent of it is. (*New Scientist*, 24 April 1999)
b. Each student has to come up with three arguments which show that some condition proposed by Chomsky is wrong. (Farkas 1981)

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* This is a truncated and emended version of a paper that has been out in the open for two years now (Geurts 1999b). I have excised a section that in the meantime appeared as a squib in *Linguistic Inquiry* (Geurts 2000a), where it is argued that specific indefinites cannot in general be construed *in situ*, or in other words, that movement of some sort is called for; here it will be taken for granted that this is so. Furthermore, I now take a fresh tack in my attempt at routing the widespread belief that specific indefinites 'refer' to entities that are known to the speaker, though not (or at least not necessarily) to the hearer (§ 1.2). Paul Dekker's comments made me see that my first attempt was not entirely successful, and although I have not yet given it up altogether, I decided to give it a rest for the time being. The remainder of the current version is virtually identical to its predecessor. For comments and discussion I am indebted to Reinhard Blutner, Paul Dekker, Brenda Kennelly, Rob van der Sandt, and Henk Zeevat.

c. The police report might indicate that Mary wants to marry a Swede. (Kasher and Gabbay 1976)

((1a) occurred in a caption, and (2a) in the text, of the same article.) The intended interpretation of (2a) presumably is that 'they say that 40 per cent of the dumped plutonium is such that they don't know where it is,' and the same holds, *mutatis mutandis*, for the prepositional object in (2b) and *a Swede* in (2c). Hence, in each case the specific indefinite is interpreted as if it occurred midway between its actual surface position and the outermost scope-bearing expression.

In all these examples there appears to be mismatch between the position at which an indefinite appears and its preferred interpretation. Following many of the more recent contributions to the literature, I will assume that this is the hallmark of specificity (e.g. Abusch 1994, Reinhart 1997, Winter 1997, van Geenhoven 1998). Such mismatches are not the norm: indefinites are often interpreted *in situ*, and there is some reason for taking this to be the default option. The reason is that comparatively 'neutral', i.e. semantically attenuate, indefinites have a preference for *in situ* readings, as the following pairs illustrate:

(3) a. Several students reported that they had been harassed by a professor.
b. Several students reported that they had been harassed by a professor emeritus from the law faculty.

(4) a. Several students reported that they had been harassed by professors.
b. Several students reported that they had been harassed by professors wearing false beards and pink gowns.

Both (3a) and (4a) are more likely to be understood with the sentence-final indefinite interpreted *in situ*. It is only when these expressions become 'heavier' that a specific reading is enforced, as (3b) and (4b) illustrate. Note, incidentally, that (4b) belies the popular view that bare plural indefinites are always construed *in situ*. It may be the case that they like such readings better than most other indefinites do, but bare plurals allow for specific construals, too.

On the strength of these observations it may be assumed that *in situ* interpretations are the rule, and specific interpretations the exception. Van Geenhoven (1998) suggests, furthermore, that wide-scope construals of specific indefinites are preferred, *ceteris paribus*, to intermediate-scope construals. I believe that she right about this, though it must be conceded be that intuitions are rather subtle. At any rate, the argument must be along the same lines as previously:

(5) a. Every city was represented by twelve athletes sponsored by a brewery.
b. Every city was represented by twelve athletes sponsored by a local brewery.

(6) a. Every newspaper featured multiple reviews of a gothic novel.
b. Every newspaper featured multiple reviews of a gothic novel written by its editor-in-chief.

Setting *in situ* readings aside, it seems to me that in the (a) sentences there is a preference for construing the sentence-final indefinites as having wide, rather than

intermediate, scope. The balance tips, however, when the indefinites are enhanced with material enabling a link with the universally quantified subject, as the (b) examples demonstrate. These observations support van Geenhoven's claim that, all else being equal, wide-scope readings are more easily obtainable than intermediate-scope ones. It bears emphasizing that these preferences hold *ceteris paribus* only, and are easily overridden by considerations of plausibility, as indeed the examples in (3) to (6) demonstrate.

We thus arrive at the following preference order on the range of possible interpretations of indefinite NPs:

in situ < wide scope < intermediate scope

Needless to say, this is a puzzling pattern, to put it mildly, but we will see later on how it can be accounted for in a principled manner.

1.2. No need to know

There is a widespread belief that in order for an indefinite NP to be used with a specific interpretation, the speaker must have a particular individual in mind (e.g. Kasher and Gabbay 1976, Fodor and Sag 1982, Manga 1996, Kratzer 1998, Yeom 1998, van Rooy 1999). It might be thought that this explains the unmistakable family resemblance between specific indefinite NPs, on the one hand, and definite NPs, on the other (which will be documented at some length in the next section). Just as a speaker employs the definite article to signal that an individual is given as part of the common ground between him and the hearer, he employs a specific indefinite if he wants to indicate that an individual is known to him, though not to his audience. In short: while definiteness implies givenness to speaker and hearer, specificity implies accessibility to the speaker alone. (For obvious reasons, there are no linguistic devices for signaling that an individual is accessible to the hearer alone.)

This view on specificity is untenable. As Haspelmath (1997) points out, there are many languages that allow indefinite NPs to be morphologically flagged as 'unknown to the speaker', but the use of such flags doesn't entail non-specificity. For example, German 'irgendein N' conveys that the speaker doesn't know the N in question, but may well be used specifically:

(7) Wilma hat vor, irgendeinen Schweden zu heiraten.
Wilma intends some-or-other Swede to marry.

But even in the absence of explicit morphological clues, there are many cases in which it is simply false, intuitively speaking, that the witness of a specific indefinite must be known to the speaker. This is especially problematic when specific indefinites take intermediate scope, but these are not the only cases. Consider (1a), for example. It would be patently wrong to say that the author of this sentence must have had a particular portion of plutonium in mind; yet there can hardly be any doubt that the indefinite '40 per cent of it' is being employed in a specific sense. Whatever it may be, having something in mind is not a prerequisite for specificity.

Having arrived at this conclusion, we should ask ourselves how we can recognize specificity in the absence of telltale scope-bearing expressions. The answer to this question, I submit, is that by and large we can't. That is to say, the chief problem for a

theory of specificity is to account for the interaction between specific indefinites and further scope-bearing expressions occurring in the same sentence. (I am still using the notion of scope in a theory-neutral sense, and these remarks will not prevent me from claiming, later on, that indefinites, be they specific or non-specific, don't have scope.) Apart from that, I know of only one phenomenon which might fall under the purview of a theory of specificity:

(8) At the party, Fred danced with an Irish woman, and so did Barney.

This sentence may or may not be construed as implying that Fred and Barney danced with the same woman, and if this is to do with the fact that the indefinite 'an Irish woman' is either specific or non-specific, as suggested by Kasher and Gabbay (1976), then this is a case in which specificity manifests itself even in the absence of other scope-bearing expressions.

1.3. Similarities between specific indefinites and definites

It was hinted already that, in certain respects, there is a resemblance between specific indefinites and definite expressions. In fact, the similarities are quite striking, as the following observations will demonstrate, and if these facts may be taken at face value, any theory of specificity worth its salt should be able to explain why definites and specific indefinites are so much alike.

1.3.1. Scope

The hallmark of specific indefinites is that they tend to take scope over anything else in the sentence, which is characteristic of definites, too. One example will suffice to illustrate this well-worn observation:

(9) All critics who were invited to comment on some poems written by Barney's 4-year-old son hailed them as mature masterpieces. (cf. (1b))

This is most likely to be read as implying that Barney has a 4-year-old son who wrote all the poems presented to the various critics. Of course, definites can take 'intermediate scope', too, as (10) demonstrates:

(10) All critics who were invited to comment on some poems written by their spouses hailed them as mature masterpieces.

If the possessive pronoun is bound by the subject NP, it is of course impossible to obtain a wide-scope reading for the definite expression *their spouses*; but an intermediate reading remains feasible – indeed, it is the most natural reading in this case. One respect in which definites differ from indefinites at large is that it is quite difficult to obtain something akin to *in situ* readings for the former, whereas we have seen that the latter prefer such readings. Narrow-scope readings for definite NPs do occur, though:

(11) That wasn't Fred's wife, you blockhead: Fred isn't even married!

But such examples are clearly marked. Hence, although definites and indefinites are quite similar in the way they interact with scope-bearing expressions, their preferences in this regard are different. To summarize:

definites: wide scope < intermediate scope < *in situ*
indefinites: *in situ* < wide scope < intermediate scope

1.3.2. Partitives

As Ladusaw (1982) was the first to point out, the nominal constituent of a partitive PP must be definite or specific; non-specific indefinites and quantified NPs are not allowed in this position:

(12) Fred is one of {the / several / *most / *all / *sm / *∅} employees who will be fired.

Here *sm* represents unstressed *some*, which has a distinct preference for a non-specific reading, like the bare plural, indicated by '∅'.

1.3.3. Indefinite *this*

Although formally *this* is a definite article, it sometimes appears to function as if it were indefinite (see Prince 1981 for discussion): (13) There is this giant spider in the cupboard. When used in this manner, *this*-NPs function as indefinites because, intuitively, they introduce discourse entities that are new, an intuition which is confirmed by the following example:

(14) Yesterday, our little daughter brought [a giant spider]$_i$ into the house, and now there is [this giant spider]$_i$ in the cupboard.

In addition, indefinite *this*-NPs behave more like specific than non-specific indefinites, because they typically take wide scope:

(15) a. If this giant spider is still in the cupboard, Betty will go berserk.
b. There is a giant spider, and if it is still in the cupboard, Betty will go berserk.
c. If there is (still) a giant spider in the cupboard, Betty will go berserk.

(15a) is more or less synonymous with (15b), rather than (15c), which is precisely what one should expect if 'this giant spider' were specific.

These observations indicate that indefinite *this*-NPs are expressions that are *marked* for definiteness but *function* as specific indefinites. It is hard to see how this mixing up of form and function could occur unless specificity and definiteness are kindred phenomena.

1.3.4. Cross-linguistic evidence

Perhaps the most telling piece (or better: collection) of evidence is that in language after language definiteness and specificity are lumped together into the same morpho-syntactic rubric. I will give a handful of more or less arbitrarily chosen examples.

• Bemba:

In Bemba, a Bantu language, there is a class of nominal prefixes of the form consonant-vowel, and another class of the form vowel-consonant-vowel. The former are used to mark non-specific indefinites, while the latter alternatively convey definiteness or specificity. The following examples are from Givón (1978); here and in the following glosses are as in the original source:

(16) a. Umu-ana a-a-fwaaya ci-tabo.
vcv-child he-past-want cv-book
'The child wanted a book (be it any).'
b. Umu-ana t-a-à-somene ci-tabo.
vcv-child neg-he-past-read cv-book
'The child didn't read a/any book.'
c. Umu-ana a-a-fwaaya ici-tabo.
vcv-child he-past-want vcv-book
'The child wanted the book' or 'The child wanted a specific book.'

• Samoan:

Samoan is similar to Bemba in that it has two articles, one of which signals non-specific indefiniteness, while the other combines specificity and definiteness (examples from Lyons 1999):

(17) a. Sa i ai le ulugāli'i'o Papa le tane a 'o Eleele le fafine.
Past exist Art couple Pres P. Art husband but Pres E. Art woman
'There was a couple, Papa, the husband, and Eleele, the wife.'
b. 'Au-mai se niu.
take-Dir Art coconut
'Bring me a coconut.'

• West Greenlandic Inuit:

In West-Greenlandic Inuit, an ergative language, transitive verbs may become intransitive by incorporating their objects. This shows itself, among other things, in the case marking on the subject, which is absolutive for intransitive, and ergative for transitive subjects. Moreover, it is only in transitive constructions that verbs bear object-agreement markers. The object of a transitive construction receives absolutive case, and may be either specific or definite, while incorporated objects are non-specific. According to Manga (1996), this is typical of ergative languages. The following sample of West-Greenlandic Inuit is from van Geenhoven (1998):

(18) a. Angunguaq tikip-p-u-q.
A.Abs arrive-Ind-Intr-3sg
'Angunguaq arrived.'
b. Angunguaq aalisakka-mik neri-v-u-q.
A.Abs fish-Inst.sg eat-Ind-Intr-3sg
'Angunguaq ate fish.'

c. Arnajaraq aalisaga-si.nngi-l-a-q.
A.Abs fish-buy-Neg-Ind-Intr-3sg
'It is not the case that Arnajaraq bought {a / more than one} fish.'

d. Angunguu aalisagaq neri-v-a-a.
A.Erg fish-Abs eat-Ind-Tr-3sg.3sg
'Angunguaq ate the/a particular fish.'

• St'át'imcets:

St'át'imcets (Lillooet Salish) features an indefinite article which can only occur within the scope of a negative expression, a question, a modal, and so on. In the absence of such operators another article must be used, which has a specific-definite function. The following examples are from Matthewson (1999):

(19) a. Cw7aoz kw-s áts'x-en-as ku sqaycw.
Neg Det-Nom see-Tr-3Erg Det man
'S/he didn't see any men.'

b. *Áts'x-en-as ku sqaycw.
see-Tr-3Erg Det man
'S/he saw a man.'

(20) a. Húy-lhkan ptakwlh, ptákwlh-min lts7a ti smém'lhats-a ...
going.to-1sg.Subj tell.story tell.story-Appl here Det woman.Dimin-Det
'I am going to tell a legend, a legend about a girl ...'

b. Wa7 ku7 ílal láti7 ti smém'lhats-a
Prog Quot cry Deic Det woman.Dimin-Det
'The girli was crying there.'

This sample will suffice to show that many languages treat definiteness and specificity as related notions, which together stand in opposition to non-specific indefiniteness. In conjunction with the evidence of the preceding sections, this raises the question what it is that definites and specific indefinites have in common. In my opinion, one of the main criteria for assessing theories of specificity should be how good their answers to this question are.

1.4. Specificity and distributivity

It has been argued by Reinhart (1997) and Winter (1997) that specific indefinites which have escaped from a scope island don't allow for a distributive interpretation. Reinhart credits Ruys with this insight; Winter attributes it (collectively) to Ruys and himself. Reinhart cites example (21a) from a manuscript by Ruys:

(21) a. If three relatives of mine die, I will inherit a house.

b. There are three relatives of mine such that, if they all die, I will inherit a house.

c. There are three relatives of mine such that, if any of them dies, I will inherit a house.

On the most likely reading of (21a) the indefinite 'three relatives of mine' is construed with narrow scope, but if it gets a specific reading and outscopes the *if*-clause, then according to Reinhart, Ruys, and Winter, it can only be understood collectively. That is to say, if the indefinite is specific, (21a) is synonymous with (21b), not (21c).

This observation is not quite correct, however; what Reinhart et al. have found is not a lawful correlation but merely a trend. First, as noted by Matthewson (1999), there are native speakers of English who manage to obtain a distributive reading for (21a), and the same holds for parallel sentences of other languages. Secondly, van Geenhoven (1998) points out that intuitions shift markedly when we vary the example. Thus it appears to be easier to get a distributive reading for the following sentence:

(22) If some relatives of mine invite me for dinner, I will panic.

In short, although in environments like (21a) or (22) specific indefinites seem to prefer collective construals, specificity does not entail collectivity. This is bad news for two rather different theories of specificity. On the one hand, theories that seek to deal with specificity with the help of quantifier raising will be embarrassed by the fact that specific indefinites disprefer non-distributive readings. On the other hand, theories that rely on choice-functions instead of quantifier raising will find it quite difficult to explain the distributive readings – a point which Winter (1997) emphasizes, because he is confident, apparently, that such readings don't occur (for further discussion, see Geurts 2000a).

There is one family of theories that can account for distributive as well non-distributive readings: these are theories which, on the one hand, resemble the quantifier-raising approach in that their account of specificity is based on movement, while, on the other hand, they agree with the choice-function approach that indefinites aren't quantifier expressions. Two such theories are discussed in the second half of this paper.

2. The binding theory of presupposition

In the remainder of this paper I present a unified account of specificity and presupposition, which is based upon the binding theory of presupposition, so before we move on I want to quickly recapitulate the main tenets of that theory; for more extensive discussion, see van der Sandt (1992), Geurts (1999a), and Geurts and van der Sandt (1999).

The binding theory is an extension of discourse representation theory (Kamp 1981), and consists of three principal claims. The first of these is that anaphora is a species of presupposition, and that the standard presupposition-inducing expressions (such as definite NPs, factives, transition verbs, and so on) differ from pronominal anaphors mainly in that they possess a richer semantic content. This difference explains why in general presupposition inducers, unlike anaphoric pronouns, can be interpreted by way of accommodation, which is the second key notion in the theory. Finally, it is assumed that the process of presupposition projection is subject to certain constraints. It is the status of these constraints that will be especially important in the following.

Formulated in procedural terms, the binding theory predicts that if an utterance contains a presupposition-inducing element, the hearer will initially attempt to bind the presupposition to a suitable antecedent, just as he would try to bind an ordinary anaphor. If the presupposition cannot be so bound, it will be accommodated, i.e. it will

be inserted in some accessible discourse representation structure (DRS). In general the number of positions at which a presupposition may be accommodated is greater than one, and if it is the choice is restricted by various constraints, but before I turn to these, let me first illustrate the workings of the theory:

(23) If Fred is gay, then his son is gay, too.

This sentence contains (at least) two presupposition-inducing expressions: the definite NP *his son*, which triggers the presupposition that Fred has a son, and the focus particle *too*, which triggers the presupposition that someone different from Fred's son is gay. Note that the first presupposition is 'inherited' by the sentence as a whole, while the second one is not: normally speaking, an utterance of (23) would license the inference that (according to the speaker) Fred has a son, but not that someone else besides Fred's son is gay. The binding theory accounts for these observations as follows. Suppose that the grammar assigns (23) the intermediate semantic representation in (24a). I assume for convenience that most interpretative problems have been cleared out of the way already, and that the only thing that remains to be done is resolve the presuppositions triggered by *his son* and *too*, which are marked out by single and double underscores, respectively.

(24) a. [x: Fred(x), [: gay(x)] ⇒ [u , v : x's-son (u), gay (v), v ≠ u , gay(u)]]
b. [x, u: Fred(x), x's-son(u), [: gay(x)] ⇒ [v : gay (v), v ≠ u , gay(u)]]
c. [x, u: Fred(x), x's-son(u), [v: v = x, gay(x), gay(v), v ≠ u] ⇒ [: gay(u)]]
d. [x, u: Fred(x), x's-son(u), [: gay(x)] ⇒ [: gay(u)]]

(24a) is the initial semantic representation correlated with (23), in which two presuppositions remain to be resolved. One of these, that Fred has a son, cannot be bound, and therefore must be interpreted by way of accommodation. Now there is a general constraint on presupposition projection to the effect that any presupposition prefers to be projected to as high a position as possible, and accordingly our first presupposition is accommodated in the principal DRS, which yields (24b). The remaining presupposition, triggered by the focus particle, can be bound in the antecedent of the conditional; this results in (24c) which, assuming that Fred and his son are different persons, is equivalent to (24d).

