

**16TH European Summer School in Logic, Language, and Information
(ESSLLI 16)**

Nancy, France

**PROCEEDINGS OF THE WORKSHOP ON THE
SYNTAX, SEMANTICS AND PRAGMATICS OF
QUESTIONS**

August 9-13, 2004

Organizers: **Ileana Comorovski**
 (Université Nancy 2 and ATILF)

Manfred Krifka
(Humboldt University and Center for
General Linguistics (ZAS), Berlin)

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WORKSHOP PROGRAM

Monday, August 9

17:00-17:15 – Introduction by the organizers	5
17:15-18:00 - Joachim Sabel (Université catholique de Louvain) ‘The Morphosyntax of Wh-Questions’ (invited talk)	7
18:00-18:30 - Muriungi Kinyua Peter (University of the Witwatersrand and University of Tromsø) ‘Wh-movement in Kitharaka as focus movement’	9

Tuesday, August 10

17:00-17:30 - Dmitry Idiatov & Johan van der Auwera (University of Antwerp) ‘On interrogative pro-verbs’	17
17:30-18:00 - Balazs Suranyi (Eotvos University, Budapest) ‘Movement and choice functions: on the syntax/semantics interface of answerhood conditions’	25
18:00-18:30 - Ingo Reich (University of Tübingen) ‘Another look at exhaustivity effects and the "de dicto" reading in embedded interrogatives’	33

Wednesday, August 11

17:00-17:45 - Chris Barker (University of California, San Diego) & Chung-chieh Shan (Harvard U.) ‘Superiority as left-to-right evaluation’ (invited talk)	41
17:45-18:30 - Robert van Rooy (University of Amsterdam) ‘Context-dependence of question meaning and alternative answers’ (invited talk)	

Thursday, August 12

17:00-17:30 - Rusudan Asatiani (Institute of Oriental Studies, Georgian Academy of Sciences, Tbilisi) ‘The semantics and typology of <i>Yes/No</i> particles’	49
17:30-18:00 - Maribel Romero (University of Pennsylvania) ‘Biased <i>Yes/No</i> Questions’	57
18:00-18:30 - Ingrid C. van Alphen (University of Amsterdam) ‘"How to do things with questions": interactional power and stance taking’	59

Friday, August 13

17:00-17:30 - Klaus Abels (University of Leipzig and University of Tromsø) ‘Deriving selectional properties of "exclamative" predicates’	67
17:30-18:00 - Carol Tenny (Carnegie Mellon University) & Peggy Speas (University of Massachusetts at Amherst) ‘The interaction of clausal syntax, discourse roles, and information structure in questions’	75
18:00-18:30 - Dietmar Zaefferer (Ludwig-Maximilians-Universität, München) ‘Interrogative Mood as Content-type-driven Epistemo-volitional Modality’	79

Alternate

Bostjan Dvorak (ZAS Berlin) and Remus Gergel (University of Tübingen) ‘Slovenian Clitics: VP-ellipsis in <i>Yes/No</i> Questions and beyond’	85
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INTRODUCTION

The investigation of questions has deepened our understanding of syntax (e.g. the constraints on syntactic dependencies), of semantics (e.g., the representation of non-declarative information) and of pragmatics (e.g., the nature of speech acts). However, linguists often took little notice of research on questions (and answers) in adjacent fields. For example, syntacticians interested in multiple constituent questions were unaware of the interpretation of different types of multiple questions, and semanticists disregarded important pragmatic factors like speaker bias. This workshop tries to bring together researchers that transcend such boundaries. The goal is to gain not only a more profound understanding of questions, but of the interaction of syntax, semantics and pragmatics in general.

The contributions to this volume analyze questions in typologically diverse languages and address problems that often draw on insights across sub-disciplines. The topics addressed include the relation between the syntax of constituent questions and information structure (discourse-linking, topic, focus), exhaustive and non-exhaustive readings of questions, biased questions, sentence form and illocutionary force, and the cross-linguistic array of possible answers to yes-no questions. Analyses of questions in context are present in several of the contributions to this volume.

The following people accepted to give invited talks at the workshop and we wish to thank them all: Chris Barker and Chung-chieh Shan, Robert van Rooy, and Joachim Sabel.

We also wish to thank our colleagues who helped us by reviewing abstracts; they provided careful and often detailed comments, which we hope were useful to the authors of the papers in this volume. The program committee was constituted of: Chris Barker (University of California, San Diego), Regine Eckardt (ZAS Berlin), Georges Rebuschi (Université Paris 3), Robert van Rooy (ILLC, University of Amsterdam), Joachim Sabel (Université catholique de Louvain), and the two workshop organizers (Ileana Comorovski and Manfred Krifka).

We are grateful to our colleague Gilles Boyé for helping us produce the file for the proceedings volume.

The workshop has been partly sponsored by the following institutions: the Deutsche Forschungsgemeinschaft (DFG) through the project "Syntax and Semantics of Questions and Answers" at the ZAS, Berlin; the ATILF (Analyse et traitement informatique de la langue française); and the University of Nancy 2. Their sponsorship is gratefully acknowledged.

The Morphosyntax of Wh-Questions

Joachim Sabel

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Wh-questions represent a sentence type that can be found in all languages of the world. From a typological point of view it is important to describe the cross-linguistic variation of wh-questions and to give a parametric account for the observed language specific differences and similarities. In this talk, I will propose an analysis for an important aspect of syntactic variation in wh-question formation, i.e., the different structural positions in which wh-words appear in wh-questions in different languages. The goal is to provide an analysis for the typology of single wh-questions that can be used for an explanation of the variation found with respect to multiple wh-questions as well.

My analysis is based on the idea that fronting of wh-phrases applies for reasons of feature-checking, as assumed in Chomsky (1995, 2000, 2001). The features that have to be checked in wh-questions are universally, [wh]- (= [interrogative]) and [focus]-features. Typological variation results from the fact that it is parameterized i) in which structural position these features are realized in a language and ii) which of these features triggers wh-fronting.

Wh-movement in Kitharaka as focus movement

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0. Introduction

In this paper, I explore question formation in Kitharaka¹ within a principles and parameters/minimalist approach. The main claim of this paper is that wh-movement in Kitharaka is triggered by a strong focus feature in Foc. The Spec-head relation between a fronted wh-phrase and Foc is conveyed by the F-marker attached to the wh-phrase, and in case of long wh-movement, the F-marker attached to the verbs in embedded sentences (cf. Muriungi 2003). This paper is organized as follows: In section 1, I present the strategies for question formation in Kitharaka. In section 2 I give data on long wh-movement in Kitharaka. Section 3 discusses the theory developed in Sabel (2000, 2002, 2003) which argues that wh-movement is universally triggered by [+focus] and [+wh] features. In section 4, I show that the various question formation strategies in Kitharaka can be accounted for quite easily within Sabel's assumptions. Section 5 provides a summary of the key issues raised in the paper.

1. Wh-question formation in Kitharaka

1.1 Strategies

Wh-questions in Kitharaka are formed by use of four strategies, wh- *ex situ* (1), wh-*in situ* (2), partial wh-movement (3) and the intermediate strategy (4), where a wh-phrase occurs immediately after the subject:

- (1) a. **N-uu** John a- ring- ir- e t?²
F-who John SP- beat- T- FV
'Who did John beat?'
- b. **I-mbi** u- ku- thugania ati John n- a- ring- ir- e t?
F-what 2nd SG-T- think that John F- SP-beat- T- FV
'What do you think that John beat?' (wh-*ex situ*)
- (2) a. John a- ring- ir- e **uu**?
John SP-beat- T- FV who
'Who did John beat?'
- b. U- ri- thugania ati John a- ring- ir- e **mbi**?
2nd SG-T- think that John SP-beat- T- FV what
'What do you think that John beat?' (wh-*in situ*)

¹ Kitharaka is a Bantu language spoken by one of the groups of the central Bantu of Kenya. According to Guthrie (1970/71), Kitharaka belongs to the Kikuyu-Kamba group which is assigned code E50. The languages in this zone are given different numbers with Kikuyu taking E51, Embu E54, Meru E53, Kitharaka E54, Kamba E55 and Sengeju E56.

² The following are the glosses:

F	focus particle/marker	T	tense/aspect marker	1 st SG	first person singular
2 nd SG	second person singular	PASS	Passive marker	FV	final vowel
SP	subject prefix	NEG	negative marker		

- (3) U- ri- thugania ati **n-uu** John a- ring- ir- e t?
 2nd SG-T- think that F-who John SP- beat- T- FV
 ‘Who do you think that John beat?’ (partial wh-movement)
- (4) a. John **n-uu** a- ring- ir- e t?
 John F-who SP- beat- T- FV
 ‘Who did John beat?’
 b. U- ri- thugania John **i-mbi** a- ring- ir- e t?
 2nd SG-T- think John F-what SP- beat- T- FV
 ‘What do you think John beat?’ (intermediate strategy)

Note that all moved wh-phrases bear a particle. This particle occurs as *n* when the wh-phrase begins with a vowel and *i* when the wh-phrase begins with a consonant. These particles are allomorphic variations of the same morpheme in Kitharaka; the focus marker. The fact that these particles are focus markers gets partial evidence from the observation that all moved focalized DPs in Kitharaka must bear these particles, (5). Note that interestingly, focalized DPs also portray the distributional possibilities of wh-questions, that is, they can occur *ex situ*, (5a), *in situ* (5b), in a partial position, (5c), and in the intermediate slot, (5d):

- (5) a. **I-nguo** Kinyua a- bur- ir- e
 F-clothes Kinyua SP- wash- T- FV
 ‘Kinyua washed **clothes**.’ (focus *ex situ*)
 b. Kinyua a- bur- ir- e **nguo**
 Kinyua SP- wash- T- FV clothes
 ‘Kinyua washed **clothes**.’ (focus *in situ*)
 c. Mwarimu a- ug- ir- e ati **i-nguo** Kinyua a- bur- ir- e
 teacher SP-say- T- FV that F-clothes Kinyua SP-wash- T- FV
 ‘The teacher said that Kinyua washed **clothes**.’ (Partial focus movement)
 d. Kinyua **i-nguo** a- bur- ir- e
 Kinyua F-clothes SP- wash- T- FV
 ‘Kinyua washed **clothes**.’ (intermediate focus)

Note that a focus *in situ*, whether wh or non-wh, cannot bear a focus particle, (6a, b). Observe further that a wh-phrase cannot be fronted if it does not have the focus marker, (6c):

- (6) a. * John a- ring- ir- e **n-uu**?
 John SP-beat- T- FV F-who
 ‘Who did John beat?’
 b. * Kinyua a-bur- ir- e **i-nguo**
 Kinyua SP- wash- T- FV F-clothes
 ‘Kinyua washed **clothes**.’
 c. * **Uu** Kinyua a- ring- ir- e?
 who Kinyua SP-beat- T- FV
 ‘Who did Kinyua beat?’

As far as I can tell there does not seem to be any difference in meaning between a sentence with an *ex situ* and an *in situ* wh-phrase. (1a) and (2b) are therefore semantically equivalent.

Observe that with partial wh-movement, the wh-phrase occurs after the complementiser *ati*. Therefore, the wh-phrase cannot be in Spec CP. Furthermore, note that although the wh-phrase occurs in an embedded specifier in partial wh-movement, it takes matrix scope. I have argued elsewhere (see Muriungi 2003), that all wh-phrases in Kitharaka move to a uniform landing site, Spec FocP. When some material occurs above the wh-phrase, as is the case with the intermediate strategy (4), such material is argued to occupy a topic position above FocP. The complementiser system in Kitharaka is therefore argued to be split into the heads Force, Topic and Focus, in the manner suggested by Rizzi (1997). The complementiser occupies Force⁰, the topic Spec TopP, and the focus Spec FocP (above TP).

1.2 Asymmetries in question formation

Kitharaka portrays asymmetries in question formation. While wh-objects can occur *in situ* and *ex situ* (see 1 & 2), subject wh-phrases can only occur *ex situ*, (cf. 7a & b). Note that the ban for subjects *in situ* also applies to derived subjects, (7c):

- (7) a. **N-uu** a- kis- ir- e Karimi?
F-who SP-kiss- T- FV Karimi
'Who kissed Karimi?'
b. * **Uu** a- kis- ir- e Karimi?
Who SP-kiss- T- FV Karimi
'Who kissed Karimi?'
c. * **Uu** a- kis- ir- w- e i- Karimi?
Who SP-kiss- T- PASS-FV by-Karimi
'Who was kissed by Karimi?'

The failure of a subject to be focused *in situ* has been attributed to the fact that most Bantu languages tend to be topic oriented, with the subject position conveying old information about which the rest of the clause is predicated (cf. Bergvall 1987). The subject position cannot therefore be the locus of focus (which in most cases tend to be associated with new information).

Observe also that while time and place wh-phrases can occur *in situ* and *ex situ* (8 & 9), manner and reason wh-phrases can only occur *ex situ*, (10 & 11):

- (8) a. Mfana a- th- ir- e **ku**?
Mfana SP go-T- FV where
'**Where** did Mfana go?'
b. **I-ku** Mfana a- th- ir- e?
F-where Mfana SP-go-T- FV
'**Where** did Mfana go?'
(9) a. Mfana a- th- ir- e **ri**?
Mfana SP-go-T- FV when
'**When** did Mfana go?'
b. **I-ri** Mfana a- th- ir- e?
F-when Mfana SP-go-T- FV
'When did Mfana go?'
(10) a. **I-mbi nontu** u- tembur- ir- e ibuku?
F-why 2nd SG- tear- T- FV book
'Why did you tear the book?'
b. * U- tembur- ir- e ibuku **mbi nontu**?
2nd SG- tear- T- FV book why
'Why did you tear the book?'
(11) a. **N-ata** w- ik- ir- e nati?
F-how 2nd SG- put- T- FV nut
'How did you fix the nut?'
b. * W- ik- ir- e nati **ata**?
2nd SG- put- T- FV nut how
'How did you fix the nut?'

One of the explanations for the asymmetries in (10 & 11) is that time and place wh-adjuncts are more argument-like than the reason and manner wh-phrases (cf. Sabel 2002). This is why they tend to pattern with wh-objects.

2. Long wh-movement

Kitharaka allows Long wh-movement. Whenever there is long wh-movement, the focus marker appears not just on the fronted wh-phrase but also on the verbs of the embedded clauses through which the wh-phrase passes, except on the verb of the matrix clause, (12a). If the focus markers don't occur, the sentence becomes ungrammatical, (12b):

- (12) a. **N-uu** u- ku-thugania ati John **n-** a- ug-ir- e Lucy **n-** a- ug- ir- e
 F-who 2ndSG-T- think that John F- SP-say-T- F Lucy F- SP-say- T- FV
 Pat **n-** a- ring- ir- e t?
 Pat F- beat- SP- T- FV
 'Who do you think that John said Lucy said Pat beat?'
 b. * **N-uu** u- ku-thugania ati John a- ug- ir- e Lucy a- ug- ir- e
 F-who 2ndSG-T- think that John SP-say- T-FV Lucy SP-say- T- FV
 Pat a- ring- ir- e t?
 Pat SP-beat- T- FV
 'Who do you think that John said Lucy said Pat beat?'