The binding theory may be summed up in the following three principles:

(A) Presuppositions must be projected (i.e., bound or accommodated).
(B) Binding is preferred to accommodation.
(C) A presupposition must be projected to the highest possible DRS.

It will be evident that none of these principles is absolute, although the first two may be more absolute than the third one. They are all subject to general constraints on interpretation, which require that an interpretation be consistent, coherent, and so on. Before these principles come into play, presuppositions are merely representational structures, and are therefore completely inert. Principle A drives away the inertia by insisting that presuppositions be either bound or accommodated. Principle B captures the insight that accommodation is a repair strategy: in principle, a presupposition wants to be bound, but if it cannot be bound it will be accommodated. Principle C may be viewed as a generalization of a constraint first proposed by Heim (1983). Heim

distinguishes between two types of accommodation: global and local. In terms of the present framework, a presupposition is accommodated globally if it goes to the principal DRS, and locally if it is accommodated in the DRS where it was triggered. Heim's proposal is that, in general, global accommodation is preferred to local accommodation, and principle C generalizes this in two ways. First, this principle applies not only to accommodation but to projection in general. This makes some difference from an observational point of view (though not much), and it is surely more attractive conceptually speaking. Secondly, although it is possible to capture Heim's distinction between global and local accommodation in our framework, the distinction as such doesn't play a role in the theory. In general, there is a line of accessible DRSs in which a presupposition can be accommodated, the two ends of this chain being the main DRS and the DRS where the presupposition arises. Global and local accommodation are just convenient labels for referring to accommodation in these DRSs, but they do not denote special processes.

I should like to stress that the fundamental insight underlying this treatment of presuppositions is not a controversial one. It is that presupposed information is information that is presented as given. Most extant theories of presupposition accept this premise, too. What distinguishes the binding theory from other accounts is just that it doesn't draw a sharp line between presupposition and anaphora. Hence, although the choice of framework is essential in some respects, the gist of my analysis of specific indefinites could be expressed in other frameworks, too.

To say that presupposed information is presented as given is *not* to say that it *is* given. Indeed, the concept of accommodation merely puts a label on the observation that speakers are wont to exploit (in Grice's sense) presupposition-inducing expressions in order to convey information that is new. The point is a familiar one, I take it, but it deserves to be stressed, because it is sometimes thought that accommodation will be the weak spot of any theory of presupposition that adopts the notion, as most of them do (see Abbott 2000 for a recent attack along these lines). Even if it could be demonstrated that, say, definite NPs are regularly used to refer to entities that are new (and Abbott maintains that this has been demonstrated), that wouldn't even begin to show that the standard view of presupposition is on the wrong track. It would merely corroborate what we knew already, namely that speakers are adept at exploiting (still in the Gricean sense) linguistic devices for their purposes.

3. Accommodating indefinites

Recently, it has been suggested by several independent sources that specificity should be handled in terms of, or at least in conjunction with, presupposition projection (Cresti 1995, Yeom 1998, van Geenhoven 1998). This is an attractive idea, as I will try to show, but it requires a dramatic change of perspective, too, because it implies that specificity is an essentially *pragmatic* phenomenon. Following these developments, I will present my own unified theory of presupposition and specificity in the next section. In many respects, my account is related as well indebted to van Geenhoven's, which will therefore be discussed first.

3.1. Incorporation vs. accommodation

The majority position in the literature on specificity is that indefinites are ambiguous between specific and non-specific readings. Van Geenhoven (1998) doesn't take exception to this view, but she develops it in an entirely new way. According to van Geenhoven, non-specific indefinites are ordinary predicates, which neither possess quantificational force nor introduce reference markers or anything of the sort. If the indefinite in (25a), for example, is interpreted non-specifically, it doesn't have narrow scope; indeed, it doesn't have scope at all because it is semantically incorporated by the verb, as suggested by the paraphrase in (25b):

(25) a. Every man loves a woman.
b. Every man is a-woman-lover.

If, on the other hand, an indefinite gets a specific reading, its semantic representation is rather different. Specific indefinites are analyzed in accordance with the standard DRT doctrine on indefinites, save for the fact that it is stipulated that they must be accommodated. Or in other words, if *a woman* in (25a) is specific, it is treated as if it were a presupposition-inducing expression whose presupposition has the peculiarity that it doesn't want to be bound. Hence, the indefinite is dealt with in two steps. First, the grammar produces the initial discourse representation in (26a), in which the semantic correlate of *a woman* is marked as specific, and then this representation is fed into the projection mechanism of the binding theory, which treats the indefinite description as it would treat any (other) presuppositional expression, except that it cannot be bound. Consequently, it must be accommodated, and since there is a general preference for accommodating things at the highest level of representation, it is predicted that the resulting interpretation will be (26b).

(26) a. [: [x: man(x)]⟨every x⟩[u: woman(u), x loves u]]
b. [u: woman(u), [x: man(x)]⟨every x⟩[: x loves u]]

I find this analysis appealing for a number of reasons. To begin with, it comes essentially for free, because all the machinery it employs is already in place, as it is required anyway for dealing with presupposition projection. Secondly, van Geenhoven's proposal explains the parallels as well as the differences between definites and specific indefinites. The reason why definites and specific indefinites are so similar is that they are interpreted by the same projection mechanism; the main difference is that definites want, and specific indefinites don't want, to be bound. Thirdly, the theory accounts in a principled way for the puzzling pattern of interpretations discussed in § 1.1, which I repeat here for ease of reference:

in situ < wide scope < intermediate scope

According to van Geenhoven, indefinites are ambiguous between a specific and a non-specific reading, and if it may be assumed that the latter prevails by default, then an *in situ* construal is preferred to a reading that involves movement, and if an indefinite gets a specific reading, principle C of the binding theory entails a preference for a wide-scope as opposed to an intermediate-scope reading.

Although van Geenhoven's theory hinges on the premise that specific indefinites are construed by way of movement, it should be stressed that this account has nothing to do

with quantifier raising (or, for that matter, any other of the standard techniques for dealing with quantifier scope). Presupposition projection is a pragmatic affair, and therefore van Geenhoven's proposal can only be seen as an attempt at dealing with specificity in pragmatic terms. Quantifier raising, in contrast, takes place at or near the syntax-semantics boundary, so a theory based on raising implies that specificity is a grammatical phenomenon, and this view has never been challenged even by authors who rejected the raising analysis. Thus considered, van Geenhoven's proposal is little short of iconoclastic.

3.2. Objections

Although I applaud van Geenhoven's pragmatic turn, and agree with the fundamental intuition underlying her theory, I have two objections, one of which I consider to be particularly serious. To begin with the major problem, I maintain that van Geenhoven's analysis is conceptually incoherent. To my mind, the very idea of a class of expressions that insist on being interpreted by way of accommodation is a contradiction in terms. Accommodation is a repair strategy by definition. A speaker who presupposes that φ presents φ as given, and if it is not given it is at the hearer's discretion whether or not he wants to play along by accommodating φ. Therefore, accommodation isn't anything like an ordinary rule of interpretation; it is a fall-back option, and if one wants to postulate a linguistic category that *selects* this option, there is a fair amount of explaining to do.

But can't we simply broaden the concept of accommodation by ruling that it applies not only to presuppositions but to certain other types of information, as well? We can, of course, but there is a price to pay. A broadening of the notion of accommodation entails that we forfeit a powerful explanatory lever in our theory of presupposition projection. For we then will have to come up with new answers to such questions as: What justifies accommodation?, Why is binding preferred to accommodation?, and so on. And as long as I don't see how these questions might be answered, I am not willing to pay this price.

My slightly less urgent complaint concerns van Geenhoven's assumption that indefinites are systematically ambiguous between specific and non-specific readings. Notwithstanding the fact that this assumption is commonplace in the literature, I don't believe there is much independent evidence to support it, but that is as it may be, because nobody would deny that ambiguities are ugly and should be avoided at practically any cost. And, come to think of it, one should expect that a specific/non-specific ambiguity can be avoided in a framework based on the insight that specificity is a pragmatic phenomenon.

4. Specificity and backgrounding

My proposal is to relate specificity and presupposition to each other, not by reducing the former to the latter, as van Geenhoven has tried, but by subsuming them under a more comprehensive rubric, which I call 'backgrounding'. I will argue that this view doesn't suffer from the shortcomings discussed in the foregoing, and, furthermore, that it throws a new and perhaps brighter light on presupposition as well as on a number of phenomena that thus far lacked a systematic account.

4.1. Foreground and background

Following Foley and van Valin (1985) and Foley (1994), among others, I understand the opposition between foreground and background distinction purely in terms of informational prominence, where prominence is a relational rather than an absolute notion. By uttering a sentence a speaker typically conveys a considerable amount of information, only a small portion of which is central to his concerns. The remainder is backgrounded information: ancillary matter that merely serves to anchor the foregrounded information to the context, or information which is brought in *en passant*. Backgrounded information is not necessarily unimportant, but it is of secondary interest in relation to foregrounded information. Thus the notion of background is primarily a negative one: backgrounded information is what remains when foregrounded information is taken away. It may well be, therefore, that it is impossible to provide a single positive description covering all sorts of background information. But no matter how many reasons for, or ways of, backgrounding there may be, I will suggest that at least some interpretative mechanisms do not discriminate between them.

A further, and crucial, negative characteristic of my notion of background is that it doesn't entail givenness; only the converse is true. Backgrounded information may be given, or presented as given, but new information is not necessarily foregrounded. For example, enclosing new information in (intonational or orthographic) parentheses often serves to indicate that it is of secondary importance, which is to say that it is backgrounded, not that it is presented as given.

My notion of background is clearly related to Abbott's (2000) 'nonassertion' and Horn's (2000) 'assertoric inertia'. The basic intuition in each case is that the main point of an utterance enjoys a special pragmatic status, while the remainder is, in some sense, downgraded. What distinguishes my concept from the other two is mainly that its interpretative effects are more explicit (see below). Apart from that I prefer to avoid the notion of assertion in this connection, because otherwise I would have to assume, contrary to what I take to be linguistic common sense, that assertions may occur in syntactically embedded positions.

Although the distinction between foreground and background may be signaled by intonational means, I don't want to make any substantial claims about the relationship between intonation and foreground/background. However, I should like to note that the correlation between intonational prominence and foregrounding is imperfect, at best. This observation is not new, but I feel it bears emphasizing nonetheless. Consider the following example:

(27) The course on postmodern theology will be given by [the dean]$_F$.

Suppose, for enhanced clarity, that this is an answer to the question 'Who is teaching the course on postmodern theology this year?', so we can be sure that the non-focused part of (27) is given, and therefore backgrounded. Now of course the focused part is (presented as) given, too, simply by virtue of the fact that it is a definite NP. But surely everything in this statement cannot be given? The solution to this puzzle is not so hard to find: the focus on *the dean* doesn't highlight the dean, but rather the fact that it is he who will be teaching the course on postmodern theology. The dean is given; that he will play a certain role is foregrounded.

If backgrounded information need not be given, there is no reason why it couldn't be marked as new. I want to suggest that this is not just an abstract possibility: it does

happen that backgrounded information is marked as new; this is precisely what specificity comes down to.

4.2. Accessibility and the Buoyancy Principle

An utterance is always interpreted within a context, and broadly speaking utterances and contexts interact with each other in two ways: the context affects the interpretation of an utterance, which in its turn changes the context in which it occurs. In DRT the context of utterance is pictured as a line of accessible DRSs, and therefore the notion of accessibility is of central importance to DRT (as it is, *mutatis mutandis*, to all dynamic theories of meaning). What, exactly, is accessibility? From a technical point of view this question is not so hard to answer, but when we interpret the question as being about the theoretical status of the accessibility relation, many different answers are possible. In Kamp's (1981) original version of DRT, accessibility was associated with anaphoricity in the sense that it was only used for constraining the interpretation of anaphora: an anaphoric pronoun had to find its antecedent in an accessible DRS. In later versions of the theory, the notion of accessibility gradually assumed a much broader significance. Thus, as we have seen in § 2, in the binding theory of presupposition accessibility demarcates what is given at the point where an expression occurs. I believe that an even broader view is called for, and that the accessible domain must be seen as the background against which an utterance is interpreted, where 'background' is to be understood as explained above.

When we thus broaden our perspective on the significance of accessibility, it is only to be expected that some of the principles of interpretation hitherto cast in terms of accessibility will have to be generalized. This applies, in particular, to principle C of the binding theory, which I propose to supplant with the following:

> *The Buoyancy Principle*
> Backgrounded material tends to float up towards the main DRS.

Strictly speaking, the Buoyancy Principle isn't part of our theory of presupposition projection, because it is not specifically about presuppositions, so all that remains of the original binding theory is two 'axioms', one saying that presuppositions want to be bound, the other, that presuppositions that cannot be bound may be accommodated. The theory's predictions aren't affected by this change, although they are now seen in a somewhat different light. In particular, I am no longer committed to the claim that presuppositions tend to take 'wide scope' *because* they are presuppositions; it is rather because they are backgrounded, and therefore subject to the Buoyancy Principle, that they gravitate towards the principal DRS. But as far as the theory of presupposition is concerned, the proposed modification isn't exactly a volte-face. Still, this relatively minor amendment may turn out to be more consequential than one should think, because it invites a rethinking of the binding theory's treatment of at least some presupposition triggers, as I will argue in § 5. The concept of buoyancy itself is discussed at greater length in Geurts (2000b).

4.3. Explaining specificity

In keeping with DRT orthodoxy, I regard indefinites as property-denoting expressions that receive existential import when they occur in argument positions. The main

advantage of this division of labor is that it makes for a uniform analysis of indefinites occurring in argument positions and indefinite non-arguments, such as predicate nominals, for example. To illustrate, it allows us to maintain that *a ventriloquist* has the same meaning in both of the following sentences:

(28) a. Barney is a ventriloquist.
b. Betty is married to a ventriloquist.

In (28a) as well as in (28b), *a ventriloquist* merely denotes a property, but only in the latter case is this property applied to a reference marker introduced by the verb. I will assume that, if this happens, the reference marker in question is labeled as new. There are various ways of accounting for this feature (if it is one), but that is a topic I don't want to go into here.

Unlike Reinhart, van Geenhoven, and many others, I deny that indefinites are ambiguous between a specific and a non-specific reading: indefinites always denote properties. If an indefinite occurs as an argument it may be construed as specific or non-specific depending on whether is backgrounded or not, which is to say that the choice is a pragmatic one. Of course, to say that a given aspect of interpretation is a pragmatic one is not to deny the possibility that it is conventionally marked in some languages. In this respect, specificity is in the same boat as definiteness, which is a pragmatic notion, too, and is conventionally marked in some, though by no means all, languages.

Following the general consensus, I take it that by default indefinites are construed non-specifically, and the most natural way of accounting for this is by assuming that, all things being equal, an indefinite will tend to be construed as part of the foreground because it carries new information. I still deny, of course, that new information is always foregrounded, but it is only natural that the former status tends to be escorted by the latter. It is only under special circumstances that new information is backgrounded, and if this happens, the expression in question is specific.

We are now all set to explain the main facts about specificity, beginning with the interaction between indefinites and (other) scope-bearing expressions. We have just seen why indefinites prefer to be construed non-specifically; this is, I suggested, because they tend to be part of the foreground. But if they are backgrounded, the Buoyancy Principle applies, which is to say that, other things being equal, they will take wide scope, and only if all things aren't equal will they take intermediate scope. This is precisely the order of preferences that we wanted to account for. Secondly, the similarities between definites and specific indefinites fall into place, too, because both types of expressions convey backgrounded information. Thirdly, and by the same token, it is only to be expected that there will be languages which lump together specificity with definiteness, assigning the two functions a single article or case marker, say. On the present account, such conventional devices receive a straightforward interpretation: they signal that something is part of the background. Thus a vcv-prefix in Bemba, for example, isn't ambiguous in any way; it just serves to indicate that the expression it attaches to is backgrounded.

The partitive constraint is explained along the same lines. It is reasonable to suppose that, in an expression of the form 'Det α of β', the main duty of β is to help identify the intended α, and is therefore backgrounded (cf. e.g. Kuno 1987). So, properly understood, the partitive constraint is not that β must be either definite or specific, but rather that it must be backgrounded. This explains why definites and specific indefinites can occur in partitive constructions, while quantifiers and non-specific indefinites can't.

4.4. Summing up

It will be evident that this analysis of specificity owes a great deal to van Geenhoven's proposal. But my account improves upon van Geenhoven's by giving a coherent picture of the relation between specificity, on the one hand, and presupposition and definiteness, on the other, while forgoing the premise that indefinites are ambiguous between specific and non-specific readings. Apart from providing a principled way of dealing with specificity, the present theory offers another attraction as well, in that it may shed new light on matters not directly related to specificity. It is to these matters that we now turn.

5. Second thoughts about presuppositions (and sundry other matters)

Being an extension of standard DRT, the binding theory regards presuppositions as elements that would like to be bound an antecedent. This is a view that agrees with pre-theoretical intuitions about the definite article, for example, but it doesn't seem right for some other expressions and constructions that are standardly categorized as presupposition inducers. I want to propose that at least some of these are better viewed as instances of backgrounding.

5.1. Lexical 'presuppositions'

Intuitively speaking, the notion that presuppositions are anaphoroid elements does not seem to be quite appropriate for dealing with lexical inferences like the following, which have often been said to be presuppositional in nature (here '>>' is to be read as 'implies, intuitively speaking'):

(29) a. Leslie is a bachelor.
>> b. Leslie is a man.

(30) a. Wilma managed to fry an egg.
>> b. It was difficult for Wilma to fry an egg.

(31) a. Fred accused Barney of nepotism.
>> b. Nepotism is a bad thing.

It is commonly held that (29a) presupposes (29b), and this claim seems justified by the observation that this inference tends to go through even when (29a) is embedded in non-entailing environments, such as:

(32) Perhaps Leslie is a bachelor.