Observe that these particles never occur when the wh-phrase is left deep in an embedded sentence, (13a). If they occurred, the sentence would be ungrammatical, (13b):

- (13) a. U- ri- thugania ati John a- ug-ir- e Lucy a- ug-ir- e Pat a- ring- ir- e
uu?
 2nd SG-T- think that John SP-say-T- FV Lucy SP-say-T- FV Pat SP-beat- T-FV
 who
 'Who do you think that John said Lucy said Pat beat?'
 b. * U- ri- thugania ati John **n-** a- ug-ir- e Lucy **n-** a- ug- ir- e
 2nd SG- T- think that John F- SP-say-T- FV Lucy F- SP-say- T- FV
 Pat **n-** a- ring- ir- e **uu?**
 Pat F- SP-beat- T- FV who
 'Who do you think that John said Lucy said Pat beat?'

The main issues I address in this paper therefore are:

- (i) Why should a fronted wh-phrase bear a focus particle, and why should this particle never occur on an *in situ* wh-phrase?
- (ii) Why should the F-markers occur on the embedded verbs whenever there is long wh-movement?

In order to answer these questions appropriately, I discuss the theory proposed in Sabel (2000, 2002, 2003).

3. The trigger for wh-movement

The idea that focus features trigger wh-movement is adequately developed in Sabel (2000, 2002, 2003). Sabel's main claim is that wh-movement is universally triggered by [+wh] and [+focus] features both of which are [+interpretable] and can be specified as [$\pm$ strong]. Given that [+focus] and [+wh] features are [+interpretable], Sabel argues that these features need to be checked only when they are strong.

Sabel uses the idea that wh-movement is triggered by [+wh] and [+focus] features to account for the cross-linguistic positioning of wh-phrases in natural languages. His claim is that languages are parameterized with regard to the strong feature that causes wh-movement. For some languages, the strong feature triggering movement is a strong [+wh] feature; for others it is a strong [+focus] feature. The issue then is how to determine the feature responsible for movement in a particular language. Sabel argues that we can determine the feature responsible for movement because [+wh] and [+focus] features have different properties. His observation is that wh-features and focus feature differ because while [+wh] features are only found in the position where the wh-phrase takes scope, [+focus] features are found in matrix and embedded Cs. Sabel further speculates that whenever a wh-feature occurs in matrix C, a focus

feature co-occurs with it, and in case of long wh-movement, in all embedded Cs. Successive cyclic wh-movement movement is therefore attributed to the focus features in the embedded Cs. Given this parameterization of [+wh] and [+focus] features, Sabel contends that if there a language that allows partial wh-movement, the trigger for movement in such a language is a strong focus feature. German (14) is such a language.

- (14) **Was** meinst du **wen** Peter Hans t vorgestellt hat?
 What think you who Peter Hans introduced has
 ‘Who do you think Peter has introduced to Hans?’

Observe that when the real wh-phrase *wen* is partially moved in German, a wh-expletive *was* occurs in the matrix Spec CP. Sabel argues that this expletive marks the scope of the substantive wh-phrase and it also checks the strong focus feature in matrix C. Given that some languages that allow partial wh-movement also allow wh *in situ* (e.g. Kikuyu cited in Sabel 2000), the conclusion needs to be drawn that the strong feature responsible for wh-movement is optionally selected for the numeration.

Sabel’s idea that focus features occur in intermediate Cs and trigger cyclic wh-movement is not mere speculation. In Bahasa Indonesia and Tuki, focus markers occur only with wh-*ex situ*, not wh-*in situ*. Interestingly, when there is long wh-movement, the focus markers occur not just on the C of the matrix clause but also in the embedded C, (15 & 16):

- (15) [CP Tane **owu** Puta a- mu- dza [CP ee (**Owu**)vadzu va- mu- enda t]]?
 Where Foc Puta SP-PL- say that Foc children SP- PL- go
 ‘Where did Puta say that the children went?’ (Tuki; Sabel 2003: 236)
- (16) [CP Siapa **yang** Bill harap [CP **yang** t akanembali baju untunknya]]?
 Siapa Foc Bill hope Foc will buy clothes for him
 ‘Who does Bill hope will buy clothes for him?’ (Bahasa Indonesia; Sabel 2003: 237)

The fact that focus markers occur in embedded Cs is indeed evidence that it is a syntactic focus feature (reflected by these focus makers) that triggers long and cyclic wh-movement.

Sabel (1998) also shows that we can predict fairly accurately the feature responsible for wh-movement because there seems to be some correlation between partial wh-movement and wh-*in situ* in embedded questions selected by a matrix verb in optional wh *in situ* languages. Sabel’s observation is that optional wh *in situ* languages can be grouped into those languages that allow partial wh-movement and wh *in situ* in embedded questions selected by matrix verb (Iraq Arabic, Malagasy), and those that allow neither partial wh-movement nor wh *in situ* in embedded questions selected by matrix V (Duala French). Sabel’s conjecture is that for those languages where the trigger for movement is a [+wh] feature, matrix verbs selecting an interrogative CP obligatorily select a strong [+wh] feature, even though the [+wh] feature may be weak in non-selected environments. Wh *in situ* in embedded questions is therefore not expected in such languages. For those other languages where the trigger for movement is a [+focus] feature and not a [+wh] feature, the CP selected will have a weak [+wh] feature. The relevant feature responsible for movement will be a [+focus] feature and given that it can be strong or weak, wh *in situ* and *ex situ* is predicted to be fine in embedded questions.

In languages such as English where the wh-phrase must move to the matrix Spec CP, (17), the trigger for movement is a strong [+wh] feature.

- (17) a. **Who** did you say that Mary saw?
 b. *You said **who** Mary saw?
 c. ***What** did you say who Mary saw?

What we observe in English is that a wh-phrase cannot be partially moved. The explanation here is that movement of the wh-phrase to an intermediate Spec CP position creates a scenario where the strong wh-feature in the matrix C is not checked. Note further that even if a wh-expletive was inserted (15c), the derivation would still crash. A wh-expletive can therefore check a focus feature (the case of German), not a strong wh-feature (as observed for English, 15c) (cf. Sabel 2000). There are also other languages like

Duala that allow both *wh in situ* and *ex situ*, although they never allow partial *wh*-movement. The feature responsible for movement in Duala must therefore be an optionally strong [+wh] feature (cf. Sabel 2000).

To sum up, we have seen in this section that *wh*-movement is triggered by strong [+wh] and [+focus] features. When these features are weak, *wh in situ* occurs. The observation has also been made that while *wh*-features only occur in matrix C, focus features can occur in matrix C as well as embedded Cs. Matrix verbs selecting an interrogative CP obligatorily select a strong [+wh] feature, if the feature responsible for movement in such a language is a [+wh] feature. If the feature responsible for movement is a [+focus] feature, a weak [+wh] feature is selected by the interrogative verbs, predicting that *wh in situ* is possible in embedded questions in such a language.

4. Conclusions for Kitharaka

Recall that in partial *wh*-movement, the *wh*-phrase occurs in a non-scopal position. The immediate conclusion for Kitharaka therefore is that the trigger for *wh*-movement is a strong focus feature, not a strong *wh*-feature. If the *wh*-feature was strong, the *wh*-phrase would always be forced to move to the matrix Spec FocP. The *wh*-feature is therefore always weak in Kitharaka. Further confirmation for the fact that it is a [+focus] feature that is responsible for the various positions of *wh*-phrases in Kitharaka is borne by the fact that Kitharaka allows *wh in situ* as well as *ex situ* in embedded questions selected by a matrix verb (18):

- (18) a. N- ti- ji a- ka-gur- a **mbi**
 1st SG-NEG- know SP-T- buy- FV what
 ‘I do not know what she will buy.’ (wh *in situ*)
 b. N- ti- ji **i-mbi** a- ka-gur- a
 1st SG-NEG- know what SP-T- buy- FV
 ‘I do not know what she will buy.’ (wh *ex situ*)

We have already seen that in Kitharaka, a moved *wh*-phrase must bear a focus marker. On the other hand, an *in situ* *wh*-phrase cannot bear a focus marker. We have also seen that a *wh*-phrase cannot be fronted if it does not have the Focus marker, (cf. 6c). I argue that the F-marker attached to the *wh*-phrase is a reflex of a focus feature. It is this feature that is attracted by another strong abstract focus feature in Foc, hence causing movement of the *wh*-phrase in *wh-ex situ*, partial *wh*-movement and the intermediate strategy. I therefore take the presence of the focus marker on the *wh*-phrase to signal the positive (strong) setting of F. The absence of the F-marker on the *wh*-phrase indicates a weak focus feature in F. No movement is required as this would lead to a violation of last resort (cf. Chomsky 1995).

There is one issue that needs to be resolved with respect to partial *wh*-movement in Kitharaka. We have seen for German that when the *wh*-phrase is partially moved, a semantically vacuous *wh*-phrase (was) occurs in the matrix Spec CP. This expletive was argued to indicate the position where the substantive *wh*-phrase is interpreted. This expletive was also given the role of checking the strong focus feature in matrix C. The issue for Kitharaka then is how the *wh*-phrase gets scope and how the focus feature in the matrix Foc is checked given the absence of a *wh*-expletive. I assume that as in German, Kitharaka has an expletive, covert in this case, and that this expletive checks the strong focus feature in Foc and marks the scope of the substantive *wh*-phrase. For the intermediate strategy, the *wh*-phrase moves to Spec FocP to check the strong focus feature in Foc, and the subject moves to Spec TopP to check a strong topic feature in Top.

For cases with long *wh*-movement, I argue that the Focus marker on the verbs in the embedded sentence is a reflex of the strong focus feature in the intermediate Focs that is checked against the feature on the *wh*-phrase. My claim is that whenever there is a focus, the topic-focus field in Kitharaka is activated, (cf. Rizzi 1997). The subject NP moves to Spec TopP above FocP. The focus marker in Foc, which is a clitic possibly with a strong affixal feature, attracts the verb which adjoins to its right. *Wh*-movement in Kitharaka therefore occurs successive cyclically through intermediate Spec FocPs whose head positions (Foc) are filled by the focus marker and the adjoined verb. The focus marker does not occur on the matrix verb, in case of long *wh*-movement, because no intermediate FocP has been passed by the *wh*-phrase.

5. Summary

I have argued in this paper that wh-movement in Kitharaka is triggered by a strong focus feature in Foc. Spec head agreement between Foc and the wh-phrase is conveyed by the focus marker attached to a fronted wh-phrase, and in the case of long wh-movement, the F-marker attached to the verbs. A weak focus feature leads to wh-*in situ* in Kitharaka.

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On interrogative pro-verbs¹

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1. Introduction

Certain interrogative pro-word types have been considered rare or even nonexistent (e.g., Katz & Postal 1964: 99; Weinrich 1963: 122; Ultan 1978; Donegan & Stampe 1983: 339; Zaefferer 1990: 227; Gil 2001; Hagège 2003). For instance, Katz & Postal (1964: 98) claim, in a rather *a priori* manner, that "...the range of constituents that can be 'questioned' is actually quite small and, with one possible exception, is restricted to Noun Phrase and probably to the Determiner constituent of NP". This excludes the possibility of interrogative pro-verbs, as illustrated in (1), and must therefore be rejected.

- (1) Chukchi (Chukotko-Kamchatkan; <http://privatewww.essex.ac.uk/~spena/Chukchee/chapter4.html>)
req-ərkan-əm igirqej gə-nin ekək?
do.what?-PROGRESSIVE-EMPHASIS right.now 2SG-POSSESSIVE son.ABSOLUTIVE
'What is your son doing right now?'

Gil (2001) suggests that "question words can 'ask about' items belonging to major (or open) syntactic categories, but not minor (or closed) ones". This will allow for interrogative pro-verbs, but this is not very good either, for it fails to account for the fact that interrogative pro-verbs are a rare phenomenon. As to their rarity, Hagège (2003) advocates a principle of linguistic economy: "it is much more economical to split the questions into an interrogative word 'who?' or 'what?' + one of the two verbs with a generic meaning, i.e. 'be' and 'do'". This cannot be a full answer either. Why would a two word construction be more economical than a one word construction? And even if it is, language is as much prone to redundancy as to economy.

This paper aims to elucidate further the issue of the rarity of interrogative pro-verbs (section 3), against the background of a more general hypothesis on what constitutes a possible interrogative pro-word (section 2).

2. A possible interrogative pro-word

The general hypothesis contains two ingredients:

- (i) a statement on the generality of the presupposition going with constituent questions,
- (ii) a claim on the relevance of the endocentric vs. exocentric distinction.

2.1. Constituent questions & presupposition

All theories on constituent questions make room for the idea that a constituent question is based on a presupposition with a variable. In (2) the presupposition says that John saw somebody, and the variable is the 'somebody' whose identity the hearer is invited to disclose.

- (2) *Who did John see?*

As the example of an interrogative pro-verb illustrated in (1) with Chukchi shows, it is important to allow the predicate of the constituent question as a possible variable. In order to account for this, we propose the definition in (3).

- (3) A constituent question is a question that asks for an instantiation of the variable *x* in an *It is known that (possibly) HAPPEN/EXIST (... x ...)* structure. The structure is the presupposition that the

¹ This paper results from research conducted as a part of the GOA (Geconcerteerde Onderzoeksactie) "Mood and Modality" project of the University of Antwerp. We wish to thank the Research Council of the University of Antwerp for its financial support. We would also like to thank two anonymous reviewers for their comments on the abstract of this work submitted to the "Workshop on Syntax and Semantics of Questions" (9-13 August 2004, Université Henri Poincaré, Nancy, France, a part of the 16th European Summer School in Logic, Language and Information).

situation under interrogation (possibly) exists, existed or will exist. The variable *x* constitutes the focus of the constituent question and of its possible answer, and it is formally expressed by an interrogative pro-word.

The element *possibly* appears in the presupposition of examples like (4). Its presence is necessary there, because of the “weak” existential nature of such a presupposition as compared to “stronger” existential presuppositions of examples like (5).

(4) *Who can solve this problem?*

(5) *Who has bitten into the apple?*

In (5) there is a clear existential presupposition that *there is* somebody who has bitten into the apple, whereas (4) only supposes that there *possibly* is somebody who can solve the problem and whose identity the hearer is invited to disclose provided, of course, the latter knows such a person. If even such a possibility were not supposed, that is if the presupposition had an *It is known that it is not possible that* HAPPEN/EXIST (... *x* ...) structure, we would rather deal with a rhetorical question as in (6). Being rather a matter of pragmatics than semantics, rhetorical questions are not considered in this paper.

(6) *Who can solve this problem?! [It is simply impossible!]*

It is also worth mentioning that a presupposition can sometimes turn out to be false. This can be illustrated by the fact that questions (2), (4) and under certain conditions even (5)² can all be answered by *nobody*.

2.2. Endocentric vs. exocentric distinction

If we want to find out what categories of interrogative pro-words can exist in the languages of the world, we should first determine which elements can potentially be variables that value that of the HAPPEN/EXIST (...) predicate can depend on. Clearly, these are first of all phrasal categories and only indirectly terminal categories. In other words, every phrasal level element can potentially be an argument of the HAPPEN/EXIST (...) predicate. Hence, an interrogative pro-element for any phrase level element can theoretically exist: interrogative pro-noun phrase, interrogative pro-verb phrase, interrogative pro-adjective phrase, interrogative pro-adverb phrase, interrogative pro-numeral phrase, interrogative pro-adposition phrase, interrogative pro-complementizer phrase, etc.

However, in the lexicon we are not dealing with phrases, but with words which correspond to terminal categories in syntax. Therefore, in order to find out which interrogative pro-words can exist, a good use can be made here of a distinction between endocentric and exocentric constructions. Only endocentric constructions can be reduced to their heads, that is to the terminal categories that we are looking for, without being simply elliptical (cf., among others, Hartman & Stork 1972: 76, Crystal 1985: 109).³ Thus, it can be argued that interrogative pro-words can be of endocentric phrase creating categories only – in the traditional sense of ‘endocentricity’. Some examples are given in (7). The endocentricity parameter turns out to be somewhat difficult to apply to verb phrases in a straightforward way. Therefore, interrogative pro-verbs will be considered separately in section 3.

- | | | |
|-----|--|--|
| (7) | a. <i>Where do you live?</i> | ADVERB category is endocentric phrasal |
| | b. <i>In what town do you live?</i> | ADJECTIVE/ DEICTIC ATTRIBUTE category is endocentric phrasal |
| | c. <i>In what do you live?</i> | NOUN category is endocentric phrasal |
| | d. <i>*WH-ADPOSITION a town do you live?</i> | ADPOSITION category is exocentric phrasal |

Example (7b) needs some explanation because many people would say that *what* is a determiner there. First, *what* as found in (7b) can, at least in some contexts, be considered as an interrogative pro-adjective because it can be synonymous to *what kind of?* and the expected answer will then be something like (8).

(8) *I live in a BIG town.*

Second, a more natural interpretation of *what* in (7b) will however be to consider it as an adnominal deictic attribute. In what follows we will try to explain why the latter term is preferred to a more usual term of determiner.

Normally, under the label of determiner such different categories are subsumed as articles, adnominal demonstrative attributes, most adnominal indefinite attributes and possessives. There has been a certain trend in linguistics to consider determiners as the heads in the phrases [determiner + noun]. On the other

² For instance, if the speaker does not see the apple, but only knows that there is an apple in another room and s/he has only heard a sound resembling that of somebody biting into the apple, whereas in fact nobody has bitten into the apple at all.

³ In other words, endocentric constructions are constructions the head of which is the single grammatically obligatory element in the construction.

hand, a more traditional analysis of determiners is to treat them as dependents.⁴ This traditional analysis seems to us to be much more appropriate. In addition, it should be pointed out that according to Dryer (1992) the category of determiner is far from universal and, it should be added, far from homogeneous. As we see it, what are normally called “determiners” are better regarded as at least two different categories: articles and adnominal deictic attributes (specifiers). The latter category includes (at least in English) adnominal demonstrative attributes, most adnominal indefinite attributes and possessives. Adnominal deictic attributes (specifiers) constitute a phrase creating category, whereas articles do not. This is illustrated in (9). Consequently, only interrogative pro-adnominal deictic attributes are possible, but no interrogative pro-articles.

(9) [exactly this] *apple*, [exactly my] *apple* but not *[exactly the] *apple*⁵

Moreover, in many languages articles and other so-called determiners can even cooccur. This is illustrated by example (10) from Italian.

(10) *la mia mamma* ‘(*the) my mommy’

There is another point worth mentioning here. Many languages show a strong preference for treating all possible kinds of their interrogative pro-adnominal attributes in one and the same way as to the categorial characterization of these elements. This becomes most clear in the case of languages with a rich morphology. For instance, in Russian all interrogative pro-adnominal attributes, such as *kakoj* ‘what, what kind of; which’, *kotoryj* ‘which (one)’, *chej* ‘whose’, are morphologically adjectives. As far as English is concerned, its interrogative pro-adnominal attributes, such as *what*, *whose* and *which*, seem to be all treated in the same way as the interrogative pro-word *which*. The latter is best considered as interrogative pro-adnominal deictic attribute and not as “interrogative determiner” as is normally done. This is especially true if we speak in terms of interrogative *pro*-forms and not just in terms of interrogative words. Consider (11), where the most natural answer will be (a) or possibly (b), less so (c) and least of all (d).⁶

- (11) – Which *apple*?
 (a) – *This/ that apple*.
 (b) – *His/ my apple*.
 (c) – *Some apple*.
 (d) – *??The apple*.

As is shown in (12), neither *which*, nor *what*, nor *whose* can normally cooccur with an article, a possessive, an adnominal demonstrative attribute, or an adnominal indefinite attribute. The word *exactly* is also used in (12) in order to further highlight combinatorial differences of the elements at issue.

- (12) (*the) *what/ whose/ which* (*his/ *some) *house* (exactly)?
 (a) – (*the/ *a/ exactly) *this* (*his/ *some) *house* (exactly)
 (b) – *a* (??exactly) *nice house* (*exactly)
 (c) – (exactly/ the) *John’s house* (*exactly)

All the facts just presented clearly show that *what* in (7b) is best considered as interrogative pro-adnominal deictic attribute and not as interrogative determiner. Moreover, the same holds true for such interrogative pro-words as *which* and *whose*.

3. Interrogative pro-verbs

3.1. Interrogative pro-predicates: interrogative pro-verbs vs. interrogative pro-“non-verbal predicates”

Interrogative pro-verbs, as illustrated in (1) are a rare phenomenon. However, based on a scrutiny of a more or less representative sample of some three hundred fifty languages,⁷ it is clear that some types of

⁴ See, for instance, Van Langendonck (2003: 176-177) for a more detailed account of the discussion on the head/dependent status of determiners.

⁵ In an appropriate context, the last variant can be possible, but only if the article is stressed. However, in this case, the article functions as an adnominal anaphoric demonstrative attribute rather than as an ordinary definite article. The form *the* here does not indicate just the definite, known status of the referent of the word *apple*, but directly refers to the previous occurrence of the word *apple* in the discourse.

⁶ The variant (d) is possible only in an appropriate context and if the article is stressed. However, in this case, the article functions as an adnominal anaphoric demonstrative attribute rather than as an ordinary definite article. The form *the* here does not indicate just the definite, known status of the referent of the word *apple*, but directly refers to the previous occurrence of the word *apple* in the discourse.

⁷ The sample consists of languages from more than 70 language families (including several isolates) plus a couple of pidgins and creoles. The language families were counted in accordance with the Ethnologue (www.ethnologue.com/family_index.asp). It should

what grammars call “interrogative verbs” are more frequent than others. The reason is that the sources consulted often use such label as “interrogative verbs” for elements that are best described as interrogative pro-“non-verbal predicates” (i.e. “nominal predicates”, “adjectival predicates”, etc.). An example of such an element is given in (13).

(13) Tuvaluan (Eastern Malayo-Polynesian; Besnier 2000: 425)

Ne aa taulua olooga ki motu?
 NONPAST what your go+NOMINALIZER to islet
 ‘How did your trip to the islets go?’ (lit.: ‘What (was) your going to the islets’).

Interrogative pro-“non-verbal predicates” and interrogative pro-verbs can be unified in a superordinate category of interrogative pro-predicates.

As our sample has shown, interrogative pro-“non-verbal predicates” are more frequent than interrogative pro-verbs. In languages that do not use copulas they would seem to be completely normal even. It is interesting to note that there are even languages in which all or almost all interrogative pro-words regularly function as interrogative pro-“non-verbal predicates”. One such case is represented by Salishan languages, spoken on the coast of British Columbia, Canada, and in the adjacent region of the USA. According to Kroeber (1999: 247), “wh-questions in Salish generally take the form of clefts ... in which the wh-word evidently is not in a complementizerlike position, but rather is the predicate of the higher clause of a biclausal construction”; “the wh-word is the focus, and is followed by a relative clause introduced by an article” (Kroeber 1999: 262).

(14) Thompson (Salishan; Kroeber 1999: 263)

swét k=wík-t-xʷ
 who ARTICLE=see-TRANSITIVE-2SG.TRANSITIVE.SUBJECT
 ‘Who did you see?’

3.2. Interrogative pro-verbs: types and frequency

It can be argued that the difference in frequency between the interrogative pro-“non-verbal predicates” and interrogative pro-verbs also hangs together with the centricity parameter. On the one hand, non-verbal predicates in a language without copulas are typically intransitive and therefore endocentric. Consequently, an interrogative pro-“non-verbal predicate” would be very natural in such a language. On the other hand, an ordinary VP can be either endocentric or exocentric, depending on whether the verb is intransitive or transitive, respectively. How can one then question a VP?

The first possibility is to construe the VP as an argument of a general non-interrogative verb (such as *do*), as in English.

- (15) a. – *What did he do?*
 b. – *He swam/ He killed a bird.*

A construction based on a general non-interrogative verb such as *do* + complement *what* can represent both an endocentric phrase and an exocentric phrase because the interrogative pro-noun *what* is categorized as endocentric phrase creating. This can be compared to the interrogative pro-adverb *where* that is also categorized as endocentric phrase creating and that can stand for both an endocentric *there*, which is an adverb as well, and an exocentric *in London*, which is an adposition phrase. The verb *do* in turn serves to indicate that the information asked about is a process or action and that it is expected to be coded by a verb. In other words, the use of the *do* + *what* construction successfully clears up the VP centricity dilemma via a “division of labour”.

The second possibility is to create a single interrogative pro-verb inviting the hearer to identify the process, as illustrated in (16). In this case, however, we get a rather weird situation where a construal that categorizes as endocentric phrase creating is expanded to stand for exocentric phrases of one and the same category and consequently to categorize as exocentric phrase creating at the same time.

(16) Kayardild (a Tangkic language of Australia; Evans 1995: 371)

nyingka ngaaka-wath?
 2SG.NOMINATIVE what-INCHOATIVE
 ‘What are you doing?’

The third option is to use two interrogative pro-verbs, one intransitive ‘do what?’ and the other one transitive ‘do what to [sth/sb]?’ , as in Paamese.

be noted that the Ethnologue uses the label of language family not only for families in the traditional sense but also for linguistic phyla such as Niger-Congo and even Australian languages.

- (17) Paamese (Austronesian, Eastern Malayo-Polynesian; Crowley 1982: 159)
- a. *raise gosaa?*
rice do.what:3SG:REALIS
'How is it going with the rice?' (lit.: 'What is the rice doing?')
 - b. *ko-gosein tuu-mali?*
2SG-do.what.to:REALIS brother-2SG:MASCULINE
'What have you done to your brother?'

At first sight, the existence of transitive interrogative pro-verbs seems to contradict the centricity criterion, because these interrogative pro-verbs are categorized as exocentric phrase creating. This apparent controversy can be explained as follows.

First, it is important to notice that the intransitive interrogative pro-verb in this type can still be answered by both an answer like *He swam* and an answer like *He killed a bird*, the transitive interrogative pro-verb being nothing but a regular (applicative) extension of the intransitive one. The attested transitive interrogative pro-verbs always happen to be morphologically related to their intransitive counterparts and are never found as the only interrogative pro-verbs in a given language. Some regular transitivizing morphology seems to be indispensable for a language to be able to acquire a transitive interrogative pro-verb.⁸ In other words, a transitive interrogative pro-verb is nothing but a luxury a language can perfectly do without. In the same way, many languages are happy with expressing their recipients, benefactors or goals with just an adpositional phrase in combination with a simple intransitive verb, whereas others can afford a special applicative affix as well.

Second, if one considers the centricity from a semantic perspective, a transitive interrogative pro-verb seems to be somewhat more acceptable or tolerable than, for instance, an interrogative pro-adposition.⁹ The reason is that a transitive verb is as a head semantically much more prominent and to a certain extent independent as compared to an adposition.¹⁰ As a result, the complement of a transitive verb can be considered as being modifierlike and, consequently, the whole verb phrase as being semantically rather endocentriclike. In order to demonstrate this, let us compare an adposition phrase like (*John lives*) *in London* and a verb phrase like (*They eat apples*). As to the adposition phrase at issue, strictly speaking we cannot say whether the whole concept is about *in* or about *London*. Neither of them can be really interpreted as a hyponym to which the whole construction refers (in terms of Hudson 1990: 106), in the sense of *good friends* being a kind of subtype of friends. On the other hand, the verb phrase *eat apples* refers rather to a subtype of eating, just as good friends are a subtype of friends. This is also the reason why an *intransitive* interrogative pro-verb can be answered both by an answer like *He swam* and an answer like *He killed a bird*.

As far as the cross-linguistic frequency of the three options is concerned, the three strategies can be arranged as follows (in brackets approximate percentages based on our sample are given for each strategy):

- I. a general non-interrogative verb such as *do* + complement *what* ($\approx 90\%$)
- II. a single intransitive interrogative pro-verb 'do what?' ($\approx 7,5\%$)
- III. both an intransitive interrogative pro-verb 'do what?' and a transitive interrogative pro-verb 'do what to [sth/sb]?' ($\approx 2,5\%$)

Two other theoretically possible options should also be mentioned. The first one would be to create an intransitive interrogative pro-verb for intransitive situations only (an answer like *He swam*) and use Strategy I for transitive and intransitive situations. The other option would be to create only a transitive interrogative pro-verb and use Strategy I for intransitive and transitive situations. However, even though the centricity criterion does not rule out these options completely, it makes such languages extremely improbable, and, indeed, no such strategy has been reported yet. Why should this be so?

For a start, think about the following. Even if we simply consider these two combinations – Strategy I plus an intransitive interrogative pro-verb for intransitive situations only and Strategy I plus a transitive interrogative pro-verb for transitive situations only – as to their internal coherence, we will immediately

⁸ For instance, in our example (19b) from Paamese the transitive interrogative pro-verb *gosein* seems to include a reflex of an applicative-causative suffix *-ni* (cf. Crowley 1982: 151).

⁹ Provided, of course, an intransitive interrogative pro-verb is already available in the language.

¹⁰ Cf. in this respect Van Langendonck (2003: 173): "The head creates a semantic syntagmatic slot that allows for specific semantic fillers. This is particularly clear in the case of verbs, since the verb (often polysemous) establishes which semantic roles can go together with it... For instance, in the sentence *Peter bought us a drink*, the word *Peter* is the agent, *a drink* the patient, and *us* the beneficiary of the verb *bought*".

notice that they are both very redundant. Strategy I alone is absolutely sufficient, because it allows with equal ease for both an intransitive verb phrase as an answer and a transitive verb phrase as an answer.

In addition, the fact that such languages are highly improbable actually follows rather straightforwardly from what has just been said when explaining, first, why transitive interrogative pro-verbs happen to exist at all and, second, why an *intransitive* interrogative pro-verb can be answered by both an answer like *He swam* and an answer like *He killed a bird*.