A naive account of facts like this would be to suppose that the lexical content of *bachelor* falls into two parts: an assertional part which specifies that *bachelor* is truthfully predicated only of unmarried individuals, and a presuppositional part which says, among other things, that a bachelor is a man; of course, it is the second half of the content of *bachelor* that triggers the presupposition in (29a) and (32). There are several

problems with this naive account. First, as it stands, this analysis implies that *every* occurrence of *bachelor* gives rise to the presupposition that the individual it is being applied to is a man, and therefore it predicts, for instance, that

(33) Betty is allergic to bachelors.

means something like, 'Betty is allergic to unmarried individuals who are presupposed (by someone?) to be men' – which is not what we want. The solution to this problem is fairly obvious: the word *bachelor* should only be allowed to trigger its presupposition when it is being used predicatively. But this seems to entail that *bachelor* is ambiguous between a presupposing and a non-presupposing reading, which is not exactly an appealing consequence.

The second problem, which is related to the first, is the following. Suppose that it is encoded in the lexicon that predicating *bachelor* of some individual *a* carries with it the presupposition that *a* is man. Consider now how the words *bachelor* and *man* are related to each other: the former is a hyponym of the latter, and the only distinctive feature of the word *bachelor* is that it applies to unmarried individuals. But at the same time that is all we are saying, as opposed to presupposing, when we call somebody a bachelor. Could this be an coincidence? I think it is pretty clear that it is not. For one thing, other hyponyms behave alike: *spinster* presupposes 'female', *woodpecker* presupposes 'bird', and so on. For another, an intuitively plausible story about this phenomenon is readily available: if a speaker wants to announce that Leslie is unmarried and has even the slightest doubt about Leslie's sex he would say that Leslie is unmarried rather than risking (29a). I do not want to suggest that spelling out an explanation along these lines is going to be trivial, but it is obvious that if such an account could be made to work it would be much more attractive than the one we started out with, which says, in effect, that it is a lexical accident that (29a) presupposes (29b).

There is yet another, and more severe, problem with the suggestion that (predicative) *bachelor* presupposes 'adult male'. It is that this presupposition, if it is one, is evidently not the kind of thing that seeks to be bound in anything like the way anaphoric elements seek to be bound. This becomes quite apparent when one considers how the binding theory would deal with (32), for example:

(34) a. [x: Leslie(x), perhaps: [: male(x), adult(x), unmarried(x)]]
b. [x: Leslie(x), male(x), adult(x), perhaps: [: unmarried(x)]]

Assuming that (34a) is the semantic representation associated with (32) by the grammar, the binding theory predicts that the presupposition triggered by *bachelor* is accommodated in the principal DRS, because it cannot be bound and there is no reason (let us suppose) why it should be accommodated locally. This yields the right interpretation (and as a matter of fact I don't know of any counterexamples to this analysis of *bachelor*), but within the framework of the binding theory this analysis causes something of an embarrassment. The presupposition supposedly triggered by *bachelor* can never be bound, as there is nothing to bind, so this presupposition would be one that, by its very nature, must always be accommodated, and as I have argued in my discussion of van Geenhoven's account of specificity, that is practically a contradiction in terms.

The presuppositions allegedly triggered by verbs such as *manage* and *accuse* (cf. examples (30) and (31)) are dubious, too, and partly for the same reasons. Most

importantly, it just doesn't seem to be plausible, from a pre-theoretical vantage point, that the inferences licensed by these verbs should be of an anaphoric nature, and this suspicion is strengthened by the observation that it is next to impossible to come up with examples in which these purported presuppositions must be interpreted by way of binding.

My proposal is to deal with the lexical inferences in (29)–(31) in terms of backgrounding instead of presupposition. According to the theory developed in the last section, backgrounded material may be given (i.e. presupposed) but backgrounding isn't wedded to givenness, and therefore new information may be backgrounded, too. This, it seems to me, is precisely what we witness in the cases under discussion. For example, if a speaker utters (29a), it is likely that the essential bit of information he intends to convey is that Leslie is married, not that Leslie is an adult male. Therefore, the information that Leslie is a man is backgrounded, which means, I have argued, that it will gravitate towards the principal DRS, by virtue of the Buoyancy Principle. Similarly, if someone utters (30a), he conveys (30b), but he doesn't present this information as given (not necessarily, anyway). However, by using this particular expression, the speaker does indicate that the truth of (30b) is of less concern to him than the fact that Wilma fried an egg. Hence, even if (30b) isn't given, we may assume that is backgrounded. The same, *mutatis mutandis*, for (31a).

I have proposed that the lexical inferences in (29)– (31) be explained in terms of backgrounding. This is not to suggest, however, that these inferences are alike in all respects, because they aren't. Speakers' intuitions make a fairly clear distinction between (29), on the one hand, and (30) and (31), on the other. Most speakers would say that if Leslie is a woman, (29a) is false. Whereas, if it turns out to be easy for Wilma to fry an egg, then it is not so evident what we should say about (30a). This statement would be misleading, to be sure, but many speakers would hesitate to simply reject it as false; similarly for (31a). One might say that, in contradistinction to the lexical entailment in (29), the inferences in (30) and (31) are conventional implicatures, but in view of the notorious ill-definedness of the concept of conventional implicature, that would do little more than rephrase the problem. I don't have particularly strong opinions on how the differences between (29) and (30)– (31) can be accounted for, nor am I convinced that this issue is extremely urgent. This, however, is as it may be, because what I proposed in the foregoing doesn't entail that such differences couldn't exist. But these observations reinforce the suspicion voiced in § 4.1, that there may be various ways of backgrounding, which may not all be equivalent.

5.2. Presupposition vs. background

Over the past few decades, but especially during the presupposition craze of the seventies, the label 'presuppositional' has been applied to such a bewildering variety of phenomena that the very notion of presupposition has become suspect, as the following passage from Neale (1990: 54) illustrates:

> A great range of disparate and unrelated phenomena has been dubbed 'presuppositional' over the years, but [...] it seems highly implausible that any theoretically important notion will do justice to the full range of data that semanticists professing an interest in 'presupposition' seek to explain.

Needless to say, I am not entirely convinced that the second half of this claim is justified, but the first half certainly is. All too often, the concept of presupposition has

been used, or rather abused, without even the shadow of justification. I have argued elsewhere that this abuse was caused at least in part because the diagnostic tests for presuppositionhood were (and still are) applied too carelessly, if they were applied at all (see Geurts 1999a). But in the light of the foregoing discussion I want to suggest that there may have been another factor as well, which is that the standard tests don't allow us to make a clear distinction between presuppositional and backgrounding effects, and that at least some of the phenomena that have been categorized, to greater or lesser acclaim, as 'presuppositional' are better seen in terms of backgrounding. The lexical inferences discussed previously are relatively clear instances of this category, and further possible candidates for relocation will be discussed below. But first I want to raise the question how we are going to distinguish between genuine presuppositions and instances of backgrounding.

This is not a trivial question because, as I hinted already, the standard litmus tests for presuppositionhood fail to distinguish between presupposition and backgrounding, as the following observations illustrate (where '>/>' symbolizes the negation of '>>'):

(35) a. If Germany becomes a monarchy again, the king of France will get nervous >> There is a king of France.
b. If there is a king of France, the king of France will get nervous >/> There is a king of France.

(36) a. If Leslie is rich, he is a bachelor >> Leslie is a man.
b. If Leslie is a man, he is a bachelor >/> Leslie is a man.

(37) a. If the king of France gets nervous, his ministers get nervous, too. >> There is a king of France.
b. If the king of France gets nervous, then France must be a monarchy >/> There is a king of France.

(38) a. If Leslie is a bachelor, he is rich >> Leslie is a man.
b. If Leslie is a bachelor, he is a man >/> Leslie is a man.

These observations suggest that there are no differences between the presupposition triggered by the definite NP 'the king of France', as in (35) and (37), and the lexical inference licensed by the noun *bachelor*, as in (36) and (38), and the parallels extend to all sorts of embedding contexts. Nevertheless, I have argued, there are good reasons for believing that lexical inferences aren't of a presuppositional nature. But none of these reasons provides us with a general criterion for discriminating between presupposition and backgrounding.

According to the binding theory, presupposed information is presented as given, in the same sense that the antecedent of an anaphoric expression is given, and the theory's treatment of presupposition is a generalization of DRT's treatment of anaphora, which is based on the widely held view that an anaphoric expression serves to retrieve an element from the common ground. That is to say, the speaker employs an anaphor not merely to signal that a discourse entity x is given, but also as an instruction to the hearer that he should identify and recover the intended x, so that new information will have the right connections. In other words, the hearer is expected to ask himself *which* entity the speaker has in mind. I want to suggest that we can turn this observation into a useful test for distinguishing between real presuppositions and merely backgrounded

information. The test goes as follows: If *x* is a genuine presupposition, then it should make sense to ask 'Which *x* do you mean?' when the speaker has just uttered a sentence implying the existence of some x. This admittedly informal criterion indicates that, for example, the following are genuine presupposition inducers:

• Pronouns:

(39) A: He is insane.
B: Who is insane?

• Definite NP's:

(40) A: The banana has been stolen.
B: Which banana has been stolen?

• Quantifier domains:

(41) A: Every girl has sent me a postcard.
B: Which girls have sent you a postcard?

• Focus particles:

(42) A: Professor Babel has read my paper, too.
B: Who else has read your paper?

On the other hand, there are various alleged presupposition inducers that fail the wh-test. The lexical inferences discussed in the previous section are a case in point, as are factive verbs and transition verbs, for example, which are standardly listed among the presupposition-inducing expressions:

• Factives:

(43) a. Barney is proud that his daughter is an anarcho-syndicalist.
>> b. Barney's daughter is an anarcho-syndicalist.

• Transition verbs:

(44) a. Betty has started taking saxophone lessons [at time t].
>> b. Betty wasn't taking saxophone lessons [before t].

The inferences in (43) and (44) originate with the factive *be proud* and the transition verb *start*, respectively, and they both exhibit the projection behavior that is characteristic of presuppositions. But they also fail the wh-test. In the first case it would make no sense to ask which state or fact (or whatever) involving his daughter Barney is proud of, and in the second case no hearer would ever wonder which instance of Betty-not-taking-saxophone-lessons ended at time t. Hence, if the wh-test is to be trusted, the inferences exemplified by (43) and (44) aren't genuine presuppositions, and therefore they must be explained in terms of backgrounding.

Zeevat (1992) has proposed a classification of presupposition-inducing expressions which resembles my somewhat tentative distinction between genuine presupposition inducers and expressions licensing inferences that are best understood in terms of backgrounding. Zeevat's 'resolution triggers' correspond to what I call

'presuppositions' *simpliciter*; his 'lexical triggers', to what I prefer to treat as backgrounding expressions (the correspondences are not quite perfect). It would take me too far afield to discuss the theory Zeevat erects on his classification, but I would like to briefly comment on one of his empirical claims, which, if correct, might be put to use for discriminating between presupposition inducers and backgrounding expressions. Zeevat views lexical triggers as 'applicability conditions' which must be satisfied locally, i.e. *in situ*; and this constraint does not hold, according to Zeevat, for resolution triggers. It follows from this that resolution triggers can, and lexical triggers cannot, get *de re* construals. The following example illustrates both predictions:

(45) Betty believes that the superintendent is a bachelor.

If this statement is true, Betty can hardly fail to believe that the superintendent is a man (which is the lexical inference triggered by *bachelor*), but it may well be that she is not aware that the person in question is a superintendent (which is part of the presupposition triggered by the definite NP). Unfortunately however, for Zeevat as well as myself, this distinction is not as neat as it initially appears to be. Suppose that *all* Betty knows about the superintendent is that he or she is not married. Would (45) be true or false, under these circumstances? Speaking for myself, I believe I might accept the statement as true, but even if other speakers should disagree, they would still have to concede, I think, that the matter is not as clear-cut as it seemed to be at first.

When we turn away from the standard *bachelor*-type cases, it becomes even clearer that Zeevat's observation is hard to maintain. Suppose Fred tells his friend Barney: 'Wilma fried an egg this morning.' Whereupon Barney reports to his wife:

(46) Fred believes that Wilma managed to fry an egg.

Tendentious though it may be, this statement is clearly correct, and it need not imply that Fred believes that it is (or was) difficult for Wilma to fry an egg. Therefore, if Zeevat's diagnostic applied across the board, this inference could not be a lexical presupposition (in Zeevat's terminology) or backgrounded information (in mine). I don't know how Zeevat would want to deal with this inference, but since I want to treat it as an instance of backgrounding, I cannot employ attitude contexts for distinguishing between presuppositions and backgrounded information.

5.3. Factives

Factive verbs are standardly regarded as presupposition-inducing expressions, although there is a well-known problem with this view. It is that some factive verbs, at least, do not always seem to trigger the presupposition that their complement is true:

(47) a. If Barney should discover that Miss Chambley is rich, he'll propose to her.
b. If I should discover that Miss Chambley is rich, I'll propose to her.

Both (47a) and (47b) can be consistently uttered by a speaker who doesn't want to commit himself as to whether Miss Chambley is rich, but unlike (47b), (47a) appears to have a further reading, as well, implying that Miss Chambley is rich. In view of observations such as these it has been suggested that *discover* belongs to a special class

of 'semi-factive' verbs, which are ambiguous between a presupposing and a non-presupposing reading. This unattractive assumption can be avoided if we approach the matter in somewhat different terms. If the complement of a factive verb can be either backgrounded or not, the Buoyancy Principle predicts that something very much like presupposition projection will occur in the former case but in the latter. This view is an attractive one, I believe, because it seems to correlate with our intuitions about foreground vs. background in factive constructions. For example, a speaker who utters (48a) may be interested primarily in the fact that Barney knew (48b), or in the fact that (48b) is true. In the former case, the information in (48b) is backgrounded; in the latter, it is foregrounded.

(48) a. Barney knows that his daughter is an anarcho-syndicalist.
>> b. Barney's daughter is an anarcho-syndicalist.

Now if the same options are available for the antecedent of (48a), we predict that backgrounding the proposition that Miss Chambley is rich will imply that Miss Chambley is rich, whereas this inference will not go through if the factive complement is foregrounded. These predictions appear to be correct.

5.4. Concluding remarks

In the preceding pages I have argued that a number of expressions that are standardly categorized as presupposition inducers are better viewed as backgrounding devices. I suspect, furthermore, that this viewpoint may be of more general use, and that it may help to account for phenomena which have not as yet received a satisfactory treatment. Let me mention just two, rather disparate, examples:

• Non-restrictive relative clauses:

(49) a. Fred suspected that Betty, who had been avoiding him of late, had discovered about his collection of Neil Sedaka albums.
>> b. Betty had been avoiding Fred of late.

• Felicity conditions on speech acts:

(50) a. Where is my bicycle?
>> b. The speaker doesn't know where his bicycle is.

Although it has occasionally been suggested that these inferences are of a presuppositional nature, this position has not gained much support in the literature (exceptions are Fillmore 1969 and Keenan 1971). Still, both types of inference seem to exhibit the 'wide scope' tendency that is the hallmark of presuppositions. This is harder to demonstrate for felicity conditions on speech acts than for non-restrictive relatives, because non-declaratives dislike being embedded under operators of any kind. But at least we have conditional speech acts:

(51) a. If my pogo stick is in the attic, where is my bicycle?
>> b. The speaker doesn't know where his bicycle is.

That non-restrictive relative clauses behave similarly is easier to show, for instance, by embedding (49a) under a weak modal operator, such as *perhaps*.

Nevertheless, it seems to me that the majority view is correct, and that the inferences exemplified by (49) and (50) shouldn't be granted the status of presuppositions. In particular, the preferred interpretation of non-restrictive relatives is plausibly explained in terms of backgrounding: non-restrictive relatives are parenthetical remarks, which are backgrounded if anything is. So the Buoyancy Principle surely applies to non-restrictive relatives, and I conjecture that it applies to felicity conditions on speech acts, too.

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Deixis, Binding and Presupposition

Nicholas Asher

1. Introduction

Dynamic semantic accounts of presupposition have proven to quite successful improvements over earlier theories. One great advance has been to link presupposition and anaphora together (van der Sandt 92, Geurts 95), an approach that extends to integrate bridging and other discourse phenomena (Asher and Lascarides !998a,b). In this extended anaphoric account, presuppositions attach, like assertions, to the discourse context via certain rhetorical relations. These discourse attachments constrain accommodation and help avoid some infelicitous predictions of standard accounts of presupposition. Further, they have interesting and complex interactions with underspecified conditions that are an important feature of the contributions of most presupposition triggers.

Deictic uses of definites, on the other hand, seem at first glance to fall outside the purview of an anaphoric theory of presupposition. There seems to be little that a discourse based theory would have to say. I will argue, however, that a discourse based account can capture how these definites function in conversation. In particular such accounts can clarify the interaction between the uses of such deictic definites and various conversational moves. At least some deictic uses of definites generate presuppositions that are bound to the context via a rhetorical function that I'll call *anchoring*, which if successful entails a type of knowing how. If this anchoring function is accepted, then the acceptors know how to locate the referent of the definite in the pres??ent context. I'll concentrate here just on definites that refer to spatial locations, where the intuitions about anchoring are quite clear. But I think that this view extends to other deictic uses of definites and has ramifications for an analysis of *de re* attitudes as well.

2. Different ways to bind presuppositions

To set the stage for an analysis of anchoring uses of definites and the role that their presuppositions play there, it is useful to see how varied a role presuppositions of definites play in anaphoric uses of definites. According to "Dynamic" accounts like Heim's *familiarity theory* (1982), definites presuppose familiar discourse referents. Such presuppositions must be satisfied in the discourse context in the Tarskian sense or must be accommodated (i.e., added) to the discourse context. Van der Sandt (1993) tells us to find these discourse referents via anaphora resolution – i.e., try to bind, and failing that, accommodate. Geurts extends this view by including propositional identity as a means of binding.

Nevertheless, there is much more that can be said about binding. Consider bridging examples like the following:

(1) a. I met two interesting people last night at a party.
b. The woman was a member of Clinton's Cabinet.

(2) a. John took engine E1 from Avon to Dansville.
b. Then he picked up the boxcar
c. and took it to Broxburn.