Let us consider first the option using Strategy I plus a transitive interrogative pro-verb only. Being categorized as exocentric phrase creating, a transitive interrogative pro-verb already represents a certain violation of the centricity principle. Any violation of a general principle is naturally expected to be possible only provided some extra factors come into action. In other words, a transitive interrogative pro-verb seems to be able to appear in a language only provided some regular transitivity morphology is available and a comparable endocentric lexeme (i.e. an intransitive interrogative pro-verb) already exists in the language. This is so, because of the “first things first” logic: if a language happens to have an interrogative pro-verb at all, then according to the centricity principle a language is naturally expected to first have an interrogative pro-verb which is endocentric phrase creating, that is an intransitive interrogative pro-verb. Even though this endocentric phrase creating verb can be answered both by an answer like *He swam* and an answer like *He killed a bird*, what matters is that the interrogative pro-verb itself is endocentric phrase creating. Only when such a compromise with the centricity principle is agreed upon, only then, provided some regular transitivity morphology is available, a further deviation from the centricity principle can be made and a transitive interrogative pro-verb can come to existence.

As to the option using Strategy I plus an intransitive interrogative pro-verb for intransitive situations only (an answer like *He swam*), we have shown above that an intransitive interrogative pro-verb can as a rule be answered both by an answer like *He swam* and an answer like *He killed a bird* and we have also tried to explain why this should normally be the case. This implies that the option at issue is highly improbable. On the other hand, what we do have some chance to find is the following. When an intransitive interrogative pro-verb appears in a given language, this language can still go on using the *do* + *what* construction as well. In other words, in one and the same language we will find Strategy I (i.e., the *do* + *what* construction) and an intransitive interrogative pro-verb which allows for *both* an intransitive verb phrase as an answer *and* a transitive verb phrase as an answer.

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Movement and choice functions: On the syntax/semantics interface of answerhood conditions

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1. Introduction

The syntax/semantics mapping determining pair list (PL) and single pair (SP) readings in multiple questions has seen a recent revival of interest. In two groups of prominent studies, binding of choice function variables (cf. Reinhart 1998) plays a central role. In the Hagstrom–Bošković (H&B) approach (Hagstrom 1998, Bošković 2001), a Q morpheme—interpreted as an existential quantifier over choice functions—is moved from inside the sentence to the C-domain. On the other hand, in the approach developed in Barss (2000), Dayal (2002) developed for English (B&D), only *wh*-phrases themselves can move; movement of (quantifiers over) choice functions is not considered. According to Barss and Dayal, a PL interpretation requires multiple movements to CP (cf. also Pesetsky 2000). In this paper I offer a case study in Hungarian to show that B&D’s approach is correct provided that it takes into account the potential movement of (quantifiers over) choice functions.¹

The paper has the following structure. In Section 2 I examine and reject an analysis of Hungarian multiple *wh*-fronting (MF) in terms of syntactic focus- or topic-movement, and go on to examine the topic/focus structure of both the MF construction and the English-type multiple interrogative pattern in Hungarian. Building on the findings, I propose a structural analysis of both MF and the English-type pattern in Section 3. Section 4 explores the mapping between the discovered structural descriptions and (pair) list/single pair answers.

2. Multiple *wh*-fronting and topic/focus articulation

Based on syntactic, semantic and prosodic parallelisms it is standard to view *wh*-operators in single *wh*-questions as a special case of focus operators, and indeed in Hungarian (or Italian, Greek, Catalan, Bengali etc.) single *wh*-movement and focus movement apparently target the same left-peripheral position, identified as FocP in Brody (1990) (on such an analysis, it is the Foc head that houses the verb, which is inverted around the preverbal particle/prefix). Bošković (1997, 2000, 2002) argues that MF in some languages reduces to multiple syntactic focalization (see also Stepanov 1998). That analysis, however, cannot characterize Hungarian, given that multiple overt focusing—which is available in languages that Bošković’s analysis has been applied to, e.g. Serbo-Croatian, Russian—is strictly prohibited in Hungarian, which allows only a unique preverbal focus.² Thus, although it is feasible to analyze the lowest, immediately preverbal *wh*-occurrence as appearing in the focus position, the higher, preceding (henceforth: high) *wh*-phrases cannot be syntactically focus-moved.

Given the heavy use of syntactic topicalization in Hungarian (cf. É.Kiss 1994, 2002), it could be claimed that high *wh*-items in MF are in fact topics, and undergo topic-movement. However, high *wh*-phrases are syntactically distinct from topicalized constituents. First, topics can intersperse with certain adverbs (e.g. temporal, epistemic) or parentheticals, while high *wh*-expressions cannot:

¹ The analysis presented here essentially draws on chapter 6 of Surányi (2002). The present work has been supported by project grant OTKA TS 40 705, and by the Békésy György scholarship. See Surányi (to appear) for a more detailed discussion, as well as for a demonstration that the account of answerhood conditions I have put forward can be maintained in the context of a wider typology of languages. For reasons of space, no attempt is made here to assess the feasibility of a Hagstrom–Bošković style account of the Hungarian facts—though see the concluding notes.

² An assumption made by Bošković is that echo *wh*-elements bear a focus property but no [wh]-feature. That MF in Hungarian is not multiple focalization is confirmed by the fact that multiple echo questions do not involve MF (in contrast to Serbo-Croatian).

- (1) a. A lányt minden valószínűség szerint a fiúnak JÁNOS mutatta be
 the girl-acc in all probability the boy-dat J.-nom introduced Pref
 ‘As for the girl, in all probability, as for the boy, it’s John who introduced her to him’
 b. *Ki minden valószínűség szerint kinek kit mutatott be
 who-nom in all probability who-dat who-acc introduced Pref
 ‘Who introduced who to who in all probability?’

Similarly, two topics can be separated by a topicalized constituent, whereas two high *wh*-elements cannot. Long movement of a topic to a matrix clause is possible, but long movement of high *wh*-phrases to a similar position is severely degraded. Topics with pronouns bound from a lower A-bar position reconstruct, unlike analogous high *wh*-phrases:

- (2) a. A fia minden apának büszkeséget jelent
 [the his.son [every actor-dat pride-acc means
 ‘Every father takes pride in his son’
 b. *Melyik gyereke melyik férfinak jelent büszkeséget?
 [which his.child [which man-dat means pride-acc
 ‘Which man takes pride in which of his children?’

I conclude that neither a multiple focusing nor a multiple topicalization account can hold of Hungarian MF. In the remainder of this section I explore the topic–focus structure involved in Hungarian multiple questions, which will be of relevance in Section 3.

It appears that in MF multiple questions at least one of the fronted *wh*-elements must have the status of focus, not only semantically, but also syntactically. This is confirmed by the complementary distribution of MF with preverbal focus. That the immediately preverbal *wh*-element in MF is semantic focus is shown by the fact that that *wh*-element corresponds to immediately preverbal focus in the appropriate answers, as well as by the fact that it bears pitch accent. Significantly, high *wh*-phrases correspond to topics in the appropriate answers:

- (3) a. Ki mit látott?
 who-nom what-acc saw
 ‘Who saw what?’
 b. Péter a Terminátor 3-at látta, és János a Mátrix 2-t (látta)
 P.-nom the Terminator 3-acc saw and J.-nom the Matrix 2-acc (saw)
 ‘Peter saw Terminator 3, and John (saw) Matrix 2’
 c. #A Terminátor 3-at látta Péter, . . .
 the Terminator 3-acc saw P.
 ‘Peter saw Terminator 3, etc.’ (unacceptable as an answer to (a))

This indicates that high *wh*-elements are interpreted at the interfaces as topics (and not as foci). The same is suggested by the fact that high *wh*-expressions invariably quantify over presupposed sets (whereas the immediately preverbal *wh*-phrase may or may not).

In short, although high *wh*-elements are not syntactically topicalized, they have the discourse semantic status of topic.³ As a consequence, *wh*-phrases cannot bear [+foc] as a lexical feature, rather, this property must be an optional feature assigned to them in the Numeration/Lexical Array—just like in the case of ordinary foci. In these terms, the common assumption of the parallelism of *wh*-operators and focus, which I have also adopted here, holds that the *wh*-pronoun in single constituent questions must be assigned [+foc] in the NUM/LA in order to function and be interpreted as a question operator. Transposing this to multiple questions, at least one *wh*-item must be focused there too. In Hungarian MF, exactly one *wh*-pronoun must be [+foc] (namely the linearly last one in the cluster of fronted *wh*-phrases): overt focus movement is triggered by a strong [foc] feature on the Foc head.⁴

I examine next the discourse functional status of *wh*-in-situ in the other pattern of multiple questions in Hungarian, which is akin to English-type multiple interrogatives. Given that [+foc] is not an

³ Bolinger (1978) calls the *wh*-phrase in a multiple question that contributes the sorting key (cf. Kuno 1982) the ‘topic’ of the multiple question. Note that in English-type languages, the sorting key can be provided either by the fronted or by the surface in situ *wh*-elements. See Grohmann (to appear) and references therein for a discussion of topicality of *wh*-phrases.

⁴ The choice of the linearly last, immediately preverbal *wh*-phrase as [+foc] is a result of the checking mechanism in derivational syntax. This is not immediately relevant to present concerns and is left aside.

inherent feature of *wh*-pronouns, if it is sufficient to have one *wh*-phrase functioning as focus in a (multiple) question, the second *wh*-item in English-type multiple interrogatives a priori may or may not be assigned [+foc] (and in MF they are not). Indeed there is empirical evidence that both options are realized in Hungarian English-type multiple interrogatives. Focused constituents undergo obligatory syntactic fronting and are immediately followed by the inverted verb in Hungarian, both in root and in embedded clauses. Of interest now are English-type bi-clausal multiple interrogatives that have a *wh*-phrase in (the focus position of) the matrix clause, and a second *wh*-phrase within the complement clause. What can be witnessed in such cases is that the second *wh*-element only *optionally* fronts within the embedded clause to the immediate left of the embedded verb.

- (4) a. Melyik fiú állítja, hogy felhívta melyik lányt?
 which boy claims that up-called which girl-acc
 b. Melyik fiú állítja, hogy melyik lányt hívta fel?
 which boy claims that which girl-acc called up
 ‘Which boy claims that he phoned which girl?’

This contrasts with the patterning of an analogous sentence with multiple foci, where a focused constituent in the embedded clause (e.g. ‘only Mary’) *must* raise to focus position. The apparent optionality in (1), then, derives from the optional assignment of [+foc] to the in situ *wh*-element in the NUM/LA.

3. Focusing, *wh*-saturation and the structure of multiple questions

Having argued against analyzing Hungarian MF in terms of multiple focusing or multiple topicalization, taking into account the fact that fronted *wh*-elements form a non-disruptable cluster, the obvious remaining candidate is bona fide overt multiple *wh*-movement to a multiple specifier configuration, triggered by strong [wh]. One option is to identify the relevant functional head in the C-system, i.e. Foc, as the bearer of the strong [wh] that triggers multiple movement. However, that treatment would face the problem of introducing lexical ambiguity in Foc itself in order to account both for MF and the English-type multiple question pattern (in terms of a single-[wh] feature vs. a multi-[wh] feature, the latter overtly attracting an indefinite number of *wh*-elements, cf. Chomsky (1995), Bošković (1999, 2000)). Further, Hungarian allows multiple questions with both MF and an in situ *wh*-phrase:⁵

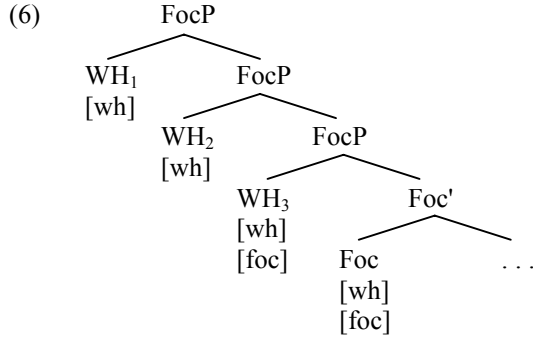
- (5) a. (Mondd el) melyik filmben ki öl meg kit?
 (tell-imp Pref) which film-in who kills Perf whom
 ‘(Tell me) who kills who in which film?’
 b. (Mondd el) ki mit tévesztett össze mivel?
 tell-imp Pref who what-acc confused Pref what-with
 ‘(Tell me) who confused what with what?’

Such sentences cannot be generated in such a bifurcated system of [wh]-features on Foc.

The alternative analysis, which I will assume, holds that in MF [wh] is strong on the moved *wh*-pronouns themselves (cf. also Lasnik 1999, Chomsky 2000 for relevant discussion of ‘Attract’ vs. ‘Move’, i.e. the location of offending features).⁶ The structure and feature composition I am assuming in the MF construction is given schematically below.

⁵ In fact Hungarian also allows one *wh*-phrase to be fronted, and two (or more) *wh*-phrases to be left in situ (this contrasts Hungarian with Bulgarian, where such patterns are ungrammatical, cf. Pesetsky 2000).

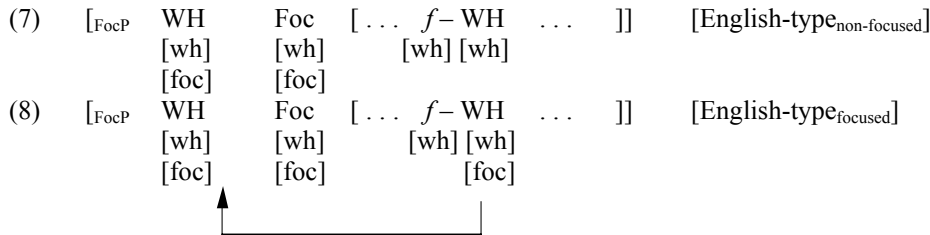
⁶ The [wh](-related) feature on Foc may also be strong (in Chomsky’s (2000) system, it must be); that choice is irrelevant for the present purposes.



Multiple [wh]-specifier (vs. single [wh]-specifier) structures are generally implicationaly related to an obviation of *wh*-island effects, as well as to the availability of long multiple *wh*-movement to a superordinate *wh*-position, as for instance in Bulgarian (cf. Rudin 1988, Richards 1997). Indeed, Hungarian parallels Bulgarian in this regard, as expected.⁷

On the present analysis, English-type multiple questions in Hungarian stand out as special in that even though the in situ *wh*-pronouns also bear strong [wh], they do not overtly raise. I adopt the view that Hungarian *wh*-pronouns are bare indefinites (cf. Cheng 1991, Nishigauchi 1990; Lipták 2001 for Hungarian). I propose to treat English-type Hungarian multiple interrogatives, following Reinhart (1998), as involving binding of choice function variables.⁸ I suggest that the syntactic reflex of combining a bare *wh*-pronoun with a D head filled by a choice function (variable) in Hungarian, is that the [wh] feature of the *wh*-pronoun will be checked. For concreteness, assume that choice function variables combining with *wh*-pronouns carry [wh]. This means that the [wh]-property of the bare *wh*-pronoun will be able to get checked locally within the full *wh*-phrase, plausibly, via head-movement to D.⁹ Choice function variables associated with *wh*-elements are bound long-distance, are quantified existentially, and by definition they ‘choose’ (i.e. output) an individual from a set (Reinhart 1998). The mechanism entails that island boundaries or quantificational interveners (e.g. Beck 1996, Cheng and Rooryck 2000) will not disrupt the dependency. These consequences are indeed verified in Hungarian.

Recall from the previous section that the in situ *wh*-elements in English-type questions may optionally be associated with [+foc]. An English-type question that involves a [+foc] in situ *wh*-phrase (English-type_{focused} for short) is essentially analogous to a sentence with multiple foci. I will follow Brody (1990) and Szabolcsi (1997) here in taking in situ foci in Hungarian to raise to the preverbal focus covertly. Notice then, however, that two kinds of English-type questions are being entertained in Hungarian, sharing the same surface pattern: while one involves covert movement, the other does not (*f*: choice function variable).¹⁰



4. Syntactic structure and answerhood conditions

In general, a multiple interrogative can be answered either with a single pair (SP) or a list (typically a pair-list, PL). More specifically, certain multiple interrogative constructions may allow both of these

⁷ On the present analysis, Hungarian is a minimal pair of Bulgarian if Bošković's (1998, 2000) analysis of Bulgarian is correct. Bošković claims that in Bulgarian exactly one *wh*-phrase is fronted to check [wh] (and [foc]), and further *wh*-phrases check only [foc], while in Hungarian exactly the reverse is true.

⁸ Indeed, English-type multiple questions in Hungarian in general cannot involve non-specific adverbial in situ *wh*-phrases like ‘how’ and ‘why’ (cf. Reinhart 1998).

⁹ For example, in [DP *f*[wh] [NP who[wh]]], the N who checks against D, occupied by *f*.

¹⁰ Note that I am assuming that the in situ *wh*-phrase containing a choice function determiner can (covertly) raise to FocP. This is similar to what Hagstrom (1998) assumes for pure *wh*-in-situ languages like Japanese, with the difference that according to Hagstrom, there an existential quantifier over choice functions (coined Q) raises alone, stranding *wh*-in-situ phrases.

answer types as appropriate, others may be expected to be answered only by SP, or only by PL. I demonstrate now that the distribution of the SP and PL interpretations across the constructions identified above can be straightforwardly derived on the basis of the structural descriptions I have proposed.

Here I will adopt Higginbotham and May's (1981) proposal, also maintained in Barss (2000), that Absorption is a necessary and sufficient condition for a PL reading to obtain. Absorption is a rule of the syntax/semantics interface that requires structural adjacency of the relevant A-bar elements. Practically, this entails that if Absorption is to take place, it requires the *wh*-phrases to raise to the same FocP, the checking position of *wh*-operators. If correct, this assumption directly explains a prominent fact about Hungarian MF questions: they can only receive PL answers, but not SP answers.

English-type_{non-focused} questions do not have the surface in situ and the preverbal *wh*-phrase in structurally adjacent positions, hence only an SP reading is expected. On the other hand, English-type_{focused} questions do have the surface in situ *wh*-element as structurally adjacent to the preverbal *wh*-phrase in covert syntax¹¹, hence a PL reading is predicted. That is, for the English-type surface pattern it is predicted that either a SP or a PL reading should be available. All sources on Hungarian describe English-type questions as allowing a SP reading. However, it has gone unnoticed that they also license a PL answer.¹² What is remarkable, however, is that although both MF questions and English-type_{focused} questions (involving singular *wh*-phrases) can be answered with a list, this list strictly *must* involve individuals as second members of the pairs (*n*th members of the *n*-tuples) in the case of English-type_{focused} interrogatives ('matching questions'), whereas an answer to MF questions can also have sets of individuals as second (*n*th) members.¹³ In fact, the analysis I have proposed already explains this restriction with respect to PL answers to English-type questions. English-type questions involve the application of a choice function variable to a *wh*-pronoun. In English-type_{focused} questions, the (determiner of the) in situ *wh*-item undergoes Absorption with the (determiner of the) preverbal *wh*-operator, hence the list reading. Given that choice functions by definition output individuals only, the list will contain individuals as second members. This is suggestive evidence of the role played by choice functions in such 'matching' questions.

A further correct consequence of the account developed here is the following. Given that Absorption requires movement of the in situ *wh*-phrase in English-type questions, in contexts where this movement is not conceivable—for instance due to locality restrictions—it is predicted that such English-type questions cannot expect a PL answer, only an SP answer. Thus, (6a) which involves an island, should allow only for a SP answer. Similarly, (6b), involving a quantificational intervener between the preverbal and the in situ *wh*-phrases, is expected to be incompatible with a PL reading. These predictions are indeed verified.

- (9) a. Melyik fiú lett ideges miután felhívta melyik lányt?
 which boy became angry after up-called which girl-acc
 'Which boy got angry after he phoned which girl?'
 b. Melyik szervező mutatta be minden jelöltnek melyik opponensét?
 Which organizer introduced Pref every candidate-dat which opponent-his-acc
 'Which organizer introduced every candidate which of his opponents?'

Recall now the discussion of bi-clausal English-type double questions like (4) from Section 2, where I demonstrated that the second *wh*-expression either undergoes local focus movement within the complement clause (when it bears [foc]) or it does not (when it does not bear [foc]). I have established that English-type_{non-focused} questions must receive a SP answer. This correctly holds of (4a) as well. On the other hand, I have demonstrated that English-type_{focused} questions may also receive a PL answer (of a restricted kind). (4b) on the present account is an English-type_{focused} question. However, given that the second *wh*-element moves to FocP of the lower clause, no structural adjacency obtains, hence, in turn, Absorption cannot apply. Thus for (4b) only a SP reading is generated, once again, the right prediction: (4b) is indeed incompatible with a PL answer.

¹¹ There is evidence that covert *wh*-movements may involve category-movement (e.g. Pesetsky 2000).

¹² As such, clauses with an English-type pattern can be arguments of verbs like 'list' or 'enumerate'.

¹³ An English-type multiple question cannot be felicitously answered by a sentence like (i):

(i) János nézett rá Marira és Sára-ra, Pali Gabira, . . .
 'John looked at Mary and Sarah, Paul looked at Gaby, . . .'

On the other hand, if the second *wh*-element in (1) can be made both [+foc] and associated with the preverbal *wh*-phrase in the matrix clause, then a list reading is expected to re-appear, exceptionally. The relevant case is (10):

- (10) ‘They broadcasted reports about so many sportsmen and so many old sports events that in the end I was unable to follow...’
 ... melyik versenyző dicsekedett, hogy hol végzett melyik versenyen
 which sportsman boasted that where finished which competition-at
 ‘...which sportsman boasted of which place he finished at in which competition’

Here the matrix verb embeds an interrogative itself. This interrogative clause has its own *wh*-operator *hol* ‘where’ in [Spec,FocP]. This allows the construal of the in situ *wh*-phrase as [+foc], which then can be syntactically associated with the *wh*-operator of the matrix clause (characteristically of such ‘*wh*-triangle’ situations), via covert movement. In this case, a PL interpretation is predicted to be induced by the matrix and the in situ *wh*-phrases. Indeed, this is the fact: (10) can be responded to as in (11).

- (11) JÁNOS dicsekedett, hogy hol végzett a VB-n, PÁL dicsekedett, hogy hol végzett az Olimpián...
 ‘It’s John who boasted of where he finished at the World Cup, it’s Paul who boasted of where he finished at the Olympics...’

Thus, the present approach is able to give an accurate account of the complex pattern of distribution of the PL and SP readings both across and within the two multiple interrogative constructions in Hungarian.

5. Concluding remarks

In this paper I have made the following points. (i) Hungarian MF involves true multiple *wh*-movement. Hence, MF cannot be cross-linguistically reduced to multiple movements driven by discourse function such as focus/topic, contra Bošković (2002). This is in fact the null hypothesis: if other multiple A-bar movements are well-attested, it is unclear why *wh*-movement should be an exception. (ii) Focus structure plays a crucial role in the covert structure of English-type multiple interrogatives in Hungarian. The in-situ *wh*-phrase can be related to the preverbal *wh*-operator either by covert (focus) movement or by binding of a choice function variable. Both these mechanisms need to be present in the grammar of *wh*-in-situ. (iii) A list interpretation correlates with multiple syntactic movements to the CP-domain.

These results are consonant with the view developed for English by Barss (2000) and Dayal (2002), where multiple movements are required to produce a list reading.¹⁴ On the other hand, they apparently contradict, and require modifications in, the Hagstrom–Bošković (H&B) account. It is argued in H&B that *wh*-movement is only compatible with a (pair) list reading, and rules out the single pair reading. If the analysis presented here is on the right track, this seems to be disconfirmed by English-type multiple questions in Hungarian, which are assumed to involve *wh*-movement. The effect of (non-*wh*-)islands containing the *wh*-in-situ element in a Hungarian double question (i.e. the loss of the list reading) is also mysterious under H&B, given that the Q particle (see Section 1) in principle could be appended to the containing island itself—this option is present elsewhere within the account.

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¹⁴ That such a general approach can be maintained cross-linguistically is argued in Surányi (to appear). The initial expectation is that other MF constructions in East European languages should also invariably receive a PL reading. That expectation, however, is not borne out. As I show in Surányi (to appear), this is unsurprising insofar as—as Bošković has argued for several Slavic languages—not all MF constructions involve (overt or covert) multiple *wh* (i.e. [wh]-feature checking) movements. Wh-Absorption, however, applies not just to any two adjacent *wh*-phrases, but to two *wh*-operators in their *wh*-operator position.

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Another Look at Exhaustivity Effects and the ‘de dicto’ Reading in Embedded Interrogatives

Ingo Reich[□]

1 Introduction

Both exhaustivity effects and the so-called ‘de dicto’ reading are well-known and much discussed topics in the literature on the syntax and semantics of embedded *wh*-interrogatives. Though the discussion can be traced back to, at least, Belnap (1963), these phenomena only became really prominent with the work of Groenendijk and Stokhof (1982, 1984). Criticizing Karttunen’s (1977) adaption of Hamblin’s (1973) ‘set of propositions’ approach, Groenendijk and Stokhof (1982, 1984) argue that an adequate semantics for embedded interrogatives needs to account for the (in)validity of at least the following inferences:

- | | |
|---|---|
| <p>(1) John knows who came to the party.
Mary came to the party.</p> <hr style="width: 80%; margin: 5px auto;"/> <p>John knows that Mary came to the party.</p> | <p>(2) John knows who came to the party.
Sue didn’t come to the party.</p> <hr style="width: 80%; margin: 5px auto;"/> <p>John knows that Sue didn’t come to the party.</p> |
| <p>(3) John knows where one can buy coffee mugs.
Starbucks sells coffee mugs.</p> <hr style="width: 80%; margin: 5px auto;"/> <p>John knows that Starbucks sells coffee mugs.</p> | <p>(4) John knows who came to the party.</p> <hr style="width: 80%; margin: 5px auto;"/> <p>John knows which students came to the party</p> |

(1) and (2) are claimed to be valid. (1) illustrates the so-called *weak exhaustive* reading: For *John knows who came to the party* to be judged true, John (only) needs to know of everybody who came to the party that s/he came to the party. (2) illustrates the *strong exhaustive* reading: For *John knows who came to the party* to be judged true, John needs to know of all people who came to the party that they came (weak exhaustive knowledge), and, in addition, that nobody else came to the party (from which he can, of course, conclude that Sue didn’t come to the party). The most prominent reading of *John knows where one can buy coffee mugs* is called the *non-exhaustive* (or *mention-some* or *existential*) reading: In this reading, it is already sufficient that John knows one place or another where one can buy coffee mugs. Relative to this reading the inference in (3) is felt to be invalid. Finally, let’s have a look at (4). Intuitively, (4) is felt to be invalid, too (at least in one reading). Why is that? It seems that in case a *wh*-phrase carries an overt restriction, the knowledge attributed to the matrix subject tends to not only relate to the verbal predicate, but to extend to the *wh*-phrase’s restriction: John is asserted to know of all students who came to the party that they came *and* to know that they are students. This is called the ‘de dicto’ reading of the *wh*-phrase/-complement.

Crucial for Groenendijk and Stokhof’s argumentation is the data in (2) and (4). Firstly, in Karttunen’s (1977) approach a question like *which students came* is taken to denote the set of true propositions of the form *x came*, where *x* is a student, cf. (5b); secondly, it is assumed that to know a question *Q* is equivalent to know every element in *Q*. Thus, Karttunen’s analysis accounts for (1), but it does not account for (2); nor does it account for (4) (since the restriction *student* is not part of the condition on *p*).

- (5) a. John knows which students came.
 b. $\lambda p \lambda x [\text{student}(w)(x) \sqcap p(w) \sqcap p = \lambda w. \text{came}(w^{\hat{}})(x)]$
 c. $\lambda p \lambda x [\text{student}(w)(x) \sqcap p(w) \sqcap (p = \lambda w. \text{came}(w^{\hat{}})(x) \sqcap p = \lambda w. \neg \text{came}(w^{\hat{}})(x))]$

To account for strong exhaustive readings, Karttunen (1977, 21f.) discusses (5c) as a possible alternative anal-

[□] This work has been supported by grant RE 1663/1-1 of the German Science Foundation (DFG).

ysis, but gets to the conclusion, that this analysis needs to be rejected, since it implements truth-conditions that are too strong. (Consider, e.g., the sentence *John knows which elementary particles have been discovered so far.*) Groenendijk and Stokhof, on the other hand, propose a propositional analysis in which *wh*-complements denote strong exhaustive propositions. Say, John, Bill, and Mary came to the party, then *who came to the party* essentially encodes the information that John, Bill, Mary, and nobody else came to the party. This analysis can be shown to capture the ‘de dicto’ reading in a very straightforward way, and to be extendable to also account for non-exhaustive readings (cf. Groenendijk and Stokhof, 1984, 534ff).

Weak exhaustiveness in this account is just an entailment of strong exhaustiveness. However, most notably Berman (1991) and Schwarz (1994) show that predicates like *to tell* or *to rattle off* show a strong tendency towards a weak, but not strong exhaustive reading:

- (6) a. John told Peter who came to the party.
- b. John rattled off who came to the party.

Heim (1994) and others conclude from these facts that what is needed for an empirically adequate semantics for *wh*-complements is a more flexible approach to exhaustivity, the strategy being to enrich a variant of Karttunen’s semantics with different kinds of answerhood conditions. In the remainder of this paper, I will first discuss the most prominent proposal of this kind, namely the Heim/Beck/Rullmann approach, and I will show that this approach does not account for an important class of empirical data. Following this discussion, I will —basically pursuing the same strategy— develop an alternative approach within traditional possible worlds semantics.¹ This approach crucially relies on the assumption that embedded *wh*-interrogatives denote generalized quantifiers ranging over properties of true answers. In the last part of the paper, I will finally present a pragmatic analysis of the ‘de dicto’ reading that is based on the use of structured propositions.