Now what happens to the presuppositions generated by *the boxcar* in (2b)? On standard accounts, we can't bind the boxcar to any discourse entity in the context nor can we satisfy the presupposition that there is a boxcar in the discourse context created by the first sentence. So all the standard theories of presupposition would say that we should accommodate a boxcar in the context. This misses an important aspect of the meaning in this discourse, which we can focus on by asking ourselves: Where ist the boxcar? The discourse based account in Asher and Lascarides (1998a) gets this essential part of the interpretation of (2) by assuming that the presuppositional material introduced by the definite contains some underspecified elements, while the bridging relation is set to identity if this produces a well-defined result (thus incorporating the insights by van der Sandt that binding is preferred), but in this case there is no non-absurd identification of the boxcar with some other discourse entity to be had. However, in (2b), there is a discourse particle or adverbial *then* that determines the discourse relation between (2a) and (2b) to be one of Narration. The presence of such a discourse relation between (2a) and (2b) entails that the event described in (2b) is understood as coming after the event described in (2a) and as spatially located in the location in which the event in (2a) terminates (Dansville). The lexical semantics of *pick up* adds the information that in effect the boxcar is in Dansville. This suffices to determine the bridging relation in this case to be 'in'. Thus, the boxcar is linked to Dansville and that is enough to get the right interpretation. Details of the analysis can be found in Asher and Lascarides (1998a).

With (1), we also see a need to supplement both the Heim and van der Sandt-Geurts approaches to presupposition. Again we can't bind the woman to any discourse entity in the context nor can we satisfy the presupposition that there is a woman in the discourse context created by the first sentence. So all the standard theories of presupposition would say that we should accommodate a woman in the context. But this again misses an essential component of the interpretation of (1): the woman is one of the two people that I met last night. The discourse based anaphoric account gets this essential part of the interpretation of (1) by a simultaneous resolution of the underspecified bridging and a computation of the discourse connections between the presupposition generated by *the woman*, the asserted component of (1b) and (1a) accounts for this anaphoric connection and the coherence of the text. More specifically, in this case again, specifying the bridging relation to identity yields an absurdity. But if we specify the bridging relation to be "an element of", we get a coherent discourse and a discourse relation of elaboration between (1a) and (1b). Alternatively, specifying the discourse relation to be Elaboration will coerce the underspecified bridging relation to the appropriate value.[1]

Other examples of complex presupposition binding occur when the presupposition trigger, the expression that generates the presupposition, is itself a discourse particle. That is the case with (3):

[1] See Asher and Lascarides (1998a) for more details, and also section 4 below.

(3) John lives in New York too.

Kripke in an unpublished paper observes that (3) can't be uttered in a null context, even if many people are known by the speaker and the audience to live in NY. But accounts like van der Sandt's and Heim's don't predict this. On the other hand, the discourse based account can, of we assume that the presupposition of *too* is that it generates a specific rhetorical function connecting the assserted content of (3) to some element of the contextually given discourse structure. In the null context there is no element of discourse structure to connect to, and so the presupposition of *too* can't be fulfilled.

A final example of binding with rhetorical relations reveals that not only are the Heim– van der Sandt – Geurts accounts of presupposition incomplete but they derive wrong interpretations. Consider (4).

(4) a. If a farmer goes to the market, he buys a donkey.
b. Yesterday, Farmer John went to the market.
c. The donkey he bought was expensive.
d. This time the donkey was expensive
e. This time (?)it_{donkey} was expensive.

Van der Sandt and Geurts must accommodate the existence of a donkey in order to interpret the presupposition of (4c,d,e). But *the donkey* in (4) depends on an anaphoric link between *bought* and *went.* Accommodation yields incorrect results. Heim's (1983) theory yields only the satisfaction of an existential presupposition, not an anaphoric one. We need an appropriate instantiation of the conditional (like (4a'))

(4) a' If John is a farmer and went to market, John bought a donkey

which, when coupled with (4b), gives the *donkey* referred to in (4c).

(5) If a farmer goes to Paris, he buys a donkey
Pedro went to Paris. His donkey was expensive.

(6) A Farmer buys a donkey whenever he visits the market.
Farmer John visits the market on Wednesdays. His donkeys are merry.

Similarly, for (4) adding an argument for *going-to-the-market* events. We might call this inferential binding. The inferential binding in (4abc) falls squarely within the analysis given to the bridging examples and to our anaphoric theory of presuppositions. The rhetorical relation that binds the presupposition to the discourse context is the relation of Defeasible Consequence (Asher and Lascarides 1998b), a natural generalization of Geurts's notion of propositional binding. Defeasible Consequence holds of two propositions p, q iff q is a defeasible consequence of p.[2] This relation will bind the presupposition to both (4a) and (4b) as both are necessary to derive the presupposition that Pedro owns a donkey.

[2] Defeasible consequence is defined precisely via a nonmonotonic logic. See for instance Lascarides and Asher 1993, or Asher and Morreau 1991.

In these examples, however, we cannot specify the bridging relation to identity. So the semantics of the rhetorical relation used to bind the presupposition must determine the bridging relation. In these examples the bridging relation is set to a witnessing relation W. While one term of W should be the discourse referent introduced by the definite, it is less clear what the other term should be. If we allow reference to quantifiers themselves or their logical forms (it is after all one type of abstract object), then we can take the other term of W to be the quantifier of which the definite produces an instance. In (4), the appropriate quantifier is *a donkey* in (4a).

3. "Deictic binding" and Discourse Function

Not all uses of definite descriptions fit so neatly into an anaphoric theory of presupposition. Definite descriptions have deictic uses within ordinary conversation. Let's take some simple examples:

(7) a. Now pour the mixture into the pan and gently simmer for 10 mins.
b. Move the window to the lower left (on a computer screen).
c. Close the window in the bedroom.
d. *You've just checked into a hotel and the clerk says:* Your room is up the stairs and right at the end of the corridor.

Many of these definites occur in contexts where, e.g., a window on the computer screen has already been introduced in a previous discourse turn. So the presupposition would be satisfied here by linking the discourse referents introduced by the two NPs. On the other hand, this mere anaphoric connection isn't sufficient to carry out the conversational purpose behind these instructions. In order, for example, to carry out the instruction in (7d), the addressee need to be able to find the referent of the description. Similarly for (7a,c). The discourse referents introduced by the definites have to be linked or anchored to particular nonlinguistic elements in the visual nonlinguistic context. The case in (7d) is a bit different, but in a way it's more interesting. The definites *your room, the corridor* have a standard anaphoric analysis but *the stairs* is somewhat different. We could simply accommodate that there is a corridor on an anaphoric account, but we would miss the intended interpretation – viz. that the stairs be linked to some object in the environment that accomplishes the manifest goal of the speaker, which is that the addressee knows how to get to his room. As one would expect, a standard, dynamic account of presupposition, which treats the presupposition of the definite in (7d) simply by adding it to the context, misses the rhetorical point of the speaker.

This rhetorical function of the presupposition for the speaker in a given context is part of what determines conversation. Consider what happens when this rhetorical function isn't shared by the interpreter or addressee. If the addressee cannot locate the stairs, for instance, it is quite appropriate for him to say:

(7) d'. Where are the stairs?

We saw earlier that the presupposition of a definite description when resolved can help determine a rhetorical function for the asserted content of a sentence (viz. (1b)), and it seems as though the presupposed material here too has an imprtant role to play in this rhetorical function. But what exactly does it do?

It's helpful to consider the behavior of such deictic uses of definites within longer stretches of dialogue. Consider the uses of definite descriptions referring to locations or spatially localized entities in the following two dialogues.

(8)
a. I: Philippe? (i) C'est Isabelle (ii). Bon, je crois que je me suis un peu perdue (iii).
b. P: Ah bon? Et tu m'appelles d'où?
c. I: Bon, j'en sais rien! Je ne vois pas le nom de la rue.
d. P: Mais tu as fait comment pour y arriver?
e. I: Non, en fait, je suis tout an bout de l'avenue Jean Jaurès, après la grande place (i). C'est une grande rue et il y a un panneau qui indique "Aubervilliers" tout droit (ii). Je ne suis pas sur le bon chemin, non? (iii)
f. P: Attends, je ne vois pas trop où tu es (i). Tu as pris sous la voie ferrée, comme je t'avais dit? (ii)
g. I: D'ici on voit une voie ferrée, an dessus de la place.
h. P: An dessus de la place? Non, ça peut pas être ça!
i. I: Ecoute, l'avenue où tu habitais, c'était bien Jean Jaurès? Et bien, la grande place est juste après, avec le pont suspendu.
j. P: Non, mais ça, ça doit être le périph et pas la voie ferrée!
k. I: Bon, peut-être, d'ici ça se voit pas.
l. P: Tu es à côté de la cité de la musique?
m. I: J'en sais rien, je connais pas la cité de la musique (i). Mais attends, est-ce qu'il fallait que je prenne un deuxième tunnel après celui de chez toi ? (ii)
n. P: Bien sûr, c'est là que tu passes sous la voie ferrée.

In this dialogue, Isabelle is trying to find her way to Phillippe's new apartment in Paris. There are many definites referring to locations or landmarks; many cannot be bound anaphorically to previous items mentioned in the discourse. The turn (8l-m) is quite interesting. *La cité de la musique* is a novel definite, with which Isabelle is obviously not familiar, since she says, that she doesn't know the Cité de la Musique. According to standard anaphoric theories of presupposition, one would at his point accommodate the presupposition of the definite, and the discourse would proceed smoothly. But that's not what happens; the discourse doesn't proceed smoothly. Isabelle's response feels as though it entails a presupposition failure – that is, it indicates that the presupposition cannot be satisfactorily treated. With such presupposition failure, there is no possibility of carrying out commands, answering questions, or the like. It has to me the same flavor as orthodox presupposition failures in questions:

(9) What does the present King of France do on Bastille Day?

Just as Isabelle says exasperatedly, "I don't know the Cité de la Musique" (8m), one could respond to this question with a similar exasperated correction: there is no present king of France! Were accommodation possible here, Isabelle would still not be able to answer the question.

If the accommodation of novel uses of definite descriptions is not always an option, how do we understand the "binding" of these novel definites? In the dialogue, there

are uses of definites that could be bound via identity to a previously mentioned occurrence as in:

(8f,ii) P: Tu as pris sous la voie ferrée comme je t'avais dit?

But interestingly Isabelle does not use this binding alone. In order to be able to answer the question, she must be able to identify the railroad tracks in her immediate environment or as something she passed on her journey. She has to "anchor" the definite to some object in the (nonlinguistic) context. To that end, she offers up an object in her perceptual context with which to bind *la voie ferrée.*

(8g) I: D'ici on voit une voie ferrée, an dessus de la place.

Interestingly again, Phillippe rejects this contextual anchoring of the railroad tracks in (8h); he identifies what she sees as the Boulevard Peripherique. So it looks like deictically used definites do generate familiarity presuppositions; further the satisfaction of the presupposition is accomplished by linking the definite to some object in the nonlinguistic context. Finally, it appears that an upshot of this linking is a mutual belief that both participants in the dialogue are referring to the same object with the description. When this doesn't happen, we get a Correction or some sort of question by the other participants, as Phillippe does in (8h).

Exactly what is the nature of this Anchoring ? It's easy enough to see that it involves some sort of *de re* attitude toward the object, but just saying this doesn't illuminate an important link between Anchoring of a definite in an utterance and the conversational goals of the utterance or of utterances linked to it. Consider

(8e,i) I: Non, en fait, je suis tout an bout de l'avenue Jean Jaurès, après la grande place.

au bout de l'avenue Jean Jaurès is a definite with a novel use. In another context accommodation might suffice, but not here with the particular conversational goals of finding out where Isabelle is. Or perhaps, the location denoted by *the end of the avenue Jean Jaurès* could be bound to some doxastically accessible discourse referent, since Phillippe lived in that neighborhood. But in Phillippe's response to Isabelle (8f.i), he makes it clear that this binding isn't sufficient for him to attain his speech act related goal of knowing where Isabelle is. In order to satisfy his conversational goals he needs a contextual anchoring that will support a *de re* knowledge claim. What would suffice is a binding of the presupposed location to some location that he is familiar with and can locate on his "cognitive map". And in fact this is what Isabelle wants to do too in view of the goal they both have of getting Isabelle unlost.

That Anchoring must be done in order to achieve the conversational goals is also well-attested in the map corpus dialogues (Edinburgh University). I give a sample here.

(10) a. A: Start at the extinct volcano, and go down round the tribal settlement. And then
b. B: Whereabouts is the tribal settlement?
c. A: It's at the bottom. It's to the left of the extinct volcano.
d. B: Right. How far?

e.	A:	Ehm, at the opposite side.
f.	B:	To the opposite side. Is it underneath the rope bridge or to the left.
g.	A:	It's underneath the rope bridge. And then from the tribal settlement go straight up towards the rope bridge and over the rope bridge. Then down three steps and along to above the volcano.
h.	B:	Is down three steps below or above the machete?
i.	A:	Ah. The machete's not on my map.
j.	B:	Oh.
k.	A:	Down three lines.
l.	B:	Right.
m.	A:	And then along as far as the volcano but above it, and stop underneath the collapsed shelter but away from it a bit,
n.	B:	Right.
o.	A:	And go up to about the middle of the map.
p.	B:	The middle of the map.
q.	A:	And stop.
r.	B:	Just slightly above the crevasse?
s.	A:	That's not on my map either. Ehm, go to your left again into about the middle.
t.	B:	I think that would bring me over the crevasse.
u.	A:	Well, it's not on my map.
v.	B:	No? Oh.

In the MAP Task Corpus dialogues, agent *A* is trying to get *B* to a given goal in a game, in which both *A* and *B* have a partially accurate map of the terrain to be traversed. In this dialogue the instructions to move to a particular place can only be carried out once either that place or obstacles to be circumvented have been anchored in an appropriate way to their maps. When this Anchoring doesn't take place, then the agents can't give or carry out directions and they have to settle on another means for conveying directions. The directions can only be carried out once the locations involved are appropriately anchored.

I want to draw several conclusions from the discussion of these examples. First, like other uses of definites, deictically used definites do generate familiarity presuppositions. Second these presuppositions are not accommodated or bound in the way familiar from standard, anaphoric theories of presupposition. But that doesn't mean that we have to throw out the machinery of the anaphoric theory. In fact, the discourse based anaphoric theory of presuppositions is very useful: we can understand contextual anchoring as a special sort of presupposition binding; in fact contextual anchoring is a rhetorical function of the presupposed information in these deictic cases. For the discourse to be felicitous, the presupposition generated by a deictically used definite must be tied to some object in the nonlinguistic context such that the interpreter believes he knows how to identify it or make use of that object for some conversationally salient, discourse purpose. The upshot of such anchoring is a mutual belief between speaker and hearer that they are referring to the same object with the description. When this doesn't happen, we get a Correction or some sort of question by the other participants, as Phillippe does in (8h), and as Isabelle does in (8m).

Phillippes goal is to get *de re* knowledge, to know where Isabelle is. But this goal itself is subservient to another goal namely that of getting Isabelle unlost. Let's assume for now that Phillippe has acquired this goal. and it is this higher goal that

tells us what sort of *de re* knowledge this really is; Phillippe needs to know where Isabelle is so that he can give her directions to get her to her destination. And to give these directions he has to construct a path from Isabelle's present location to her destination and to do that he has to be able to fix the present location (and her destination) on some cognitive map; or perhaps more simply he has to know how himself to get from where she is to where she wants to go. So this *de re* claimis grounded in a plan and finally in a capacity for actin. It's not *knowledge that* that's indicative or even constitutive of *de re* attitude claims; it's knowing how to realize a cerain goal. Boer and Lycan (1986) propose that *de re* knowledge be understood relative to purposes. I take their proposal to be basically correct. But they still analyze *de re* attitudes in light of knowledge that – viz. knowledge of a proposition containing an attributive description. and while this is sometimes the case, it need not be; in the map task it may be the ability to point to a loction or to put an agent in a particular location that constitutes knowledge *de re* of that location. Boer and Lycan are interested in stopping the "regress" of "who is X?" type questions. But in so doing they conflate the issue of *de re* knowledge claims with their justification. *De re* knowledge is just a matter of having access to the object that is sufficient for accomplishing the contextually given goals at hand. The upshot of our proposal for contextual anchoring amounts to the following view of *de re* attitude: there isn't any *absolute de re* knowledge; there's *de re* knowledge relative to various goals that one might have.

3.1 Previous approaches to Contextual Anchoring

The description given of the phenomenon of contextual anchoring of the presuppposi-tions of definites is a quite different picture of deictically used definites than that found in the philosophical and linguistic literature. Here are some approaches that might be useful to combine with the Boer and Lycan analysis of *de re* attitudes I have sketched above.

- contextual evaluations for indexicals and demonstratives (Kaplan 1978)
- value loading (Barwise and Perry 1983)
- DRT's external and internal anchors (e.g., Asher 1986)

Each one of these theories gives us an account of the satisfaction of the definites. Both Kaplan and Barwise and Perry suggest that a definite may be evaluated in the present context or for Barwise and Perry in any "conversationally salient" situation. This "value loading", or "externalist" type of evaluation yields a singular proposition for the sentence containing the definite. Such an account yields a connection between deictically used definites and *de re* attitudes, which seems needed to account for the rhetorical function of such definites. Once an agent accepts such a singular proposition or comes to believe it, he has a *de re* believe.

The problem is that this act of acceptance and the *de re* attitude as an attitude toward a singular proposition doesn't by itself link up easily to the conversational patterns we've already discussed. Consider again the position of Phillippe in (8f.i). Suppose that he accepts Isabelle's assertion whose interpretation yields a singular proposition. By accepting this assertion, he comes to have a belief, in this case a *de re* belief. But on the other hand, we'd like to distinguish this case from the sort of attitude that Phillippe requires in order to satisfy his conversational goals. For instance, in (8i), it's clear from his response that Phillippe *doesn't have access* to that contextual evalua-

tion, which is something that these approaches can't explain. And this lack of access drives his response to Isabelle's assertion, and in particular her use of the definite *au bout de l'avenue Jean Jaurès.*

An alternative, "internalist" approach to singular propositions and the attendant construal of de re attitudes is to look for some internal, cognitive aspect of these attitudes. This is also a familiar idea in philosophy, also made famous by Kaplan – though this time it's Kaplan's (1968) paper 'Quantifying in'. Kaplan's idea was that a de re attitude involves a particular sort of name, a "vivid name", for the object and that name as a constituent of the attitude object. Vivid names for a particular attitude holder are ones that have a lot of information associated with them, perhaps information suficient to identify the object. But, at least on this construal, vividness isn't necessary for some de re knowledge claims. Knowledge who, for instance, is presumbaly a kind of *de re* attitude. So now consider the de re knolwedge involved in knowing who lost the battle of Hastings for the purposes of a history exam. Here the name of a long dead Anglo Saxon king will suffice; what seems important in this case is not the amount of information as the disposal of the possessor of the attitude but the way that information interacts with the conversational goals at hand. The practical activity in the example about King Harold is just being able to supply the correct answer. We could reconstrue vividness in terms of knowing how, but we would still need to supplement this with an account of how this attitude toward the referent of the definite interacts with discourse. And we lack here any connection with accounts of presupposition.