2 Embedded Interrogatives and Exhaustivity Effects

As already hinted at in the last section, Heim (1994) showed in detail that it is in principle possible to enrich Karttunen’s semantics for embedded questions with answerhood conditions resulting in a propositional approach (more or less) in the spirit of Groenendijk and Stokhof. Intuitively speaking, in a sentence like *John knows who came to the party* the matrix predicate *know* relates the matrix subject to the (denotation of the) answer to the embedded question *Q* rather than to the (denotation of the) embedded question *Q* itself. Since answers are of a propositional nature, it is straightforward to derive an answerhood condition answer_1 implementing weak exhaustiveness by simply taking the intersection of the question’s denotation, cf. (7a). (This could be a type-shifting operation or triggered by the lexical semantics of the embedding predicate.)

- (7) a. $\llbracket \text{answer}_1(w)(Q) \rrbracket := \sqcap \llbracket Q \rrbracket(w)$ (type $\llbracket s, t \rrbracket$)
- b. $\llbracket \text{answer}_2(w)(Q) \rrbracket := \lambda w^\dagger [\sqcap \llbracket Q \rrbracket(w) = \sqcap \llbracket Q \rrbracket(w^\dagger)]$ (type $\llbracket s, t \rrbracket$)
- c. $\llbracket \text{answer}_3(w)(Q) \rrbracket := \lambda P \sqcap p[P(w)(p) \sqcap Q(w)(p) \sqcap p(w)]$ (type $\llbracket \llbracket s, \llbracket s, t \rrbracket, t \rrbracket, t \rrbracket, t \rrbracket$)

Using Groenendijk and Stokhof’s mechanism of deriving partitions by comparing denotations in each possible world, we can derive a second answerhood condition, answer_2 , on the basis of answer_1 , cf. (7b). This answerhood condition is (almost) equivalent to Groenendijk and Stokhof’s analysis of *wh*-complements and therefore licenses inferences exemplifying strong exhaustiveness. Finally, to account for non-exhaustive readings, Beck and Rullmann (1999) propose to add another answerhood condition to the analysis, answer_3 , which is essentially an existential generalized quantifier over properties of propositions, cf. (7c).

When discussing questions of exhaustiveness, the relevant literature almost exclusively focuses on *know*-type predicates which have been dubbed *extensional* in Groenendijk and Stokhof (1982). If we have, however, a somewhat closer look at the so-called *intensional* predicates of the *wonder*-type class,

- (8) a. John wonders where he can buy a coffee mug.
- b. John wants a detailed list (of) who plans to attend the conference.
- c. John investigates which/how many predicates embed strong exhaustive interrogatives.

¹ Being primarily concerned with extensions and/or modifications of the traditional Hamblin/Karttunen approach, I won’t enter here into a discussion of the interesting proposal presented in van Rooy (2003).

we can observe exactly the same phenomenon: predicates of this class also allow for non-exhaustive —cf. (7c)—, weak exhaustive —cf. (8b)—, and strong exhaustive —cf. (8c)— readings. Though this is not necessarily a problem,² it is a problem, if it is assumed that *wonder*-type predicates simply denote relations between individuals and questions (cf. e.g. Berman, 1991, and more carefully Beck and Rullmann, 1999).

In this paper, I want to propose that interrogative *wh*-complements —whether embedded under an extensional predicate of the *know*-class or an intensional predicate of the *wonder*-class— uniformly refer to a complete question/answer sequence: *wh*-complements denote generalized quantifiers ranging over properties of true answers, where true answers are taken to be sets of true propositions. The basic idea underlying this analysis is that *wh*-complements behave in many respects parallel to indefinites in extensional and intensional contexts. Within a Montague-style analysis, indefinites denote generalized quantifiers ranging over properties of individuals. If the indefinite is embedded under an intensional predicate (in its *de dicto* reading) like, e.g., *seek* (of type $\langle s, \langle \langle s, \langle s, \langle e, t \rangle \rangle \rangle \rangle, t \rangle, \langle e, t \rangle \rangle$), the quantifier's intension serves as the semantic argument of the intensional predicate. If it is embedded under an extensional predicate like, e.g., *find* (of type $\langle s, \langle e, \langle e, t \rangle \rangle \rangle$), the quantifier leaves a trace of type *e*, and raises to a position above the extensional predicate; as a consequence the order of functor and argument is inversed.

(9) John seeks a unicorn.

- a. **seeks**(*w*)(*John*, $\lambda w^\flat. \lambda P \langle \langle s, \langle s, \langle e, t \rangle \rangle \rangle, t \rangle. [\text{unicorn}(w^\flat)(x) \sqcap P(w^\flat)(x)]$)
- b. $\lambda P \langle \langle s, \langle s, \langle e, t \rangle \rangle \rangle, t \rangle. [\text{unicorn}(w)(x) \sqcap P(w)(x)] (\lambda w^\flat \lambda x. \text{finds}(w)(\text{John}, x))$

A similar analysis is in fact available in case of *wh*-complements. Suppose the unembedded variant *Q* of the question *where he can buy a coffee mug* denotes in *w* the set of (not necessarily true) propositions of the form *he can buy a coffee mug at x*, where *x* is some place in *w*. Suppose furthermore that any subset *X* of *Q* in *w* is a possible answer to *Q* in *w* ($\llbracket \text{answer}(w)(X)(Q) \rrbracket = 1$ iff $X \sqsubseteq Q(w)$), and that it is a true answer, if every proposition contained in *X* is true ($\llbracket \text{true}(w)(X) \rrbracket = 1$ iff $\sqcap p, p \sqsubseteq X, p(w) = 1$). Given this, the *wh*-complement in (10a), in its non-exhaustive reading, is assigned the denotation in (10b), an existential generalized quantifier over properties of true answers.

- (10) a. (John knows) where he can buy a coffee mug
- b. $\lambda w \lambda P \langle \langle s, \langle s, \langle e, t \rangle \rangle \rangle, t \rangle. [\text{answer}(w)(X)(Q) \sqcap \text{true}(w)(X)] \sqcap P(w)(X)$

Being an extensional question embedding predicate, *know* is of semantic type $\langle s, \langle \langle \langle s, \langle s, \langle e, t \rangle \rangle \rangle, t \rangle, t \rangle, \langle e, t \rangle \rangle$ (and of type $\langle s, \langle \langle s, \langle s, \langle e, t \rangle \rangle \rangle, t \rangle, \langle e, t \rangle \rangle$ if it embeds a declarative complement); thus, to avoid a type mismatch, the *wh*-complement needs to raise at LF, cf. (11c). Its interpretation results in exactly the intended reading, cf. (11b): John_i needs to know some answer to the question *Where can I_i buy a coffee mug?*³

- (11) a. John knows, where he can buy a coffee mug.
- b. John [1 [[where he can buy a coffee mug] [2 [t₁ knows t₂]]]]
- c. $\lambda w. \langle \langle s, \langle s, \langle e, t \rangle \rangle \rangle, t \rangle. [\text{answer}(w)(X)(Q) \sqcap \text{true}(w)(X)] \sqcap \text{know}(w)(X)(\text{john})$

In its overall shape this analysis is very similar to the analysis of non-exhaustive readings in Beck and Rullmann (1999), the only difference being that in the Beck/Rullmann approach *answer*₃ ranges over properties of propositions, rather than over properties of sets of propositions as proposed here. But there are two more crucial differences. Firstly, I explicitly assume *wonder*-predicates to be intensional question embedding predicates of type $\langle s, \langle \langle s, \langle s, \langle \langle s, \langle s, \langle e, t \rangle \rangle \rangle \rangle, t \rangle, t \rangle, \langle e, t \rangle \rangle$, i.e., (12a) is interpreted as (12b).

- (12) a. John wonders where he can buy a coffee mug.
- b. **wonders**(*w*)(*john*, $\lambda w^\flat \lambda P \langle \langle s, \langle s, \langle e, t \rangle \rangle \rangle, t \rangle. [\text{answer}(w^\flat)(X)(Q) \sqcap \text{true}(w^\flat)(X)] \sqcap P(w^\flat)(X)$)

² The Heim/Beck/Rullmann approach could in fact be generalized to *wonder*-type predicates along the lines suggested by the analysis in Groenendijk and Stokhof (1982). We will see, however, that the proposal presented below shows some additional interesting implications related to the analysis of quantificational variability on the one hand, and the ‘*de dicto*’ reading on the other hand.

³ Following Karttunen (1977), I assume that to know a set of propositions *X* is equivalent to know every proposition *p* that is an element of *X*. As Karttunen noted himself, there is a potential problem with the empty set: If the set in question is empty, the *know*-relation is trivialized. There are two remarks in place here. First, I’ve got strong intuitions that in non-exhaustive readings this situation seems to be excluded by background assumptions, i.e., by some kind of existential presupposition. This is, however, most probably not true for exhaustive readings. I will therefore assume that empty *wh*-complements are always subject to a strong exhaustive interpretation. In this case the matrix subject will know the proposition that the maximal true answer to the question is the empty set (cf. (13c) below).

Thus, whatever the correct lexical semantics of *wonder* looks like, non-exhaustive (de dicto) readings are predicted to be possible not only in case of *know*-type predicates, but also in case of *wonder*-type predicates. Secondly, the answerhood condition *answer3* in Beck and Rullmann’s approach is very different from *answer1* and *answer2*, and it seems to have some kind of independent status. In the analysis proposed here, the non-exhaustive reading is the most basic answerhood condition in the sense that it serves as the starting point to derive both the weak and the strong exhaustive reading. The weak exhaustive reading (not the strong exhaustive one as in Rullmann (1995)) is derived by adding a maximality constraint as a condition on X , cf. (13b):⁴ weak exhaustive answers are simply maximal true answers. The strong exhaustive reading, in turn, is derived on the basis of the weak exhaustive reading, and captures exactly the closure condition intuitively underlying strong exhaustivity: the property $\mathcal{P}$ of ‘being known by John’ (λX . that John knows X) not only applies to the maximal true answer X , but extends to its description of being a maximal true answer, cf. (13c):⁵ John knows the maximal true answer, and he knows that this answer is in fact the maximal true answer. This way of defining strong exhaustiveness obviously avoids the potential problems related to incorporating strong exhaustiveness in a set-based approach as discussed in Karttunen (1977).

- (13) a. $\lambda w \lambda \mathcal{P} \Box X [(\text{answer}(w)(X)(Q) \Box \text{true}(w)(X)) \Box \mathcal{P}(w)(X)]$
 b. $\lambda w \lambda \mathcal{P} \Box X [\max(X, \lambda Y. \text{answer}(w)(Y)(Q) \Box \text{true}(w)(Y)) \Box \mathcal{P}(w)(X)]$
 c. $\lambda w \lambda \mathcal{P} \Box X [\max(X, \lambda Y. \text{answer}(w)(Y)(Q) \Box \text{true}(w)(Y)) \Box \mathcal{P}(w)(X)$
 $\Box \mathcal{P}(w)(\circ \lambda w^\Box. \max(X, \lambda Y. \text{answer}(w^\Box)(Y)(Q) \Box \text{true}(w^\Box)(Y)))]$

From what has been said by now, it should be clear that weak exhaustive and strong exhaustive (de dicto) readings are predicted to be available in case of *wonder*-type predicates as well, i.e., the data presented in (8) above can be accounted for. This is apparently not true for proposals like Berman (1991) and Lahiri (1991, 2000) that analyse answerhood conditions as special instances of a phenomenon dubbed the *quantificational variability effect*, cf. (14), which is generally assumed to be only available in case of *know*-type predicates.

- (14) John mostly knows who cheated at the exam.
 (= For most people, who cheated at the exam, John knows that they did.)

This does not mean, however, that the analysis presented above is in any way incompatible with a straightforward treatment of the quantificational variability data. On the contrary. Since raising the *wh*-complement in case of *know*-type predicates leaves a trace of type ‘set of propositions,’ and since this trace is in the c-command domain of the quantificational adverb, there should be several ways to approach the syntax and semantics of quantificational adverbs.⁶ Though I’m not yet in a position to give a fully explicit account of all the intricate problems related to these effects, I’d like to nevertheless sketch a possible analysis that gives an impression of what such an account could look like. First consider once more the proposed analysis in case of a, say, weak exhaustive reading. The *wh*-complement raises to the matrix-VP for type reasons and leaves a trace t_2 of type $\Box s, t\Box, t\Box$. This LF is interpreted in (15c) and reduces to (15d).

- (15) a. John knows, who cheated at the exam.
 b. John [1 [[who cheated at the exam] [2 [t_1 knows t_2]]]]
 c. **John** λx [$\lambda \mathcal{P} \Box X [\max(X, \lambda Y. \text{answer}(w)(Y)(Q) \Box \text{true}(w)(Y)) \Box \mathcal{P}(w)(X)] (\lambda X. x \text{ knows } X)$]
 d. $\lambda w. \Box X [\max(X, \lambda Y. \text{answer}(w)(Y)(Q) \Box \text{true}(w)(Y)) \Box \text{know}(w)(X)(\text{john})]$

Now consider the variant (16a) of (15a) containing the quantificational adverb *mostly*. Suppose that the quantificational adverb *mostly* is coindexed with the *wh*-complement, cf. (16a), and that raising the *wh*-complement leaves a complex trace of type $\Box s, t\Box$, cf. (16b). By assumption, the interpretation of the complex trace consists of (i) a variable X of type ‘set of propositions’ bound by the moved *wh*-complement, and (ii) a choice function variable f_i of type $\Box \Box s, t\Box, t\Box, \Box s, t\Box$ operating on the variable X and being bound by the

⁴ Maximality is defined in the usual manner: $\Box \max(X, \mathcal{P}) \Box = 1$ iff (i) $\Box \mathcal{P}(X) \Box = 1$, and (ii) $\Box \Box Z(\mathcal{P}(Z) \rightarrow Z \Box X) \Box = 1$. It should be noted here that this way of defining maximality copes with all the potential problems related to the use of maximality operators as discussed in detail in Beck and Rullmann (1999). This is simply because this definition —like *answer1*— operates on a propositional level. Note also that it is important to distinguish semantics from pragmatics in case of maximal answers. If, for example, all propositions contained in the maximal true answer are linearly ordered with respect to the entailment relation (i.e., $p_1 \Box p_2 \Box \dots \Box p_n$), then the maximal true answer is the set $\{p_1, p_2, \dots, p_n\}$, but —following Gricean maxims— a speaker will only articulate p_n .

⁵ The operator ‘ $\circ$ ’ shifts a proposition to the singleton set containing it.

⁶ Note that in Beck and Rullmann (1999)’s analysis the trace just refers to an (unstructured) proposition.

coindexed quantificational adverb *mostly*, cf. (16c).⁷ Given that *mostly* quantifies over minimally defined choice functions (i.e., choice functions with domain $\{g(X)\}$), this results in the representation in (16d), where $\llbracket \text{most}(\lambda f_i. \text{know}(w)(f_i(X))(\text{john})) \rrbracket^g = 1$ if and only if for most choice functions f with domain $\{g(X)\}$ John knows the proposition $f(g(X))$. This is, of course, essentially equivalent to the proposition that for most people who did cheat at the exam, John knows that they did.