A DRT approach to deictically used definites could make use both of internalist and externalist components. In the terminology of Asher (1986) (see also Kamp 1987), a DRT approach to deictically used definites could make use both of external anchors to simulate the truth conditional effects of singular propositions and of internal anchors that could furnish additional descriptive conditions. The definite would introduce a discourse referent x that would be linked to some object a in the context via an external anchor, which would ensure that the satisfaction of the discourse representation must proceed by assigning a to x. Additionally, the binding of the presupposition generated by the definite could take place via an internal anchoring of x to some discourse referent in a representation that is part of the agent's cognitive state. Such internal anchors link the interpretation of one discourse referent x in one representation R_1 to the interpretation of another discourse referent y in another representation R_2; more precisely, we say that a pair of assignments f, g satisfies R_1 and R_2 respectively given an internal anchor between x and y iff f(x) = g(y). Unlike the value loading accounts, this approach focuses on the cognitive aspect of these contextual anchorings.

DRT approaches also give us an anaphoric account of presuppositions. Roughly, a definite description introduces a presuppositional component into the discourse representation in which a discourse referent is introduced along with the properties that are given by the description. This discourse referent must be linked to some other discourse referent in the context, unless the presupposition is to be accommodated. We can now postulate that the discourse referent introduced by presupposition generated by the deictically used definite binds via an internal anchor to some discourse referent in the interpreter's cognitive state. Nevertheless, a DRT approach says little about the sort of knowing how that we've seen is important in the examples. The uses of definites in these dialogues establish that it's the cognitive access for certain purposes that are crucial for *de re* attitude claim. Like Kaplan's own picture of de re knowledge in quantifying in, DRT's conception of internal anchoring lacks any tie to practical plans; in fact there aren't any constraints on internal anchors whatsover, which might well

accord with our intuitions about beliefs of a certain kind (footnote Jeshion here) but which doesn't capture the particular sense of de re attitude at issue here. The proposal I've just developed as it stands is still just binding, albeit to a belief context rather than a discourse context. We need some story here of familiarity that goes beyond binding. We need an account in which, e.g., the variable associated with Isabelle's location is linked to some cognitively accessible discourse referent in a way that allows Phillippe to accomplish his conversational goals.

Let's see how this might be cashed out in terms of the examples in the dialogues. The thesis about de re knowledge claims goes hand in hand with a goal relative notion of contextual anchoring. Fleshing out this idea is what I turn to now. I'll elaborate a theory of presupposition and of the logical form of presupposition triggers (though not too much hangs on this) which allows a wide variety of presupposition bindings. I'll also say something about how this account interacts with a theory of cognitive modelling. I'll then return to these contextual anchorings.

4. SDRT's account of presupposition

I turn now to see how to analyze anchoring uses of definites within the anaphoric account of presuppositions of Asher and Lascarides (1998a, 1998b). I nee, however, to give a few more details of the account than I did earlier. In this account presuppositions are, like assertions, units of information that must be integrated into the discourse context. A unit of information, however, can be integrated into the discourse context in different ways, ways which correspond to the rhetorical function of that unit of information. Accordingly this leads us to a more complex notion of a discourse structure than that present say in DRT. A discourse structure is a pair (A, F), where:

- A is a set of labels
- Φ is a set of formulas representing clauses and relations on labels (between clauses)
- $F : A \rightarrow \Phi$

We'll express the effects of F on A via the notation $\pi : K$.

While both assertions and presuppositions must be integrated to the discourse context, presuppositions must be linked via particular discourse relations. Asher and Lascarides (1998b) isolated two, Background and Defeasible Consequence. While there is no accommodation *per se* in this framework since the attachment of presuppositions is just part and parcel of building a discourse structure, the cases of accommodation in the literature correspond to linking the presupposition via the relation of Background. Defeasible Consequence generalizes the propositional binding relation in van der Sandt and Geurts, while Background imposes thematic constraints that the notion of accommodation lacks. Background(p, q) holds iff q and p entail a common topic and q specifies properties of elements in p that set the stage for or serve as an explanation for some event described in p or in some proposition linked to p $(\neq q)$.

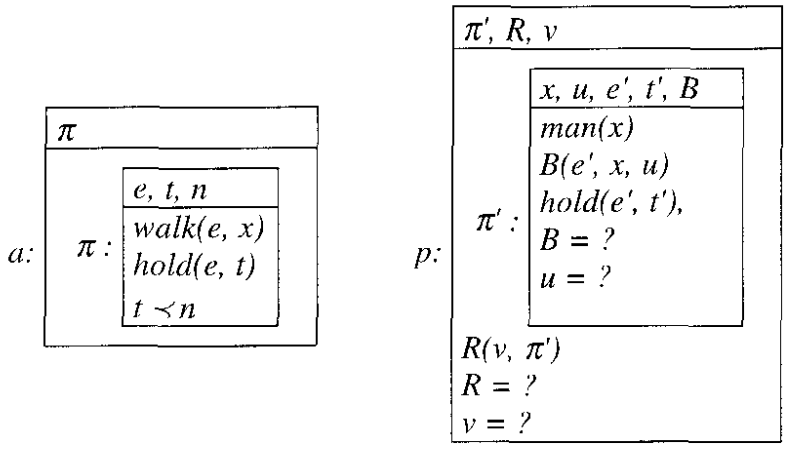
As discussed in the introduction, presuppositions are understood as containing incomplete or underspecified elements. This is particularly true in the case of the presuppositions of definites. In discussing earlier examples, I alluded to an innovation of the SDRT view that incorporates an underspecified bridging relation B in the presup-

position of a definite. The representations of presuppositions underspecify the discourse relation by which they attach to the discourse context and the other term of that relation; as such they are explicitly anaphoric elements whose proper interpretation must resolve all of these underspecifications – i.e. find appropriate specifications for these underspecifications.

Here's an example of how a presupposition and an assertion would be analyzed in SDRT. The asserted component is labelled with a, the presupposed part with p. The asserted part produces a labelled SDRS for for the asserted content of a clause; another SDRS – viz.(11b), the "p" part – with speech act discourse referent π', and condition π' : $K_{\pi'}$ for the presupposed content of this clause, where $K_{\pi'}$ will be the DRS discourse constituent that represents the presupposition.

(11) The man walked.

(11')



In the SDRS above, the man denoted by the definite must be (bridging) related to an antecedent object (so (11) couldn't be uttered in a null context). Further, the presupposition must be bound to the context via a rhetorical relation. While both presuppositions and assertions must get integrated into the context, they do so in different ways. Presuppositions link typically with either Defeasible Consequence or Background. We'll add here the relation of Anchoring as another relation that presuppositions can bear to other elements in the discourse structure. When the components above are attached to the discourse context and the various specifications of underspecified conditions are effected (as far as possible), then we have an update of the discourse context with the information given by (11). Following Asher and Lascarides (1998b), I'll represent update by a three place relation involving the discourse context, the new information and a "resulting" SDRS that integrates the new information into the discourse context.

In the introduction, I also mentioned that SDRT incorporates a principle of resolving B to identity whenever feasible, thus capturing the preference for binding that is a feature anaphoric theories of presupposition. This accounts for the simple cases of binding in

(12) Whenever I see a book in a bookstore that I like, I try to buy the book.

We can formalize this principle as follows:

- If Possible Use Identity:
  $(K_\beta [B = ?] \wedge \downarrow Update(K_\tau, K_\alpha, K_\beta [B/\lambda x \lambda y x = y])) \rightarrow \langle \tau, \alpha, \beta [B/\lambda x \lambda y x = y] \rangle$

This constraint says that as long as setting the bridging relation to identity is well defined $\downarrow$, then the update of the discourse context with K fi will set B to identity.

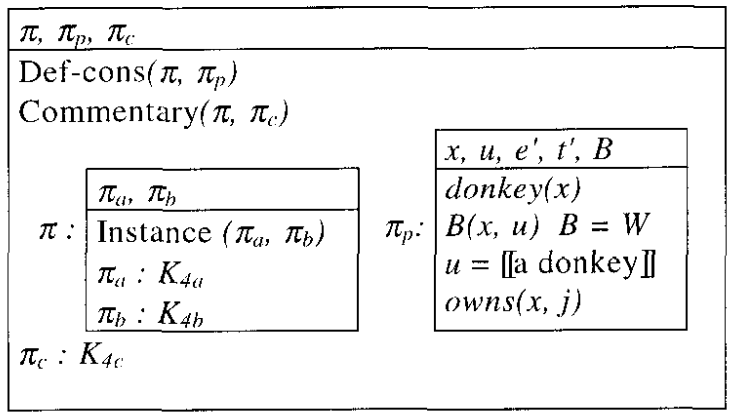
As we saw in (1) or (2), sometimes we cannot resolve B to identity. In that case whathappens? When we try to resolve the bridging relation to something other than identity, we do so in a way that maximizes dis- course coherence. Since the update relation is nondeterministic, there are often many ways new information can be integrated into a discourse con- text. Sometimes the resolu tion of underspecified elements as in (1) will determine how the new information attaches to the discourse context. Some of these ways provide for a more coherent discourse than not. Attachment and resolution of underspecified elements always tries to maximize discourse coherence. And to give this constraint some bite, I specify some things about the preference order $\succ$ on discourse structures:

- More specified, well typed SDRSs are always preferred to SDRSs with less specification - $\tau \rightarrow_* \tau' \rightarrow \tau' \succ \tau$.
- SDRSs that violate type restrictions are less preferred than those that don't violate such restrictions.
- defeasible consequence $\succ$ background for presupposed material.
- background with a more specific topic $\succ$ background with a less specific topic.
- where speech act related goals or SARGs can be inferred from Cognitive Modeling, a discourse structure that is more likely to lead to SARG satisfaction is more coherent than one that is not likely to lead to SARG satisfaction.

All of these constraints on $\succ$ require probably more explanation than I can give here. The first constraint just says that if an SDRS with fewer underspecifications where no type constraints on predicates are violated is to be preferred to an underspecified SDRS. The second constraint says that anytime a type restriction is violated that SDRS is less preferred to other SDRSs where the type restriction is not violated. The third constraint says that some discourse relations between presupposed material and the discourse context like defeasible consequence are to be preferred over a relation of background between the presupposed material and the discourse context (thus encoding an anaphoric theory of presupposition's preference for binding over accommodation). The fourth constraint tells us that the tighter the connection between the background material and the foreground material, the better the discourse coherence between those two segments, as a tighter connection between background and foreground will allow for a narrower, or more specific, topic. Thus, in an example like (1) maximizing discourse coherence or MDC will prefer those SDRSs where the bridging relation in the presupposition of the definite is set to some relation other than identity since setting the relation to identity would require the identification of a couple with a woman, which violates type restrictions. But further setting the bridging relation to be "a member of" is preferred on several counts: it specifies the underspecified relation and it also gives rise to a Background relation with a more specific topic than would be otherwise possible. For the inferential binding cases like (4), MDC will specify the bridging relation to the

witness relation as we described earlier, because that will allow us to attach the presupposition with the relation of defeasible consequence to the SDRS consisting of the first two sentences of (4), and that is preferred to any option on which the presupposition is not so attached. Below I give a picture of how the specifications would go. Def-cons is the relation of Defeasible Consequence, Commentary is another relation in which the speaker of the second constituent expresses an attitude toward some element in the first constituent.

(13)



That leaves our last constraint on $\succ$ for discussion It has to do with cognitive modelling, the part of our story that I turn to next.

4.1. Cognitive Modeling

As we've seen anchoring requires linking an epistemic attitude to conversational goals. Thus, we need to be able to infer conversational goals from conversational patterns. In other work (Asher and Lascarides 1998, Asher 1999), Lascarides and I have co opted some of the insights of Gricean pragmatics and speech act theory to link speech act related goals or SARGs to discourse structure. On our view, the rhetorical relations in dialogue bring considerations about why participants ask, elaborate, request, assert and respond to what is said. In turn such SARGs help elucidate and further constrain discourse structure. In order to formulate a precise notion of anchoring for deictically used definites, I will give some of the principles for discovering SARGs in that component of SDRT that supplies a rough cognitive model of discourse participants.

A second feature of anchoring is that once the anchoring function of a deictically used definite is accepted by the interpreter, it appears that speaker and hearer mutually believe that the definite picks out the same object. Given that we have adopted a largely internalist view of the de re attitude involved in anchoring and that the way dynamic semantics models attitudes has nothing to say about knowing how, I'll show how such mutual belief can be derived from axioms having to do with the beliefs of the participants.

Cognitive modelling in SDRT follows the basic BDI approach in which we have modal operators for belief (K45) (B) and intention (I) (KD)s, and a mutual belief operator MB_G, for any group G with the usual axiomatization.We'll assume distributivity of B and I over $>$, as well as the K axiom. I'll suppose that $B_A p_\pi$, corresponds to A believing the proposition content represented in the SDRS K_π. It is assumed in SDRT that whenever an agent intends something, he does not already believe that it is true:

$I_{A\varphi} \rightarrow \neg B_{A\varphi}$. Goals are propositions that one intends (a simplification but good enough for our purposes here). I'll start with the simple Grice like axioms for belief modelling. The first axiom allows us to infer beliefs from assertions.

- Sincerity: $R(\alpha, \beta) > \mathrm{Bel}_{\mathrm{Agent}(\beta)} R(\alpha, \beta)$

A second default, competence, transfers the beliefs of one agent to another, while the constraint on acceptance gets us from acceptances to beliefs about what others have said.

- Competence: $B_A \Phi > B_B \Phi$
- Constraint on Acceptance: $\mathrm{Accepts}(\alpha, \beta) > MB_{\mathrm{Agent}(\beta)}\alpha$

Let's now turn to the inference of SARGs. Inferences concerning SARGs also revolve around a Gricean notion of cooperativity. One agent B is cooperative with another agent A if he adopts A's goals. According to this, B will try to realize A's goals in so doing help A. This can be only a default, because there may be many times when B has conflicting goals with respect to A. So, a second level to cooperativity is to indicate if the speaker does not share the conversational goals of the other participant. These principles are expressed by the following axiom:

- Cooperativity:
  (a) $I_A(\Phi) > I_B(\Phi)$
  (b) $I_A(\Phi) \wedge \neg I_B(\Phi 0) > I_B B_A \neg I_B(\Phi)$

Cooperativity doesn't tell us what an agent's goals might be in dialogue, because it may not be possible to infer an agent's goals from what he says. This is where particular linguistic axioms like QRG and RRG come in.

- Question Related Goals (QRG):
  $\mathrm{QAP}(\alpha, \beta) > (I_{\mathrm{agent}(\alpha)} B_{\mathrm{agent}(\alpha)} \beta)$

This axiom states: if β is the answer to the question α, then normally the agent or speaker of ff intends to be in a certain state in which β is true. This axiom applies whenever an agent asks a question. A similar axiom holds for requests.

- Request Related Goals (RRG):
  $\alpha :! > I_{Agent(\alpha)} a$

SARGs for assertions are more difficult to capture. We'll assume that knowledge relevant to connecting the content of assertions, which we'll assume here to be sincere, to their conventionally associated SARGs can be accessed by the linguistic system. Finally, we'll assume that if we compute a SARG via Cooperativity or RRG or QRG, then if the agent's speech act has both a presuppositional and an assertional component, the SARG computed applies to both.

One final matter is that in SDRT questions can elaborate on other questions or requests. We see this in (8b) already where Phillippe's question is intended to help

elaborate a plan already implicit in Isabelle's opening (8a). We call the rhetorical relation that (8b) stands in to (8a) Question Elaboration or Q-Elab (see Asher 1999, Asher and Lascarides 1998c). If we have a Q-elab, then the SARGs of the second question include the SARGs of the first. Formally, we express this as:

- SARG additivity:
  $(\text{Q-elab}(\alpha, \beta) \wedge \text{SARG}(\alpha, \delta)) \rightarrow \text{SARG}(\beta, \delta)$

This ensures that Q-elab SARGs are carried along as discourse participants try to answer the original question by asking other questions. We'll group the SARGs that are accumulated through nested Q-elabs within a cluster.

5. Conversational Goals and *De Re* Attitudes

We have most of the parts in place for our presuppositional account of contextual anchoring. We needed an account of conversational goals, and we have just seen ways of getting SARGs from various conversational moves.We determined earlier from looking at our examples that these conversational goals were essential in determining the de re attitudes that are part of contextual anchoring. Further, I argued that these de re attitudes were really grounded not in an attitude toward a proposition but in an ability. I'll try to be more precise about what this ability consists in now using the devices available to a theory like SDRT. That means giving some analysis of this practical capacity in terms of a broadly DRT-theoretic account of belief.

Let's return first to the turn (8e-f). Isabelle first corrects her previous turn and then tries to answer Phillippe's question in (8b). Isabelle uses a deictically used definite, 'the end of the avenue Jean Jaurès' in her answer, that Isabelle further localizes with reference to 'the big square' (la grande place). What is the discourse relation between the presupposition of the definite and the discourse context? Presumably, the presupposition is to anchor the assertion. Interestingly, Isabelle goes on to elaborate on this location where she is, and the point of this elaboration in (8e.ii) is ostensibly to help establish the Anchoring relation between the presupposition of the definite and the discourse context.

To appreciate the cognitive effects of Anchoring, let's see what happens if the discourse move by Isabelle which includes the anchoring is accepted by Phillippe. If this Anchoring relation is accepted by Phillippe, it has a certain implication: that Phillippe will be able to determine which location Isabelle describes. Moreover, Phillippe's knowing where Isabelle is is the SARG derived from (8b) via QRG. By SARG additivity this remains a SARG through (8d).[3] By Cooperativity Isabelle takes over this SARG and she is trying to satisfy that SARG with her utterance of (8e). Were (8e) to be accepted, she would have satisfied that SARG and perhaps also the associated SARG of getting her unlost. In (8f), however, Phillippe doesn't accept the Anchoring relation, which is why he asks "Wait a minute, I don't quite see where you are."

So accepting an Anchoring relation between the presupposition introduced by a definite ψ and some element in the discourse context by an agent A requires a

[3] Actually, in SDRT theoretic terms, (8d) attaches to (8b) via Question Elaboration or Q-elab, which automatically propagates the SARG of the first question forward, but I'll gloss over the details of this part of the discourse structure here.

computable means of getting to the referent of ψ from the present *here* and *now*, the present nonlinguistic context of utterance, for some given purpose φ. To this end, I define a Path relation on discourse referents x, which is introduced by the presuppositional component of the definite's DR-theoretic lexical entry and $u_1, \ldots, u_n$ relative to a SARG φ and its associated cluster, P_φ (A, x, $u_1, \ldots, u_n$). This relation holds iff

- $u_1, \ldots, u_n$ are accessible in A's belief state and some of the $u_1, \ldots, u_n$ are externally anchored to distinguishable objects in the present context (e.g., the *here* and *now*).
- there is a collection of formulas T ($u_1, \ldots, u_n$) characterizing correct beliefs of A concerning $u_1, \ldots, u_n$ such that A has a proof from T ($u_1, \ldots, u_n$) that φ.

Thus Anchoring as a discourse relation between a presupposition introduced by a definite and some other element in the discourse context in the SDRS for an agent A entails that the Agent can satisfy a current SARG that he has. The connection to a particular de re attitude grounded in an ability comes about because in many, and perhaps in all cases, the SARG that needs to be satisfied specifies a *de re* attitude (as in our dialogue examples) or requires for its satisfaction a *de re* attitude that is itself grounded in an ability. That is, satisfying a SARG may often involve a practical ability in addition to beliefs towards attitudes.

Spelling out the entailment without specifying the SARG further seems difficult. On the other hand, in the case of knowledge where, which is what is at issue in the examples culled from the dialogues (8) and (10), we can be more specific. In such cases the path formula could plausibly involve a sequence of locations $l_1 \ldots l_n$, such that T and l_1 have the following features:

- formulas of the form $C(l_i, l_{i+1})$ for $1 \leq i \leq n$, where C is the relation of Connectedness.
- T determines distance and orientation information for each l_i and with respect to l_{i-1} and l_{i+1} and
- the initial location l_1 is an accissible point in the present non-linguist context.

The idea is that if the dialogue agent whose SDRS contains an Anchoring relation and the associated goal is knowing where someone is, then the agent should be in possession of information that will allow him to compute a path, a sequence of connected locations that will get him from his present surroundings to the location denoted by the definite. Or if the SARG is a slightly more complex type of knowing where – say the goal is to know where something a is relative to some other location l, then the agent must be in possession of a path from the location of a to l.

With this in mind, let's once again go back to the exchange in (8ef). Phillippe doesn't accept the Anchoring relation. Why? Well, it's manifestly because even though Phillippe presumably knows what the end of ave. Jean Jaurès is, he doesn't know *where* she is. In this case the demands of his SARG to know where she is, can only be satisfied if he can bind the definite to a spatially determinable object from the present context – i.e. have his belief structure satisfy a path condition between where Isabelle is and his current context, or perhaps where she needs to go. As his response makes evident, he cannot.

Other examples from our dialogues bear out the usefulness of thinking in terms of T as determining a path. In (10) speaker A uses definites that he can link to elements in hisenvironment and intends to have B link to elements in his immediate context (the map). A has presumably already linked the discourse referents via a Path condition. B stops the flow of instructions when he cannot determine a Path relation. The Path condition is really a constraint on a dialogue agent's attitudes. Path binding is a type of internal anchor in DRT. But what is distinctive about it is its link to practical activities as defined by the discourse and by SARGs.

6. Contextual Anchoring as Discourse Function

We have now seen how Anchoring as a discourse function has entailments concerning *de re* abilities. What remains to be done is to specify how we might infer Anchoring as a discourse relation and to specify formally the relationship between the discourse structure and the cognitive constraints. This will be done through a pair of axioms written in the SDRT format.

Like other discourse relations, Anchoring can also specify the underspecified bridging relation in the presupposed information. Given our informal analysis, we might think that Anchoring should somehow specify the bridging relation to a path relation. Here as with inferential binding, there is a downward flow from the global discourse structure and its associated cognitive model to resolving certain underspecifications needed in the binding of presuppositions.

In those examples of inferential binding, however, the bridging relation cannot be set to identity without violating type restrictions. Here the situation appears to be different. Consider the exchange in (8g-h). Isabelle tentatively accepts (8g). She uses a Path condition to bind the railroad tracks to something in her immediate surroundings. The path sequence has length 1, and she has information about the direction and distance that makes it more likely that her current SARGs will be satisfied: the SARGs are that Phillippe know whether Isabelle has passed under the railroad tracks (inferred via QRG as a SARG for Phillippe and then as a SARG for Isabelle via Cooperativity), that Phillippe know where Isabelle is and that Isabelle find her way (inferred via QRG, Cooperativity, SARG additivity). But she's not sure, so she tells Phillippe what the head of the Path sequence is in (8h).

Now how does the Path condition interact with the specification of the bridging relation? Given the instructions given earlier by Phillippe to Isabelle, it's easy enough for Isabelle to set the bridging relation to identity. This would be sufficient to bind the presupposition via Background to the asserted constituent or to Background's topic. But this won't achieve Phillippe's SARG, which is determined by his question – namely, this is the SARG of knowing whether Isabelle passed under the railroad tracks he told her about. Further, we can assume that Isabelle also has the SARGthat Phillippe know whether she went under the railroad tracks or not. This follows from QRG and Cooperativity: QRG tells us that Phillippe has as a SARGthat he know the answer to his question; Cooperativity transfers this SARG from Phillippe to Isabelle.

In order to satisfy this common SARG, Isabelle has to do two things; she does indeed have to link the railroad tracks mentioned to those given in Phillippe's instructions, and she has to bind the location of that bridge to some location in her journey or where she is now. And if this analysis is right, then we need both to have Anchoring determine a Path condition while also allowing in the relevant cases the

bridging relation to be set to identity. This would result in the most coherent discourse structure according to MDC because it leads to a satisfaction of a given SARG and it is also the one mandated by If Possible Use Identity. So it appears that whenever setting the bridging relation to a Path relation would help achieve some recognizable SARG, we infer Anchoring as a discourse relation; and in turn Anchoring then determines the existence of a Path condition relation. But an inference to an Anchoring relation doesn't clash with the principle of setting the bridging relation to identity If Possible Use Identity; rather it complements it.

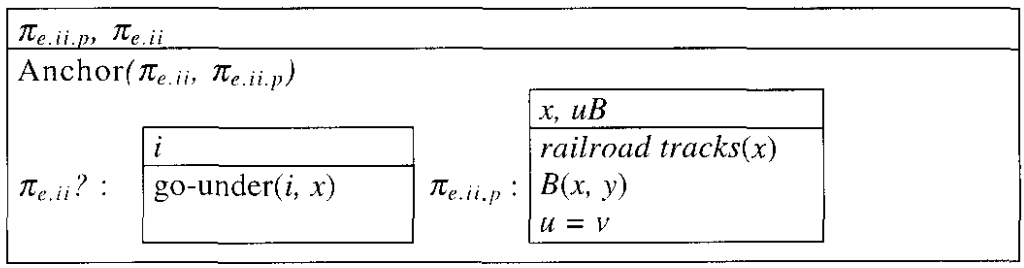
I have formalized this using the underlying nonmonotonic logic of SDRT. We infer Anchoring by default whenever resolving B to a path relation would normally allow the agents involved to see to it that (formalized via the operator stit) their SARGs are realized. Below we use $[B = ?](\beta)$ to mean that K_β has the underspecified conditions B = ?.

- Anchoring:
  $\{\langle \tau, \alpha, \beta\rangle \wedge \text{Sarg}(\beta, \phi) \wedge [\text{B} = ?]\ (\beta) \wedge (K_\beta\,[B \rightarrow_* P_\phi] \rightarrow \Diamond\ \text{stit}(\text{agent}\ (\beta), \phi))\} >$
  $\text{Anchor}(\alpha, \beta)$

- Constraint on Anchoring:
  $(\text{Anchor}\ (\alpha, \beta) \wedge [B\ (x, y)](\beta) \wedge \text{Sarg}(\alpha, \beta)) \rightarrow$
  $(K_\alpha \wedge K_\beta \wedge (B_A\,\text{Anchor}(\alpha, \beta) \rightarrow [\text{v}^{\rightarrow}|\ \text{Path}_\phi(a, x, \text{v}^{\rightarrow})]))$

The constraint on anchoring says that an anchoring relation entails that its terms must be true propositions and further that if an agent believes Anchor(α; β), then the Path condition must be satisfied by agent A. Let's now see how this axiom works. Let's go back to (8g) and its context once again. Isabelle first processes Phillippe's question. She isolates out the presupposition of the definite *la voie ferrée* in a constituent $K_{e,ii,p}$ and the assertion $K_{e,ii}$. Given what we have said earlier about cooperativity, she attemptsto cooperate with Phillippe's SARG of knowing the answer to this question and she does her best to tell him. But in order to give him an answer, she has to be able to anchor the presupposition and thus satisfy a Path condition linking the bridge to some element in her trajectory, which I assume can be reconstructed from her *here and now*, or in her *here and now* itself. So Isabelle's SDRS looks something like this, if we ignore the processing of definites like Phillippe and you and the manner adverbial clause:

(8e.ii)



In the above, *v* is the discourse referent for the railroad tracks introduced in Phillippe's previous instructions and one that is presumably now cognitively accessible in Isabelle's cognitive state The bridging relation has been set to identity between x and v. u is some discourse referent in Isabelle's cognitive state that is an internally anchor for the presupposed material. And it is in virtue of u that the Path condition is satisfied.

But Isabelle is not sure whether the Path condition has been satisfied. So she attempts to clarify or elaborate on what the putative Path condition is that she has found for x. In SDRT we model this rhetorical function by attaching (8g) to $\pi_{e.ii.p}$ with the discourse relation Elaboration (for details on this relation see Asher 1993, Lascarides and Asher 1993). This Elaboration also constitutes an indirect answer (Asher and Lascarides 1998a) to the question in ß e.ii , and it is precisely this Elaboration and indirect answer that Phillippe rejects in (8h).

Let's see how our approach fares with discourse initial deictic definites. Consider the initial turn (10a) where A mentions the tribal settlement. Here there is presumably no discourse referent already introduced in the discourse that could serve as a link, and so resolving the bridging relation to identity in this case is not possible. We'll assume that B is able to anchor the presupposition generated by *the extinct volcano*, but as his question demonstrates, he is not able presumably to determine a Path condition for the discourse referent x introduced by *the tribal settlement*. So presumably the question in (10b) is intended to help get an appropriate Path condition for x and once that question is answered B can anchor the presupposition to the asserted content of (10a). In this case since 'If Possible Use Identity' because this axiom cannot be used, MDC resolves the Bridging relation to the Path condition, once the Anchor relation is established.

7. From Acknowledging Path Binding to Mutual Belief

A final element in the analysis of anchoring is to account for the fact that when an Anchoring function has been acknowledged, the two participants in the conversation have the mutual belief that the Path relations link to the same location. This comes about after the interpreter accepts an Anchoring relation proferred by the speaker; this means that the Path condition is satisfied not only by the speaker but the interpreter as well. Because the Path relation must be satisfied by both the speaker's and the hearer's beliefs if Anchoring, we say that Anchoring is a kind of coordination.

How do we acquire mutual belief in communication? Due to Fisher (1988) we know that if communication is synchronous, then mutual belief can be had. Suppose there is enough simultanous exchange of information to have it qualify as synchronous. This is in fact encoded in our constraint on agreement: a signal of agreement to a previous contribution in which a discourse structure like Anchoring holds gets us to a mutual belief that the presupposed material is serving as an Anchor. Now consider any of the conversational turns where an Anchoring relation is proposed and then accepted (e.g., 10c-d).

(10) c. A: It's at the bottom. It's to the left of the a e extinct volcano.
d. B: Right. How far?

By sincerity we have that *A* attaches the presupposed material given by *the extinct volcano* with Anchoring to his turn. By signaling an agreement with *Right B* also adopts this discourse structure for A's turn. We can now conclude given our assumptions that there is mutual belief in this discourse structure (and that if you will we have that discourse structure in the common ground). But now how to we get to that mutual belief that both path bindings link to the same object? How do we even represent this fact? We can relatively easily answer the latter question: among the beliefs of a dialogue agent *A* are also beliefs about other dialogue participants–let's say for the

moment just B. Given that there is a shared belief that both participants have a path binding (from Anchoring), A can internally anchor the last discourse referent u of B's Path condition as in Asher (1986) or more recent work of Kamp. Here I'm going to use the older notation and represent internal anchors as equalities within the embedded belief context. So we'll represent this internal anchoring for A as an equality $x_A = x_B$ in A's representation of B's belief state and similarly for B. In effect this says that B's beliefs about x_B are also in effect a belief about A's individual concept.

We'll suppose that Anchoring has been proposed and accepted as in (10cd). So it's mutually believed that each agent's cognitive state satisfies the Path condition for the discourse referent introduced by the presupposition of the definite. This means:

- Assume A represents B's cognitive state as having a formula $\phi(x_B)$ in it for the definite while his own has $\phi'(x_A)$.
- $\mathcal{B}_A\mathcal{B}_B\phi(x_B) \wedge \mathcal{B}_A\phi(x_A)$.
- By competence we have $\mathcal{B}_A(\mathcal{B}_B\phi(x_B) > \mathcal{B}_A\phi(x_B))$.
- By distributivity of belief over > and DMP: $\mathcal{B}_A\mathcal{B}_B\phi(x_B)$, which then in K45 yields
- $\mathcal{B}_A\phi(x_B)$, and so by K
- $\mathcal{B}_A(\phi(x_B) \wedge \phi'(x_A))$.
  And since ϕ entails a uniqueness clause, first order logic yields:
- $\mathcal{B}_A x_A = x_B$
- Since this is derived from mutually believed information, B can pursue the same reasoning and reason that A has also done this reasoning. Hence by our jump to the mutual belief axiom, we get
- $M\mathcal{B}_{A,B}x_A = x_B$

That seems to me to suffice for internal anchoring however it's represented. Notice that postulating this equality in A's belief state leads to no binding problems because A supposes through competence that there is an x_B of which B has his beliefs.

8. Conclusions

I've shown that a discourse based, anaphoric theory of presupposition has an interesting story to tell about at least some deictic uses of definites. In many of these uses presuppositions are anaphorically bound to the discourse context via a particular discourse relation, Anchoring, whose semantics and conversational function is directly linked to the participant's conversational goals. Anchoring entails a *de re* attitude, but it is one that is linked to an increased capacity for satisfying at least some conversational goals. Our investigation has confirmed the view that *de re* attitudes involve some sort of knowing how. We have seen how Anchoring, when accepted by all participants, leads to a mutual belief in coordinated reference – viz. that all the particpants are referring to

the same thing and can single it out at least insofar as that's required for conversational purposes. SDRT gave us the framework within which to analyze the discourse function of these uses of definites, and the modest set of defaults that SDRT uses in developing a theory of conversational goals or SARGs was helpful in deducing SARGs for the Anchoring analysis.

Further tasks: Presumably definites outside the context of spatial localization dialogues can also be Anchored. So one idea for further research is to see how to extend this analysis to other definites – deictically used pronouns and the like. Moreover, it seems that almost all words have presupposition like associated information whose failure to be anchored (bound) lead to similar corrections as those we've studied here. Consider these metalinguistic bits of anchoring information in the examples below due to Ginzburg that are called into question by B's responses.

(14) a. A: John kowtowed.
b. B: Kowtowed?

(15) a. A: Chris inebriated Pat.
b. B: Inebriated?

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About the Whereabouts of Indefinites*

Werner Frey
Zentrum für Allgemeine Sprachwissenschaft, Berlin
frey@zas.gwz-berlin.de

The paper characterizes three different domains in the German middle field which are relevant for the interpretation of an indefinite. It is argued that the so-called 'strong' reading of an indefinite is the basic one and that the 'weak' reading needs special licensing which is mirrored by certain syntactic requirements. Some popular claims about the relation between the position and the interpretation of indefinites as well as some claims about scrambling are discussed and rejected. From the findings also follows that the strong reading of an indefinite is independent of its information status.

Introduction

That the interpretation of an indefinite depends on its environment has received the attention of linguists for quite some time. This variability of indefinites is of great interest because many important issues arise: the design of the syntax-semantics mapping, the function of scrambling, the influence of information structure on syntax and semantics, and the influence of prosodic phrasing on the position and the meaning of indefinites.

In the following, I would like to discuss some of the claims found in the literature. I will confront them mainly with the behavior of bare plurals in the middle field of the German clause, the realm of scrambling. Although German belongs to the languages which have already been widely discussed with respect to the behavior of indefinites, there are still a lot of data which might further stimulate the discussion. I will try to account for some of them with a proposal of my own.

1. Where strong indefinites can be situated

Diesing (1992) considered examples like the following:

(1) a. weil ja doch Kinder auf der Straße spielen
since PRT PRT children on the street play
'since children do play on the street'
b. weil Kinder ja doch auf der Straße spielen

According to Diesing, the subject of (1a) gets an existential interpretation, whereas the subject of (1b) is interpreted generically. Diesing adopted the DRT view of indefinites

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(Kamp 1981): Indefinites do not have quantificational force of their own; rather the variable introduced by an indefinite has to be bound by another element of the structure. Diesing took modal particles like *ja doch* as indicators of the VP boundary. To capture the difference in meaning between examples like in (1), Diesing formulated her famous mapping hypothesis for the relation between syntax and semantics:

(2) a. Material situated in the VP will be mapped into the nuclear scope (i.e. into the domain of 'existential closure').
b. Material outside VP will be mapped into the restriction of a quantificational structure.

The mapping in (2) is supposed to apply on LF. However, according to Diesing, the S-structure positions of indefinites in the German clausal middle field already correspond to their positions on LF. Therefore, with regard to the middle field, the mapping in (2) operates on S-structure. In (1a) the indefinite stays inside the VP. According to (2a), it is interpreted existentially. In (1b), on the other hand, given Diesing's assumptions, the bare plural is outside the VP. (2b) says that it has to be mapped into the restrictive clause of a quantificational structure. According to Diesing, such a quantificational structure may arise from an implicit generic operator. This is the case in (1b), and the indefinite gets a generic reading.

According to (2), every indefinite inside the VP gets an existential reading. The existential reading is often called 'weak reading'. All the other readings are called 'strong'. The generic reading of (1b) is one of the strong readings. Other strong readings are exemplified in (3) :

(3) a. da zwei Linguisten ja doch etwas dagegen hatten
since two linguists PRT PRT something against have
'since two of the linguists had something against it'
b. weil ein Artikel von Otto ja doch bald erscheinen wird
because an article by O. PRT PRT soon appear will
'because an article by O. will soon appear'

The indefinite in (3a) is understood partitively, i.e. the sentence talks about two linguists belonging to a contextually given set. The indefinite in (3b) has a specific reading, i.e. the speaker has a certain article by Otto in mind.