- (16) a. John *mostly_i* knows, [who cheated at the exam]_i.
 b. John [1 [[who cheated at the exam] [2 [t₁ *mostly_i* knows t_{2,i}]]]]
 c. **John** $\lambda x [\lambda P \Box X [\max(X, \lambda Y. \text{true-ans}(w)(Y)(Q)) \Box P(w)(X)] (\lambda X. x \text{ mostly } \lambda f_i [\text{knows } f_i(X)])]$
 d. $\lambda w. \Box X [\max(X, \lambda Y. \text{true-ans}(w)(Y)(Q)) \Box \text{most}(\lambda f_i. \text{know}(w)(f_i(X))(\text{john}))]$

This sketch of an analysis shows that there is indeed a compositional way to derive the interaction of answerhood conditions and quantificational adverbs within the proposed approach, while at the same time predicting that this effect is only available with *know*-type predicates. (The analysis presupposes (i) raising of the *wh*-complement, and (ii) that the relevant predicate also subcategorizes for declarative sentences.) Technically, it is in principle possible to generalize this analysis to non-exhaustive and strong exhaustive readings. It seems to me, however, that the readings in question are filtered out pragmatically and/or semantically: In case of non-exhaustive readings we systematically expect the possibility that X only denotes a singleton set, and in case of strong exhaustive readings the maximality condition is always contained in a singleton set. Depending on one's theory, this is incompatible with the semantics of *most* or it trivializes its semantics.

3 Embedded Interrogatives and the ‘de dicto’ Reading

In the previous section it has been shown that the proposed generalized quantifier analysis of *wh*-complements allows for a type-uniform treatment of all relevant answerhood conditions, that it correctly predicts that these answerhood conditions play a crucial role not only in the semantics of *know*-type predicates, but also in case of *wonder*-type predicates, and, finally, that it is promising with respect to the treatment of quantificational variability effects. But what about the invalidity of inferences like the one presented in (4) above? If one has a closer look at the definition of the answerhood condition in (13c), repeated here as (17), it becomes clear that the two maximality conditions together encode exactly the same information that does Heim's (1994) notion *answer₃*: X is the Karttunen denotation of the question Q evaluated at index w , and the proposition to be known consists of all worlds w^j in which the Karttunen denotation of Q is identical to that in w .

- (17) $\lambda w \lambda P \Box X [\max(X, \lambda Y. \text{answer}(w)(Y)(Q) \Box \text{true}(w)(Y)) \Box P(w)(X)$
 $\Box P(w)(\lambda w^j. \max(X, \lambda Y. \text{answer}(w^j)(Y)(Q) \Box \text{true}(w^j)(Y)))]$

In Heim (1994) it is proven that *answer₃* is essentially equivalent to Groenendijk and Stokhof's analysis of *wh*-complements, and thus incorporates —apart from strong exhaustiveness— a ‘de dicto’ reading of the *wh*-phrase/-complement. It is also shown that we can nevertheless derive a ‘de re’ reading —the reading in which (4) is a licit inference—, if we employ some mechanism that allows us to prevent the *wh*-phrase's world argument to be bound within the scope of the matrix predicate. Since the condition $\text{answer}(w^j)(Y)(Q)$ rewrites as, e.g., $\lambda p \Box x [\text{student}(w^j)(x) \Box p = \lambda w^j. x \text{ cheated at the exam in } w^j]$, the strong exhaustive ‘de re’ reading can be represented within the analysis developed in the last section as stated in (18): The proposition to be known now consists of all worlds w^j in which the Karttunen denotation of Q is identical to that in w , but with the possible difference that x is no student in w^j .

- (18) $\lambda w \lambda P \Box X [\max(X, \lambda Y. \text{answer}(w)(Y)(Q) \Box \text{true}(w)(Y)) \Box P(w)(X)$
 $\Box P(w)(\lambda w^j. \max(X, \lambda Y. \text{answer}(w)(Y)(Q) \Box \text{true}(w^j)(Y)))]$

Actually, I will assume from now on that the strong exhaustive reading of *wh*-complements is always to be represented as a ‘de re’ reading. The reason for this is the following: It is not only strong exhaustive readings of *wh*-complements that allow for a ‘de dicto’ reading of the *wh*-phrase; the same phenomenon can be observed, for example, in case of non-exhaustive readings, cf. (19a), which is ambiguous between a ‘de dicto’ and a ‘de re’ reading, and (19b) which only allows for a ‘de dicto’ reading.

⁷ $\text{true-ans}(w)(Y)(Q)$ is used as a shorthand for $\text{answer}(w)(Y)(Q) \Box \text{true}(w)(Y)$.

- (19) a. John knows which students attended the conference.
 b. I know which students attended the conference.

In case of non-exhaustive answers, however, there is of course no way to derive the ‘de dicto’ reading from strong exhaustiveness. I think —and here I follow Beck and Rullmann (1999) who argue for the same conclusion, though on the basis of different data— that this constitutes strong evidence for the assumption that strong exhaustiveness and ‘de dicto’ readings are to be treated as independent phenomena.

But what could such an analysis of the ‘de dicto’ reading look like? Beck and Rullmann (1999) propose a semantic account of this reading. The basic idea is to incorporate the *wh*-phrase’s restriction into the propositions denoted by the question, and to allow for some kind of flexible binding of its world argument. One problematic aspect of this approach is that it doesn’t exclude a ‘de re’ reading in case of 1st person matrix subjects, cf (19b) above. Of course, it is always possible to filter out the unavailable reading by some pragmatic mechanism. But if we have to invoke pragmatics anyway, why shouldn’t we take the direct route? This is what I want to propose in the following.

If we follow the arguments presented in Krifka (2001) in favour of a structured meaning approach to questions and answers, it seems straightforward to assume that independent *wh*-interrogatives denote sets of structured rather than unstructured propositions, cf. (20) (cf. also Reich, 2002, 2003, for a detailed analysis).

- (20) a. Which students cheated at the exam?
 b. $\lambda w \lambda p \Box x [\text{student}(w)(x) \Box p = \Box x, \lambda y \lambda w^1.y \text{ cheated at the exam in } w^1]$

In this case, however, a *wh*-complement denotes a generalized quantifier over properties of sets of structured propositions, and we need to specify what it means to know a structured proposition. Here we can take advantage of the semantics for propositional attitudes developed in Cresswell and von Stechow (1982):

- (21) *John knows* $\Box \text{Peter}, \lambda x. \text{that } x \text{ cheated at the exam}$ is true in *w* iff (i) there is an acquaintance relation ζ s.t. John uniquely refers to the person Peter via ζ , and (ii) John self-ascribes the property of being acquainted with a person via ζ which has the property $\lambda x. \text{that } x \text{ cheated at the exam}$.

The crucial point here is that the truth-conditions of propositional attitude verbs are relativized to ‘acquaintance relations’ ζ like, e.g., names, definite descriptions, and other suitable, though not necessarily linguistically expressed cognitive relations. With respect to the ‘de dicto’ reading of *which*-complements, this relativization to acquaintance relations now opens up the possibility of a pragmatic account. The basic idea is as follows: Usage of the explicit restriction *which student* (instead of the simpler *who*) correlates with a conversational point and thus triggers an implicature. This implicature is intended to convey the information that either ‘being a student’ is part of the acquaintance relation ζ_1 holding between the speaker and the person Peter, or it is part of the acquaintance relation ζ_2 holding between the matrix subject John and Peter. In the latter case this is exactly the reading that is called ‘de dicto’ in Groenendijk and Stokhof (1982) with respect to *wh*-complements. If the matrix subject is 1st person, the speaker and the referent of the matrix subject coincide, and consequently only a ‘de dicto’ reading is available; this immediately accounts for the contrast observed in (20).

4 Summary

In this paper, I tried to make two empirical points. Firstly, answerhood conditions do not only play a central role in the syntax and semantics of *know*-type predicates, but also in the case of *wonder*-type predicates. Secondly, strong exhaustiveness and the ‘de dicto’ reading of *which*-complements are two independent phenomena. With respect to the first point, I proposed a variant of the Hamblin/Karttunen semantics for *wh*-interrogatives, in which *wh*-complements denote generalized quantifiers over properties of (maximal) true answers (construed as sets of propositions), and I sketched a possible analysis of quantificational variability effects within this generalized quantifier approach. With respect to the second point, I outlined a pragmatic account of the so-called ‘de dicto’ reading that crucially relies on the use of acquaintance relations.

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SUPERIORITY AS LEFT-TO-RIGHT EVALUATION

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ABSTRACT. We present an analysis on which superiority violations are ruled out by the following processing default: “Evaluate expressions from left to right.” We give a combinatory categorial grammar that models the syntax and the semantics of *wh*-question formation, using continuations to provide control over order of evaluation. Continuations are a concept developed independently for describing the evaluation order of subexpressions in programming language semantics. The grammar generates in-situ *wh* and multiple *wh*, but not superiority violations. In addition, the analysis automatically makes good predictions concerning the interaction of *wh* with pronominal binding.

1. SUPERIORITY

‘Superiority’ is the name for the fact observed by Kuno and Robinson (1972) (p. 474) that moving a *wh*-phrase across an in-situ *wh*-phrase results in ungrammaticality.

- (1) a. Who ate what?
b. *What did who eat __?

For many years the dominant explanation for superiority attempted to reduce superiority to the ECP, which is a constraint on legitimate LF representations. Unfortunately, as Hornstein (1995) (p. 124) and others point out, the ECP analysis has empirical shortcomings. Because the ECP distinguishes subjects from other argument positions, it can account for the basic contrast in (1), but it fails when both *wh*-phrases correspond to non-subject argument positions.

- (2) a. Who did Tom persuade __ to buy what?
b. *What did Tom persuade who to buy __?

Some more recent accounts of superiority recast it on Minimalist assumptions as a combination of Greed, Procrastinate, and Shortest Move, along with a transderivational constraint; others, as a combination of Attract with the Minimal Link Condition; still others, as an Optimality Theoretic interaction among a constraint requiring that Spec of CP be filled by a *wh*-phrase, a constraint that *wh*-phrases raise for interpretation, and a general prohibition against movement. The details of these accounts are fairly intricate, and we will not discuss them further here, except to note that none of them connects superiority with linear order (see Dayal, 2003 for a survey of explanations for superiority).

In contrast to the accounts just mentioned, building on Chierchia’s (1991; 1993) analysis of pair-list readings, Hornstein (1995), Dayal (1996), and Comorovski (1996) separately argue that superiority reduces to weak crossover.

- (3) Who_{*i*} __ bought [*pro*_{*i*} what]?
*What_{*i*} did [*pro*_{*i*} who] buy ___{*i*}?

For instance, on Hornstein’s analysis, an in-situ *wh*-phrase denotes a Skolem function of type $\langle e, e \rangle$ whose argument corresponds to a silent pronoun (*pro*). If we stipulate that in-situ *wh*-phrase pronominals must be bound by the raised *wh*-phrase, then superiority violations create a classic weak crossover configuration as shown in (3), which would be blocked by whatever principles rule out weak crossover violations.

We do not propose to reduce superiority to crossover or vice versa. Rather, we claim that crossover and superiority arise through somewhat different binding mechanisms, both of which are sensitive to order of evaluation. That is what accounts for (a significant portion of) their mutual resemblance. Unlike the ECP analysis, our account does not care whether the elements involved are subjects, and naturally generalizes to configurations like (2). Unlike Hornstein’s and similar analyses, our account does without covert syntax entirely: there is no distinct level of LF, no covert pronominals, no syntactic indexing, and no distinction

Date: May 25, 2004.

Thanks to Daniel Büring, Svetlana Godjevac, Chris Potts, and Stuart Shieber. The second author is supported by National Science Foundation Grant IRI-9712068.

between the meaning of a raised *wh*-phrase versus an in-situ *wh*-phrase. In fact, there is no stipulation at all beyond providing *wh*-phrases with a basic syntactic category and truth conditions, since superiority falls out from the independently-motivated theory of scope given in Section 2 in the presence of left-to-right evaluation.

2. A GENERAL THEORY OF SCOPE AND WH-QUESTIONS

In this section we present a general system for describing quantifier scope and *wh*-question formation.

We have two basic syntactic category labels, *e* and *t*. Complex syntactic categories are of the form A/B , $A \setminus B$, $A \Rightarrow B$, $A \sim B$, $A \rightarrow B$, $A \triangleright B$, or $A ? B$, where A and B are again syntactic categories. No matter what the connective symbol in the middle is, the semantic type of expressions in each of these categories is $\langle \alpha, \beta \rangle$, where α is the semantic type of expressions in category A , and β is the semantic type of expressions in category B .

We provide exactly one rule that allows two expressions to combine to form a syntactically complex expression:

- (4) Syntax: $A \Rightarrow B$ followed by A yields B
Semantics: f x fx

This rule says that a phrase of category $A \Rightarrow B$ followed by a phrase of category A can be combined into a complex phrase of category B .

To support the usual forward and backward combination rules, we provide two category-shifting rules, *F* and *B*:

- (5) a. Forward combination (*F*): $(A/B) \Rightarrow (A \Rightarrow B)$
Semantics: $\lambda fx. fx$
b. Backward combination (*B*): $A \Rightarrow ((A \setminus B) \Rightarrow B)$
Semantics: $\lambda xf. fx$

The best way to illustrate the way this system works is with a simple example. First we need some lexical entries as follows (assume right associativity for categories):

(6)	Expression	Category	Denotation	Description
a.	Mary	<i>e</i>	m	non-quantificational NP
b.	mother	$e \setminus e$	mother	relational noun
c.	left	$e \setminus t$	left	intransitive verb phrase
d.	saw	$e/e \setminus t$	saw	transitive verb
e.	gave	$e/e/e \setminus t$	gave	ditransitive verb
f.	thought	$t/e \setminus t$	thought	verb with sentential object
g.	did	t/t	$\lambda p.p$	placeholder auxiliary verb

We can now derive the sentence *Mary left*.

- (7)
$$\begin{array}{rcl} B & \text{Mary} & \text{left} \\ e \Rightarrow (e \setminus t) \Rightarrow t & e & e \setminus t \\ \hline (e \setminus t) \Rightarrow t & & \\ \hline t & & \end{array}$$

Or, more succinctly, $(B \text{ Mary}) \text{ left}$, which denotes **left m** after beta-reduction.

2.1. Continuations and quantifier scope. To account for quantifier scope displacement and quantifier scope ambiguity, we define four new category-shifting operators in addition to *F* and *B*.

- (8) a. LIFT (*L*): $A \Rightarrow ((A \sim B) \rightarrow B)$
Semantics: $\lambda xc. cx$
b. EVAL (*E*): $((t \sim t) \rightarrow A) \Rightarrow A$
Semantics: $\lambda X. X(\lambda x. x)$
c. SKIP (*S*): $(A \Rightarrow B) \Rightarrow ((A \sim D) \rightarrow E) \Rightarrow ((B \sim D) \rightarrow E)$
Semantics: $\lambda XYc. Y(\lambda y. c(Xy))$
d. META (*M*): $(A \Rightarrow B \Rightarrow C) \Rightarrow ((A \sim E) \rightarrow F) \Rightarrow ((B \sim D) \rightarrow E) \Rightarrow ((C \sim D) \rightarrow F)$
Semantics: $\lambda XLRc. L(\lambda l. R(\lambda r. c(Xlr)))$

The connective ‘ $\sim$ ’ labels continuation objects. The category ‘ $A \sim B$ ’ can be read as ‘a continuation expecting an argument of category A and returning a result of category B ’.