That Diesing considers each of the examples in (1) as unambiguous is crucial for her approach. However, this assumption is problematic. Although an example like (1b) has in fact only the generic reading, the sentence in (1a) is actually ambiguous (cf. e.g. Haider & Rosengren 1998, Frey & Pittner 1998). It has an existential and a generic reading. The same is true for the following examples:

(4) a. weil Otto ja doch Fußballübertragungen anschaut
because O. PRT PRT soccer broadcasts watches
b weil hier wer Bücher über Wissenschaftler kauft
because here someone books about scientists buys
c. weil Abgeordnete Ostförderprogramme ablehnten
because deputies support programs for East Germany rejected

The objects in (4) can have a generic or an existential reading. In these examples the two readings are differentiated by different intonations (cf. Büring 2001). The generic reading is forced by stressing the object and the predicate, the existential reading is the result of stressing the object only. However, in (1a) and in the following example the different readings of the subjects are available under the same intonation:

(5) da ja doch junge Frauen diese SENDung angeschaut haben
since PRT young women this broadcast watched have

This shows that it is not the intonation itself which differentiates the generic and the existential reading of indefinites. That in (4) the two readings of the sentences are associated with different intonations is because a generic phrase can not be a focus exponent but an existential one can.[1] Thus, if an object in (4) is generically interpreted it can not be the constituent with primary accent.

Note that (4b, c) show that a generic bare plural may stay inside the VP independently of Diesing's assumption about the position of modal particles. The subject of (4b) is an indefinite wh-pronoun. Such an element cannot be scrambled (e.g. Haider 1993). Since the subject stays in its base position, the following object certainly is inside the VP. The preferred reading of the subject in (4c) is the existential reading. Thus, according to Diesing, it is situated inside the VP. It follows that the object must be in the VP as well although it can be interpreted generically.[2]

Other strong readings are also possible for an indefinite which is situated in the VP:

(6) a. Hans möchte heute wem einen Artikel zeigen (und zwar seinen ersten in Phonologie) *(specific)*
H. wants today s.o. an article show (namely his first in phonology)

b. weil wer zwei Linguisten in seinem Haus beherbergt *(partitive)*
because s.o. two linguists in his house accommodates

In (6a) the speaker has a certain article written by Hans in mind. (6b) may talk about two linguists who belong to a given set.

The data considered so far show that (2b) has to be rejected. Instead the following holds in German:

(7) An indefinite NP in its base position can get a strong reading.

The same is true for Dutch, another scrambling language, cf. de Hoop (1992).

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[1] Neither can a universally quantified NP be a focus exponent (cf. (ia)); however, a definite NP can play this role (cf. (ib) or (5)):

(i) a. Heute hat Otto jedes HEMD gebügelt *(only narrow focus)*
Today has O. every shirt ironed

b. Heute hat Otto sein blaues HEMD gebügelt *(wide focus possible)*
Today has O. his blue shirt ironed

[2] These data are also problematic for approaches like Tsai (2001), where the strong reading of an indefinite is always the result of interpreting a copy in a movement chain of the indefinite which is outside the domain of existential closure.

2. The domain of the weak reading

The possibility of a weak reading of an indefinite in the middle field is restricted:

(8) *weil die Polizei Linguisten gestern verhaftet hat *(weak reading)*
because the police linguists yesterday arrested has

The indefinite in (8) is situated in front of a temporal adverbial. In this position it cannot get an existential interpretation.

However, there are adverbials in front of which an indefinite can get a weak reading:

(9) weil die Polizei Linguisten im Stadtpark verhaftet hat
because the police linguists in the municipal park arrested has

In (9) the indefinite precedes a locative adverbial. An indefinite preceding e.g. a manner adverbial or an instrumental can also get the existential reading:

(10) a. Heute hat Otto Kolleginnen zärtlich umarmt
Today has O. colleagues tenderly embraced
b. Heute hat Otto Passanten mit seinem Gesang erschreckt
Today has O. pedestrians with his singing frightened

Analyzing different data from those considered here, Frey & Pittner (1998) argue that the different adverbial types have different base positions in the middle field. For example, it is argued that the base position of a manner adverbial is next to the base position of the verb (or verbal complex) and that locative and instrumental adverbials belong to the class of adverbials whose base positions are right below the base position of the highest argument of the verb. In contrast, temporal adverbials belong to that class of adverbials whose base positions are right above the highest argument.[3] This is the highest position occupied by adverbials which relate to the eventuality denoted by the clause. Thus, the difference between (8) on the one hand and (9) as well as (10) on the other should be related to the fact that in (8) the indefinite is higher than the base position of the temporal (and, ergo, of the base of the subject) whereas in (9) and (10) it is below the base of the subject. This leads to the following characterization of the domain for the weak reading of indefinites (cf. also Haider & Rosengren 1998, Frey & Pittner 1998):

(11) An indefinite that depends on a verb and occurs in the middle field of a German clause can be existentially interpreted only if it is situated inside the minimal maximal projection which contains all the base positions of the dependants of the verb and all the licensers of the indefinite.
This category will be called the minimal domain of the associates of the indefinite (MDA).

[3] Adverbials of the same class are not ordered with respect to each other. See Frey & Pittner (1998) on how other adverbial types fit into these distinctions.

> An element depends on a verb if it is an argument of the verb or if it belongs to the adverbial types that specify the eventuality argument of the verb (e.g. temporals, locatives, instrumentals, manner adverbials).[4]

We may assume that in German, for every indefinite dependent on the verb the syntactic category corresponding to its MDA is the VP (or vP).[5, 6] However, it is obvious that the MDA does not correspond to Diesing's concept of the VP and that (11) does not give the same results as Diesing's condition (2a). These are the differences:

(i) As (9) and (10) show, certain adverbial types have their base position inside the MDA.
(ii) Scrambling is possible inside the MDA.
(iii) According to (7), strong indefinites may occur in the MDA.

The following examples, in which the MDA(= VP) is marked by parentheses, illustrate these properties:

(12) a. weil [ein Kollege Pressemitteilungen$_i$ einer Kollegin t_i vorliest]
because a colleague press statements.ACC a colleague.DAT reads
'because a colleague reads press statements to a colleague'
(Acc-obj. can be existential or generic)

b. weil Pressemitteilungen$_i$ [ein Kollege einer Kollegin t_i vorliest]
(Acc-Obj. only generic)

c. weil [in einigen Jahren Orkane im Mittelmeer entstehen]
because in some years hurricanes in the Mediterranean Sea arise
(Subj. existential or generic)

d. weil Orkane$_i$ [in einigen Jahren t_i im Mittelmeer entstehen]
(Subj. only generic)

e. weil [früher in Hinterhöfen$_i$ die Jungen t_i Fußball spielten]
because in former times in backyards the boys soccer played
(Locative existential or generic)

f. weil in Hinterhöfen$_i$ [früher die Jungen t_i Fußball spielten]
(Locative only generic)

g. weil in Hinterhöfen$_i$ [die Jungen t_i Fußball spielten]
(Locative only *generic)*

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[4] Arguments are meant to be subcategorized phrases which refer to objects in contrast to predicative phrases.

We assume that if a PP is dependent on a verb, so is the complement of the head P.

[5] For the simplicity of the discussion we assume that the adverbial types mentioned here are adjoined to the verbal projection.

[6] In English an indefinite subject in Spec,IP can get a strong and a weak interpretation. Because in English the subject gets its case in Spec,IP the MDA of the subject corresponds to IP in English. In German, case is licensed in the theta-positions and the MDA always corresponds to VP. The same is true for Dutch. A subject in Spec,IP has a strong reading only (cf. de Hoop 1992). This is expected because in Dutch a subject can get case in its base position, i.e. like in German it does not have to move to be fully licensed.

In (12a) the accusative is scrambled across the other object but is still inside its MDA. An existential interpretation is possible. In (12b) the same argument has left this domain and thus gets only a generic interpretation. In (12c) the subject is in its base position, and it can get a strong or weak reading. In contrast, the subject in (12d) is in front of a temporal adverbial and thus has left the MDA. It is interpreted generically. In (12e) a locative is scrambled to a position between a temporal adverbial and the subject. A temporal in its base position marks the upper boundary of the MDA but still belongs to it. Therefore the locative in (12e) is inside its MDA, and it can have a weak reading. In (12f) the locative is scrambled outside its MDA. Thus only the generic reading is left. The same is true for (12g). Note the difference in meaning between (12e) and (12g). The latter does not contain a temporal, therefore the MDA is 'closed' right above the subject.

Before we end this section, a remark is necessary. The preceding observations hold for indefinites under normal intonation. If they are assigned a heavy pitch as in the following examples, they behave differently:

(13) a. weil PulLOver$_i$ Maria t_i verschenkt hat (aber keine HEMden)
because pullover M. given away has (but no shirts)
b. Hans hat FIsche$_i$ gestern t_i gefangen (keine KRABben)
H. has fish yesterday caught (no prawns)

In (13) the indefinites are contrastively focused. They can get an existential interpretation although they are moved out of their MDAs. These are examples of so called focus scrambling, which is discussed in Neeleman (1994). Focus scrambling is an instance of A'-movement and differs from the standard reordering in the middle field. For example, focus scrambling (in contrast to regular scrambling) necessarily undergoes reconstruction for the purpose of semantic interpretation. The readings of the sentences in (13) are therefore expected. Other examples of focus scrambling are given in (14):

(14) a. weil GRÜN$_i$/*grün$_i$ Otto die Wand t_i streichen möchte
because green O. the wall paint wants
b. weil ALle Filme$_i$/alle FILme$_i$ mindestens einer t_i gesehen hat
because all films at least one seen has
(only: $\exists\forall$)

(14a) shows that, for example, a resultative can be focus scrambled but the same phrase cannot undergo standard scrambling. The sentence (14b) has only the reading that would arise if the moved phrase were in its base position. This confirms that the moved element is obligatorily reconstructed.

3. On some claims about scrambling

De Hoop (1992) states that:

(15) Weak indefinites cannot be scrambled.

Her conclusion is based on Dutch examples like (16), the German equivalent was given in (8).

(16) *dat de politie taalkungigen gisteren opgepakt heeft
that the police linguists yesterday arrested has

Other authors (e.g. Lenerz 1977, 2001, Choi 1999) also assume (15). However, in section 2 it was argued that scrambling of a weak indefinite is possible inside its MDA. If we replace the temporal adverbial in (8), which is an element at the boundary of the MDA, by a locative, which is inside the MDA, the sentence becomes fine as was shown in (9), repeated here for convenience:

(9) weil [die Polizei Linguisten$_i$ im Stadtpark t_i verhaftet hat]

Therefore we may conclude that de Hoop (1992) arrived at (15) by considering only a subset of the different adverbial types. The underlying assumption was that the different adverbial types all have their base outside the VP. However, our findings show that this assumption is highly dubious.

That a weak indefinite may scramble as long as the target position is inside its MDA was also shown by the indefinite object in (12a). The reason that de Hoop did not consider sentences like (12a) could be that scrambling of an object across another one is just not an option in Dutch.[7]

The effects of scrambling are not well understood and there is much disagreement among the syntacticians working on this subject. Specifically, it is not known what the effect of scrambling as in (9) or (12a, e) is. But whatever this effect might be, the examples show that it does not destroy the possibility of an existential interpretation.
Note that examples like (9) and (12a, e) and the fact that strong indefinites may stay in situ (cf. (7)) contradict an often articulated claim about scrambling, according to which it is triggered by a certain property of strong NPs. Diesing (1997) for example suggests that the reason for scrambling is that definites and strongly interpreted indefinites have to escape existential closure. Besides not acknowledging (7) she overlooks the fact that

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[7] The criticism against de Hoop (1992) also applies to Choi (1999), but it is not appropriate for Lenerz (1977, 2001). Lenerz considers examples like the following as pieces of evidence for (15):

(i) Wem hast du ein Buch gegeben?
to whom have you a book given
*Ich habe ein Buch dem/einem Studenten gegeben
I have a book the-DAT/a-DAT student given

Note however that an additional factor may be involved which disfavors scrambling of the indefinite in this case. It seems that a constituent which fills the open position indicated by a preceding wh-phrase wants to precede other non-familiar elements in the clause:

(ii) Wem hat Otto was mitgebracht?
to whom has O. something brought
a. Otto hat einem Nachbarn Äpfel mitgebracht
O. has a-DAT neighbor apples brought
b. ??Otto hat Äpfel$_i$ einem Nachbarn t_i mitgebracht

(iii) Was hat Otto wem mitgebracht?
What has O. to whom brought?
a. ??Otto hat einem Nachbarn Äpfel mitgebracht
b. Otto hat Äpfel$_i$ einem Nachbarn t_i mitgebracht

Note that the weak object in (iiib) is scrambled.

scrambling can occur inside VP. For Delfitto & Corver (1997) the trigger for scrambling is the feature [+familiar], which has to be checked in the syntactic structure. All strongly interpreted indefinites but no weak ones are supposed to carry this feature. Again, it is not accounted for that a weak indefinite can, and a strong indefinite does not have to scramble.

A view on scrambling that is inspired by phonological considerations is offered by Neeleman & Reinhart (1998). According to that view, scrambling is triggered by the need to destress a constituent. A constituent is destressed if and only if it is discourse-given (D-linked). In a scrambling language scrambling is preferred to get the result of destressing a constituent. Therefore, according to Neeleman & Reinhart, a discourse-given constituent is scrambled in order not to be the target of the nuclear stress rule.

However, this cannot be the whole story about scrambling. First, as we have seen, a weak indefinite may scramble, and such an element is not discourse-given. Second, it is possible to scramble the indirect object of a ditransitive verb:

(17) weil heute Fussballspielern$_i$ Linguistinnen t_i Blumen schickten
since today soccer players.DAT female-linguists flowers.ACC sent

The indirect object in (17) can be interpreted generically or existentially. Note that in its base position the indirect object could have the same interpretations and would not be the target of the nuclear stress rule, so destressing cannot be the reason for scrambling in this case. Third, Neeleman & Reinhart consider generic indefinites as somehow D-linked. However, as predicted by (7), the indefinite in the following sentence can have a generic interpretation:

(18) weil die Polizei gestern Linguisten verhaftet hat
because the police yesterday linguists arrested has

In (18) there is the option for the generic indefinite to scramble. Given the assumptions of Reinhart & Neeleman, we would expect that it must scramble. This, however, is not true.

Büring (2001) subscribes to (15). In order to explain the deviance of Lenerz' example which was given above in Fn. 7 under (i), he formulates a prosody-based constraint. According to this constraint the nuclear scope consists of complete accent domains all of which contain focus. The nuclear scope can start at any focal accent domain and then continues until the end of the clause. According to Büring, Lenerz' example is bad because there is no position to insert the boundary of existential closure: Inserting it in front of the accusative would violate the constraint that the nuclear scope only contains phrases with focus, inserting it after the accusative would leave this element without existential force.

Büring's constraint is not compatible with our findings. Although for Büring the boundary for existential closure is not given by a certain syntactic category but is influenced by prosody and information structure, Büring's approach, like Diesing's, assumes that existential closure starts at a certain boundary in the clause and keeps its force till the end of the clause. Therefore a sentence like (4c) should not have a reading with an existential subject and a generic object. The object follows a weakly interpreted subject and should be affected by existential closure. But the sentence does have the reading in question.

4. Indefinites as members of a complex predicate

In this section we will look at a domain which is reserved for the weak reading. No strong reading is possible here. This is illustrated by the following examples:

(19) a. Der Kanzler hat neulich Akten gründlich studiert
the chancellor has recently documents thoroughly studied
(indefinite can be weak or strong)
b. Der Kanzler hat neulich gründlich Akten studiert
(indefinite only weak)

The indefinite in (19a) can get a weak or a strong reading. The indefinite follows a temporal adverbial and precedes a manner adverbial. It is inside its MDA. However, if we let the indefinite follow the manner adverbial as in (19b) only the weak reading is available.

In Frey & Pittner (1998) it is argued that manner adverbials have their base position next to the verb or to the complex predicate[8]. This is motivated by data like the following:

(20) a. ??Der Kanzler hat heute gründlich diese Akten studiert
the chancellor has today thoroughly these documents studied
b. *Der Kanzler hat heute gründlich jede Akte studiert
the chancellor has today thoroughly every document studied

On the other side there are elements which can appear between a manner adverbial and the verb. Besides an indefinite like in (19b), this is, for example, true for resultatives:

(21) Karl hat die Vase behutsam sauber gewischt
K. has the vase carefully clean wiped

In the literature it is often argued that resultatives form a complex predicate with the verb (e.g. Neeleman 1994, Winkler 1997). Therefore, one should investigate whether an indefinite such as in (19b) can also participate in the formation of complex predicates.
If in German an auxiliary combines with a modal, the standard order of the verbal elements does not sound very good. Instead the inversion of the modal is preferred:

(22) a. (?)dass Hans heute dieses/jedes Hemd bügeln müssen wird
that H. today this /every shirt iron must will
b. dass Hans heute dieses/jedes Hemd wird bügeln müssen
c. *dass Hans heute wird dieses Hemd bügeln müssen
d. *dass Hans heute wird jedes Hemd bügeln müssen

(22a) shows the standard order of verbal elements and (22b) the inversion. (22c, d) illustrate that an argument cannot be carried along in such an inversion structure. This suggests that only elements of the complex predicate can participate in the inversion.

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[8] If a German clause contains auxiliaries or modals a complex predicate is formed, cf. e.g. Haider (1993).

Interestingly, indefinites can be part of the inversion (cf. (23a)). The same is true for resultatives (cf. (23b)):

(23) a. dass Hans heute wird Hemden bügeln müssen
b. dass Hans heute die Vase wird sauber wischen müssen

Under the assumption that inversion only affects elements of the complex predicate, (23a) shows that indefinites can belong to a complex predicate.

Unlike a resultative, a depictive cannot be part of a complex predicate (cf. Neeleman 1994, Winkler 1997). This explains the following contrast:

(24) a. *Maria hat heute gründlich Patienten betrunken untersucht
M. has today thoroughly patients drunk examined
b. Maria hat heute spielerisch Patienten unter den Tisch getrunken
M. has today playfully patients under the table drunk

All the elements following a manner adverbial have to be part of a complex predicate. The indefinite and the resultative in (24b) both fulfill this requirement. However the depictive in (24a) cannot belong to the complex predicate and therefore causes ungrammaticality.

Neeleman (1994) argues convincingly that a stranded preposition incorporates into a complex predicate in Dutch. In German, preposition stranding only occurs in the split construction with *da-*. It seems that in this case, too, the preposition is part of a complex predicate:

(25) a. Da hat Otto sorgfältig mit gearbeitet
There has O. carefully with worked
'O. has carefully worked with this'
b. *Da hat Otto mit sorgfältig gearbeitet

The stranded preposition is ungrammatical before a manner adverbial ((25b)). Under the assumption that stranded prepositions are part of a complex predicate the following data confirm that the same can be true for indefinites in contrast to arguments:

(26) a. da hat er mit Hunde vertrieben
there has he with dogs chased-away
'he has chased away dogs with it'
b. *da hat er mit diesen/jeden Hund vertrieben
there has he with this/every dog chased-away
'he has chased this/every dog away'

Finally note that an indefinite but not a full argument can be part of a nominalization with a verbal base:

(27) a. das Hemdenbügeln
the shirts-ironing
b. *das jedes-Hemd-Bügeln
the every-shirt-ironing

According to the DRT view, an indefinite enters the syntactic structure as a predicate. The binding of its variable is done by other elements of the structure. In the special cases considered in this section the indefinite is part of a complex predicate. It is reasonable to assume that in this case the existential binding is induced by the verb itself. We may think of this as a mechanism similar to the one which allows to omit an argument as in:

(28) Otto isst gerade
O. eats at-the-moment
'O. is eating'

As is well known, in such examples the omitted arguments are interpreted existentially. The following rule seems to be reasonable:

(29) Indefinites which are part of a complex predicate are bound by existential closure induced by another element of the complex predicate.[9]

In most cases it makes no significant difference whether the existential binding of an indefinite is induced by the predicate in the course of complex predicate formation as in (30a) or whether it happens inside the MDA as in (30b). Therefore the sentences in (30) seem to be synonymous:

(30) a. weil Otto heute sorgfältig ein Hemd/Hemden gebügelt hat
that O. today carefully a shirt /shirts ironed has
b. weil Otto heute ein Hemd/Hemden sorgfältig gebügelt hat

However, there are verbs where there is such a difference. This is illustrated by the following examples (from Eckardt, to appear):

(31) a. dass Hans geschickt eine Flöte schnitzte
that H. skillfully a flute carved
b. *dass Hans eine Flöte geschickt schnitzte

The verb in (31) is a verb of creation. Such a verb denotes an event which describes the creation of a new object rather than a treatment of a given one. As (31a, b) show, with such verbs an existential indefinite can only occur after a manner adverbial, i.e. in our view it has to be part of the complex predicate formation. The binding of the indefinite has to be induced by the verb.

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[9] This statement is not quite correct. In an example like the following, which describes a habitual property, the object has to follow a manner adverbial and therefore is part of a complex predicate according to our considerations:

(i) a. dass Otto sorgfältig Briefmarken sammelt
that O. carefully stamps collects
b. *dass Otto Briefmarken sorgfältig sammelt

As Hans Kamp (p.c.) has pointed out, the object in (ia) has neither an existential nor a generic reading.

Examples like (ia) are very complicated from a semantic point of view, and I am not in a position to discuss them here. Intuitively, it certainly makes sense that their objects should be part of a complex predicate.

This observation makes sense. A verb of creation expresses that after the event of creation is completed, the appropriate object will exist. However a sentence like (31a) can be true although the event of creation is not completed and consequently the object does not exist in the model. This shows that the existence of the object does not have to become part of the described event but is just part of the intentions or plans which are denoted by the verb. The syntactic correspondence of this fact is that the indefinite has to belong to the complex predicate like in (31a).

In contrast, the existential requirement which is expressed by a weakly interpreted indefinite bound in the MDA has to be fulfilled by the described event, i.e. from a sentence like (30b) it follows that there exist(s) a shirt/shirts.[10] Now, in (31b) the indefinite has to be bound in the MDA and the predicate of the sentence is a verb of creation. Thus, the existence of the object follows and it does not follow. This semantic contradiction causes the ungrammaticality of the sentence.

Let us conclude this section with a remark on van Geenhoven (1998). Van Geenhoven assumes that bare plurals denote properties and that every weakly interpreted bare plural in German is incorporated into the verb, i.e. to be part of a complex predicate is supposed to be the general case for weak bare plurals and is not, as we assume, restricted to indefinites occurring below the base position of manner adverbials.

There are problems with this approach. First, as (4c) shows, an existential bare plural can precede a generic one. Because incorporation presupposes adjacency, the generic indefinite also ought to incorporate. However, this is not compatible with van Geenhoven's assumptions. Second, it cannot be explained why the object in (19a) has a weak and a strong reading, whereas the object in (19b) can only be weakly interpreted. Third, van Geenhoven assumes that the type mismatch which is created by the demand of the verb for an object and the fact that bare plurals denote properties is solved by a operation on the predicate, which introduces an existential quantifier over instances of the property. Since this is a lexical operation, it follows that every weak bare plural should have narrow scope with respect to any other operator in the clause. However, as the example (47b) in section 6 below will show, this is not true for an indefinite which gets its existential reading in its MDA.

5. Strong indefinites and information status

Some authors assume that strong indefinites are topics, cf. e.g. Jäger (1996), Erteschik-Shir (1997). Since there are many different notions of topic around, an evaluation of this claim would require a careful discussion of the different concepts. This can not be done here. Rather it will be shown that the claim is not compatible with the findings of Frey (2000) about a topic position in German.

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[10] Correspondingly, the object of an opaque verb like *seek* has to follow a manner adverbial if the sentence ought to have the de dicto reading:

(i) a. weil Otto intensiv eine Frau gesucht hat *(de dicto possible)*
because O. intensively a woman sought has
b. weil Otto eine Frau intensiv gesucht hat *(only de re)*

Thus, if the object occurs in front of a manner adverbial the sentence implies its existence.

In Frey (2000) it is argued that there is a designated position for aboutness topics in the middle field of a German clause. This position is right above the base position of sentence adverbials. Sentential adverbials are those adverbials which express the speaker's evaluation of the proposition expressed by the clause. The base position of sentence adverbials is higher than the base position of any other element of the clause (cf. Frey & Pittner 1998). Two of the various phenomena which support the thesis of a designated topic position are the following:

(32) Da wir gerade von Hans sprechen.
Since we right now of H. speak 'Speaking about Hans'
a. Nächstes Jahr wird den Hans erfreulicherweise eine vornehme Dame heiraten
Next year will the-Acc H. fortunately a fine lady marry
b. #Nächstes Jahr wird erfreulicherweise den Hans eine vornehme Dame heiraten

(33) a. $Sein_i$ Vater wird dem $Otto_i$ wahrscheinlich das Auto ausleihen
His father will the-DAT O. probably the car lend
'Probably, Otto's father will lend him the car'
b. *$Sein_i$ Vater wird wahrscheinlich dem $Otto_i$ das Auto ausleihen

The context in (32) forces *Hans* to be an aboutness topic in the following sentence. (32a, b) show that under such circumstances the item in question has to precede a sentence adverbial. The examples in (33) contain cataphoric pronouns. According to Kuno (1972) and Reinhart (1995) cataphoric pronouns can corefer only with topics. Under this assumption, (33a, b) also show that there is a designated topic position in front of the sentential adverbials in the middle field.

In section 1 it was shown that indefinites in their base position can have a strong reading. Obviously, these strongly interpreted indefinites can not be topics according to Frey (2000). But even indefinites which are positioned higher than the MDA and therefore only have the strong reading are not necessarily topics. This can be shown as follows: As mentioned above, the base position of sentence adverbials is higher than the base positions of any other elements. So we can scramble an indefinite to a position between the base position of a sentential adverbial and, say, the base position of a temporal adverbial:

(34) weil erfreulicherweise Väter an Weihnachten mit der Eisenbahn spielen
since fortunately fathers at Christmas with the model railway play

The indefinite in (34) can only be strongly interpreted. Given (11) this is expected because the indefinite is higher than a temporal adverbial and therefore must be outside the MDA. However, according to Frey (2000) this indefinite cannot be a topic because it is still below the sentential adverbial. The following data confirm this:

(35) Da wir gerade von Vätern sprechen.
'Speaking about fathers'
a. Ich habe gehört, dass Väter erfreulicherweise an Weihnachten mit der
I have heard that fathers fortunately at Christmas with the

Eisenbahn spielen
model railway play

b. #Ich habe gehört, dass erfreulicherweise Väter an Weihnachten mit der Eisenbahn spielen

(36) a. Ihre$_i$ Angehörigen werden fleißigen Linguisten$_j$ erfreulicherweise helfen
Their relatives will diligent linguists fortunately help

b. *Ihre$_i$ Angehörigen werden erfreulicherweise fleißigen Linguisten$_i$ helfen

Thus we arrive at the following claim:

(37) The strong reading of an indefinite is not a sufficient condition for its status as a topic.

Let us now consider sentences with a so called individual level (IL-) predicate:

(38) weil Linguistinnen klug sind
because female-linguists clever are

The applicability of an IL-predicate to its argument is not restricted to certain times and places. As is well known, the subject of an IL-predicate can only have a strong reading. Thus in (38) the bare plural has only the generic reading.

Let us have a look at the standard account of the fact that the subject of an IL-predicate is strongly interpreted. It goes as follows (e.g. Jäger 1996, Erteschik-Shir 1997, de Swart 2001): Every sentence needs to have a topic. In sentences with a stage level predicate this role can be played by the event argument because stage level predicates talk about a specific situation located in time and space or a generic type of situation. This is not possible in the case of IL-predicates because they describe properties which are not tied to particular situations. Therefore the subject argument has to be the topic. Topics must be strong NPs because only these encode a notion of 'aboutness' or 'familiarity'.

This chain of reasoning is in conflict with the thesis of a designated topic position in the German middle field. It can easily be shown that, although the subject of an IL-predicate is interpreted strongly, it does not have to be in this position:

(39) a. weil offensichtlich Linguistinnen intelligent sind *(generic)*
because obviously female-linguists intelligent are

b. weil erfreulicherweise ein Student Fußball liebt *(specific)*
because fortunately a student soccer loves

Thus (37) also holds for sentences with IL-predicates. (39a, b) together with the findings of Frey (2000) show that the fact that individual level predicates necessarily have strong subjects cannot be deduced from the assumption that every clause has to have a topic.

In the next section we will try to give an account of the strong reading of the subjects of IL-predicates which differs from the standard one.

6. A cartography for indefinites

The findings of the preceding sections have revealed the following domains at S-structure for the interpretation of indefinites in the middle field of a German clause:

(40) The relation between position and meaning of indefinites in German:
- a. *The domain of complex predicate formation* (below the base position of manner adverbials): An indefinite can only be weakly interpreted.
- b. *The minimal domain of the associates of an indefinite which is dependent on a verb (MDA)* (the minimal maximal projection which contains the base positions of the verb's dependants and all licensers of the indefinite): The indefinite can be interpreted weakly or strongly.
- c. *The domain above of MDA* : The indefinite is necessarily strong.

(40a) was already motivated in section 4. Let us now make some speculations on how the conditions in (40b, c) could be justified for bare plurals.

Chierchia (1998) investigates the relation between the different meanings of bare plurals in different languages. He argues that in languages like English or German bare plurals can either denote kinds or properties. Thus, if in these languages a bare plural occurs in canonical argumental position, it unambiguously denotes a kind. However, bare arguments also occur with non-kind-selecting predicates. Chierchia assumes that in this case the type of the predicate is adjusted by introducing a quantification over instances of the kind. Chierchia argues that in episodic contexts this yields the existential quantification. He shows that this process is even operative with DPs like the one in the following sentence:

(41) a. That kind of animal is ruining my garden
b. $\exists x$ [$^{\cup}$that kind of animal(x) $\wedge$ *ruin* my garden(x)]

The sentence (41a) has the interpretation (41b). The type shifting operation $^{\cup}$ maps a kind to the (plural) property of being an instance of the kind. Chierchia calls the general mechanism which is operative here 'Derived Kind Predication' (DPK):

(42) DPK: $P(k) = \exists x [^{\cup}k(x) \wedge P(x)]$ for P a predicate which applies to objects which are non-kinds and k a kind.

Thus Chierchia assumes that in the context of an event specification it is possible to deduce the existence of an instance of the kind for which the predicate of the sentence holds. The same mechanism is extended to bare plurals:

(43) a. Lions are ruining my garden
b. ruining my garden ($^{\cap}$lions) (where $^{\cap}$ yields a kind from the corresponding property)
$\leftrightarrow$ (via DKP) $\exists x$ [$^{\cup\cap}$lions (x) $\wedge$ ruin my garden(x)]

We can use Chierchia's proposal in the following way: It is a standard assumption that a verb's theta grid contains an argument position for the eventuality which is denoted by

the clause ('the E-position'). Among the eventualities at least events and states are differentiated, however there might be more subtypes. Like the other argument positions, the E-position has to be saturated by an element in the syntactic structure. The saturation of the E-position occurs after the other argument places are saturated. Many syntacticians assume an Asp(ect)P(hrase) right above the VP. It is reasonable to assume that the instantiation of the E-position with a specified event is linked to an appropriate AspP. Adopting this assumption we can make the application of DPK dependent on an appropriate AspP and arrive at the following constraint[11]:

(44) A bare plural dependent on a verb can have a weak reading only if the head of its A-chain is situated in its MDA, and the accompanying AspP of the MDA licenses the specification of an event.

The generic interpretation of a bare plural is derived by Chierchia via a process of accommodation of variables over instances of the kind in the restriction of a generic operator. Let us assume that this process is in principle always available. Thus, if the predicate of a sentence applies to objects which are non-kinds and gets a bare plural as an argument it is possible to derive a universal statement about the instances of the kind. This results in a generic sentence. Thus, we assume that the strong reading of a bare plural is given for free whereas, according to (44), the weak reading of a bare plural is the special case which needs extra syntactic licensing.[12]

That the weak reading of an indefinite is dependent on the specification of a singular event is shown by the following data:

(45) a. I consider firemen available
b. John believes students of this class to be intelligent
c. Max hält Studenten dieses Kurses für intelligent
M. considers students of-this course intelligent

The bare plurals in (45) only have the generic reading. (45a) is of special interest because *available* is not an individual predicate. However, the adjective by itself cannot specify an event and the matrix predicate does not specify an event in the given example. Therefore no singular event is specified by the sentence. The same is true for the remaining sentences (45c, d), no specified event is characterized.

[11] To keep the following statement simple, it is assumed that scrambling constitutes an A-chain. However, this assumption is not crucial for our considerations.

[12] The other strong readings of indefinites are in principle also available in every argumental position. This is true, e.g., of the specific reading of a singular indefinite (cf. (3b), (6a)).

There are approaches which treat singular indefinites as choice functions. Von Heusinger (to appear) argues that specific indefinites are choice functions which depend on the speaker or a referential expression in the clause. Adopting this view we can relate the fact that the specific interpretation of a singular indefinite is always available to the fact that at least the speaker is always available as a possible anchor for the specific interpretation. If we assume that the weak interpretation of a singular indefinite is represented by a choice function which is dependent on the specification of an event (cf. Lenerz 2001), we can further derive that the weak reading of a singular indefinite is only possible in the restricted environment described in (44).

Chris Wilder (p.c.) made an important observation with regard to constructions like (45). If such sentences are changed such that the matrix clause specifies a singular event, the bare plurals also change their interpretation:

(46) a. I have considered firemen available
b. John has believed students of this class to be intelligent
c. Max hat Studenten dieses Kurses für intelligent gehalten
d. John has believed that students of this class are intelligent
e. Max hat geglaubt, dass Studenten dieses Kurses intelligent sind

The accusative objects in (46a, b, c) can be interpreted existentially. Note that their MDAs have accompanying AspPs which now specify episodic frames.[13] In contrast, in (46d, e) the specification of an event by the matrix predicate does not give rise to the existential interpretation of the bare plurals in the finite complement clauses. The bare plurals in these examples are not in a licensing relation with the matrix predicates. In sum, the data in (45) and (46) constitute nice evidence for the condition in (44).

In the last section we discussed the reading of the subject in sentences like the following:

(38) weil Linguistinnen klug sind
because female-linguists clever are

According to an often articulated explanation the subject of an IL-predicate has to be a topic and therefore has only the strong reading. We refuted the claim about the obligatory topic status. However, to explain why the subject of an IL-predicate has the strong reading, we do not have to assume that it is necessarily a topic. (44) already explains data like (38) or (39). Because individual level predicates do not specify situations located in time and place, such predicates are not accompanied by an episodic AspP. Therefore according to (44) the weak interpretation of an indefinite subject is not possible.

Let us conclude by a look at the scope of a bare plural. The following sentences are both unambiguous. The scope relation between the quantified NP and the weakly interpreted indefinite corresponds in both sentences to their linear order[14].

(47) a. Sie hat heute fast jedem Kollegen Zimmer ihrer Villa gezeigt (only: $\forall\exists$)
She has today almost every colleague rooms of her villa shown
b. Sie hat heute Kollegen fast jedes Zimmer ihrer Villa gezeigt (only: $\exists\forall$)

Note that this is not expected if the scope of existential closure is the VP. On this assumption both sentences should exhibit the same scope relation between the universally quantified NP and the indefinite. If one assumes that in the German middle field scope relations are fixed at S-structure, then both sentences should have wide scope of the existentially interpreted indefinite. If one believes that in German scope is

[13] In (46a) and (46b) the matrix predicate licenses the case of the accusative object and therefore belongs to its MDA, cf. (11). For the German example (46c) it can easily be shown that *für intelligent halten* constitutes a complex predicate.

[14] The same scopal behavior could be shown for generically interpreted indefinites.

determined at LF and that a universally quantified NP has to leave the VP at LF both sentences should have the reading with wide scope of the universal NP.

In fact the unambiguity of the sentences in (47) shows that in the middle field the scope relation between an indefinite and a quantifier is determined by the c-command relations at S-structure. In this respect, an indefinite behaves like any other scope sensitive element in German. Therefore, the operation which derives the reading of an *indefinite* cannot be a lexical operation on the predicate (as van Geenhoven 1998 has it) because the syntactic position of a bare plural is crucial for its scope. The semantic mechanism which derives the reading of an *indefinite* has to apply during the semantic processing of the syntactic structure. However, it has to be applied very locally, i.e. this additional step of semantic processing has to be carried out right after the semantic processing of the lexical material of the indefinite. This operation cannot wait till the interpretation process reaches the VP level.

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