In order to exploit continuations, we must provide lexical items that explicitly mention them.

- (9) everyone $(e \sim t) \rightarrow t$ $\lambda c. \forall x. cx$
 someone $(e \sim t) \rightarrow t$ $\lambda c. \exists x. cx$

In general, a category of the form $(A \sim D) \rightarrow E$ can be thought of as a quantificational expression that functions locally syntactically as an expression of category A , that takes scope over an expression of category D , and that returns as a result an expression of category E . For instance, *everyone* has category $(e \sim t) \rightarrow t$.

We can illustrate the syntactic type-shifting aspect of this analysis by using F , B , E , L , S and M as the names of the type-shifting operators.

- (10) Everyone’s mother left.
 $E ((M B) ((M B) \text{everyone’s } (L \text{ mother})) (L \text{ left})) = \forall x. \mathbf{left}(\mathbf{mother } x)$

For instance, “ L left” is the LIFT rule $A \Rightarrow ((A \sim B) \rightarrow B)$ applied to the category of *left*, $e \backslash t$, to yield $((e \backslash t) \sim t) \rightarrow t$, with denotation $\lambda \kappa. \kappa \mathbf{left}$. This example shows that the grammar derives sentences in which a quantificational NP occurs embedded arbitrarily deep within a possessive NP.

At this point we can illustrate quantifier scope ambiguity.

- (11) Someone saw everyone.
 $E (M B \text{ someone } (M F (L \text{ saw}) \text{ everyone})) = \exists y. \forall x. \mathbf{saw } y x$
- (12) Someone saw everyone.
 $E (S E (M (M B) (L \text{ someone}) (M (M F) (L (L \text{ saw})) (S L \text{ everyone})))) = \forall x. \exists y. \mathbf{saw } x y$

In general, quantifiers on the same level will take linear scope relative to one another, while quantifiers at higher levels take wider scope. Thus inverse scope is associated with extra effort (to the extent that category shifting can be thought of as correlating with processing effort), which correlates with the observation that, all else being equal, linear scope is more salient.

2.2. *Wh*-phrases, in-situ and raised. To generate single and multiple *wh*-questions, we begin by providing the following lexical items:

- (13) a. *who* $(e \sim A) \rightarrow (e ? A)$ **who**
 b. *what* $(e \sim A) \rightarrow (e ? A)$ **what**

A *wh*-word fits into a context expecting an NP (i.e., a context that produces a continuation of type $e \sim A$ for some choice of A), and transforms that context into a question. We can now derive a simple *wh*-question, a multiple *wh*-question, and a question in which the *wh*-word is embedded within a possessive, as follows.

- (14) Who left?
 $E (M B \text{ who } (L \text{ left})) = e ? t : \mathbf{who}(\lambda x. \mathbf{left } x)$
- (15) Who bought what?
 $E (M B \text{ who } ((S (F \text{ bought})) \text{ what})) = e ? (e ? t) : \mathbf{who}(\lambda x. \mathbf{what}(\lambda y. \mathbf{bought } y x))$
- (16) Whose mother left?
 $E (M B (M B \text{ who’s } (L \text{ mother})) (L \text{ left})) = e ? t : \mathbf{who}(\lambda x. \mathbf{left}(\mathbf{mother } x))$

Just as for quantificational possessors, the scoping mechanism allows *wh*-possessors embedded arbitrarily deeply (e.g., *whose mother’s friend’s dog left?*) to take effect at the top level of the sentence without special stipulation.

In order for a *wh*-phrase to occur in sentence-initial position (which we will inaccurately call “raised” in deference to universal usage), we now provide a silent pronoun (“trace”) and a silent syntactic topicalization operator Q that allows a *wh*-phrase to occur in fronted position.

- (17) a. $_ (e \sim A) \rightarrow (e \sim A)$ $\lambda c. c$
 b. $Q (A \rightarrow (e ? B)) \Rightarrow (A / (e ? B))$ $\lambda X. X$

The trace “ $_$ ” records in its result type the fact that an e -type argument is missing and needs to be connected with a binder in order to be complete.

The topic operator Q converts a *wh*-phrase into the kind of phrase that can bind a trace. Because this operator is specific to *wh*-expressions, we call it Q , though in general, other types of expression can also

topicalize in English. This provides for matrix questions containing one raised *wh*-phrase and any number of in-situ *wh*-phrases:

- (18) What did Mary buy __?
 $F(Q \text{ what})(E(M F(L \text{ did})(M B(L \text{ Mary})(M F(L \text{ buy } _))))$
 $= e ? t : \mathbf{what}(\lambda x. \mathbf{buy} \ x \ m)$
- (19) Who did Mary give __ what?
 $F(Q \text{ who})(E(M F(L \text{ did})(M B(L \text{ Mary})(M F(M F(L \text{ give } _) \text{ what}))))$
 $= e ? (e ? t) : \mathbf{who}(\lambda x. \mathbf{what}(\lambda y. \mathbf{give} \ x \ y \ m))$

Interestingly, this analysis of English *wh*-phrases automatically rules out any sentence in which more than one *wh*-word has been fronted (e.g., **What who did Mary say __ bought __?*).

3. EXPLAINING SUPERIORITY

Nothing more need be said in order to account for superiority contrasts. A raised *wh*-word can only “bind” its *wh*-trace if the *wh*-trace is evaluated before any in-situ *wh*-word.

Consider first a single *wh*-question such as *Who_i did Mary say ___i bought something?* In order for the *wh*-phrase to “bind” its trace, the complement to the raised *wh*-phrase must provide access to the embedded trace; in semantic terms, the complement must denote a function whose first argument corresponds to the trace. Thus *Mary say __ bought something* might denote $\lambda t. \mathbf{say}(\exists y. \mathbf{buy} \ y \ t) \ m$, where the first argument (i.e., the abstract beginning with λt) abstracts over the argument position corresponding to the trace. In scope terms, the trace must receive widest scope.

In particular, if there is also an in-situ *wh*-phrase, the trace must outscope the in-situ *wh*-phrase. Thus in the multiple-*wh*-phrase *Who did Mary say __ bought what?*, the constituent *Mary say __ bought what* must denote the function $\lambda t. \mathbf{what}(\lambda y. \mathbf{say}(\mathbf{buy} \ y \ t) \ m)$, in which the λ -abstract corresponding to the trace (λt) has scope over the denotation of the in-situ *wh*-phrase.

Now consider a superiority violation such as **What_i did who buy ___i?*: an in-situ *wh*-word (*who*) intervenes between the raised *wh*-word (*what*) and its trace. By the reasoning just given, the trace must take scope over *who*. But in order for the trace to take scope over something to its left, the trace must type-shift to operate at a higher continuation level, as explained above with respect to quantifier scope. Thus, the trace and the in-situ *wh*-word must operate at two different continuation levels. Because the result contains two continuation levels, we must lower it twice before combining it with the raised *wh*-phrase *what*. The normal way to lower the continuation level is to apply EVAL. We can apply EVAL once here, resulting in the category $((e ? t) \sim A) \rightarrow (e \sim A)$ for *did who buy __*; but this category still contains one extra layer of continuations, which prevents it from combining with the fronted *what*. When we attempt to apply EVAL a second time, we cannot: EVAL only matches a category of the form $(t \sim t) \rightarrow A$; since $(e ? t) \sim A$ does not unify with $(t \sim t)$, EVAL cannot apply, and the derivation will never be complete.

To make more precise what we mean by a ‘complete derivation’, say that a derivation of a sentence or a question is ‘complete’ if the expression as a whole is at the zeroth continuation level. For practical purposes, this will mean that the final type contains no occurrences of the connective ‘ $\sim$ ’. Thus the main complete categories provided by the grammar are t , $e \triangleright t$, $e ? t$, $e ? (e ? t)$, and so on. For instance, the grammar classifies the sentence *Mary left* as belonging both to the category t and the category $(t \sim t) \rightarrow t$; but since $(t \sim t) \rightarrow t$ is at the first continuation level (it contains a $\sim$), only the derivation that justifies inclusion in the category t counts as complete.

The upshot of the above reasoning is that a *wh*-trace must be evaluated before any in-situ *wh*-phrase for the same clause. Given left-to-right evaluation, this means the trace must precede any in-situ *wh*-phrases. In other words, given left-to-right evaluation, an intervening in-situ *wh*-word fatally disrupts the binding relation between a raised *wh*-word and its trace.

4. AN EMPIRICAL REFINEMENT: D-LINKED WH-PHRASES

Since Pesetsky’s (1987) work, it is usually assumed that if an in-situ *wh*-phrase is somehow linked to the discourse (what it means to be ‘linked to the discourse’ currently remains imprecise), it no longer triggers superiority violations.

- (20) What did which students buy __?

This would normally be a superiority violation, since *what* crosses over the in-situ *wh*-phrase *which students*. But *wh*-phrases headed by *which* are assumed to be intrinsically linked to the discourse (D-linked) by virtue of some aspect of their meaning, which is supposed to be why sentences like (20) are grammatical.

So if we want to derive (20), we must find a way for the in-situ *wh*-phrase to allow the trace to take wide scope. This can be accomplished by allowing the *which*-phrase to explicitly anticipate the possibility that a trace may follow it:

- (21) *what* $(e \sim A) \rightarrow (e ? A)$ **what**
 (22) *which N* $(e \sim (e \sim A)) \rightarrow (e \sim (e ? A))$ $\lambda c. \lambda t. \mathbf{which(N)}(\lambda x. cxt)$

In the non-D-linked denotation for *what* (repeated here from (13b) for comparison), there is one ‘ $e \sim$ ’; in the D-linked denotation for a *wh*-phrase headed by *which*, there is an extra ‘ $e \sim$ ’ corresponding to the downstream trace. The semantics simply gives the argument corresponding to the trace (here, t) wide scope by fiat.

This allows the following derivation for (20):

- (23) $F(Q \text{ what})(E(M B \text{ which-students}(M F(L \text{ buy } _))))$
 $= e ? (e ? t) : \mathbf{what}(\lambda t. \mathbf{which}(\mathbf{students})(\lambda x. \mathbf{buy } t x))$

Needless to say, there are additional complexities related to D-linking that we are not able to address here.

5. WH-BINDING AND CROSSOVER

As is well-known, *wh*-phrases are capable of binding pronouns, and when they do, they exhibit crossover effects—but with an interesting twist:

- (24) a. $\text{Who}_i \text{ ___ saw his}_i \text{ mother?}$
 b. $*\text{Who}_i \text{ did his}_i \text{ mother see ___?}$

If the *wh*-phrase is doing the binding, then the pattern here seems mysterious at first glance, since in both cases the raised *wh*-phrase is to the left of the pronoun in question, c-commands it, and outscopes it.

To study this interaction, we need to add pronouns to our grammar, and provide a type-shifter that allows noun phrases to bind pronouns.

- (25) a. *he* $(e \sim A) \rightarrow (e \triangleright A)$ $\lambda c. c$
 b. **BIND** $((e \sim A) \rightarrow B) \Rightarrow ((e \sim e \triangleright A) \rightarrow B)$ $\lambda X. \lambda c. X(\lambda x. cxx)$

These entries allow derivations for quantificational binding examples such as *Everyone_i thought he_i left*:

- (26) $E(M B (\mathbf{BIND} \text{ everyone})(M F(L \text{ thought})(M B \text{ he}(L \text{ left}))))$
 $= \forall x. \mathbf{thought}(\mathbf{left } x) x$

Incidentally, as we have described in detail elsewhere, this approach to binding automatically interacts with order of evaluation to correctly rule out crossover violations such as **His_i mother loves everyone_i*.

As a first approximation to the contrast given above in (24), Reinhart (1983) (p. 114) and others have suggested that it is the *wh*-trace that binds the pronoun, and not the raised *wh*-word directly. In our system, this corresponds to applying **BIND** operator to the *wh*-trace:

- (27) **BIND** $_ = (e \sim (e \triangleright A)) \rightarrow (e \sim A) : \lambda cx. cxx$

This is sufficient to derive the grammatical example in (24a):

- (28) $F(Q \text{ who})(E(M B (\mathbf{BIND} _)(M F(L \text{ saw})(M B \text{ his}(L \text{ mother}))))))$
 $= e ? t : \mathbf{who}(\lambda x. \mathbf{saw}(\mathbf{mother } x) x)$

The ungrammatical sentence in (24b) has no analogous derivation. The reason is that in order for the trace to serve as a binder, it must be evaluated before the pronoun, which means that it must precede the pronoun, which it doesn’t.

However, merely allowing the trace to bind is not sufficient to generate the full range of grammatical interpretations:

- (29) a. $\text{Whose}_i \text{ friend}_j \text{’s next-door neighbor}_k \text{ did Mary think ___ saw his}_{i/j/k} \text{ mother?}$
 b. $\text{Whose}_i \text{ friend}_j \text{’s next-door neighbor}_k \text{ did Mary think his}_{i/*j/*k} \text{ mother saw ___?}$

In (29a), the person doing the seeing (i.e., the trace) must be a next-door neighbor, and this is guaranteed by our analysis. The problem is that if the pronoun is bound by the trace, we should expect that the pronoun also can refer only to the neighbor; but in fact, as indicated by the subscripts, it can be bound either by *whose*,

or by *whose friend*, or by *whose friend's next-door neighbor*. Apparently (contra Reinhart's suggestion), in some situations, at least, the pronoun can be bound directly by a *wh*-phrase. Nevertheless, the trace still plays a critical role, as shown in (29b), since if the trace fails to precede the pronoun, none of these binding possibilities are possible.

Remarkably, this intricate pattern of facts falls out here without stipulation. Our system does in fact allow a *wh*-phrase to bind the pronoun directly. For instance, the sentence derived above in (28) by allowing the trace to bind the pronoun can also be derived as follows:

- (30) $F(Q(\text{BIND } \text{who})) (E(M B _ (M F(L \text{ saw}) (M B \text{ his}(L \text{ mother}))))))$
 $= e ? t : \mathbf{who}(\lambda x. \mathbf{saw}(\mathbf{mother } x) x)$

The variability in the binding shown in (29a) arises from the variability of applying the BIND operator to either *whose*, *whose friend*, or *whose friend's next-door neighbor*. We illustrate this interaction of binding with pied-piping with the following simpler example:

- (31) Whose_i friend $_$ saw his_i mother?
 $F(Q(M B(\text{BIND } \text{whose})(L \text{ friend})))$
 $(E(M B _ (M F(L \text{ saw}) (M B \text{ his}(L \text{ mother}))))))$
 $= e ? t : \mathbf{who}(\lambda x. \mathbf{saw}(\mathbf{mother } x) (\mathbf{friend } x))$

As desired, the trace corresponds to the friend participant, but the pronoun is bound by *whose*.

Crucially, even considering the possibility that *wh*-phrases can bind pronouns directly, the ungrammatical interpretations in (24b) and (29b) still have no derivation. The reason is that (BIND who) has category $(e \sim (e \triangleright A)) \rightarrow e ? A$. Note that the *e* corresponding to the trace is outside the *e* corresponding to the pronoun (i.e., the $\sim$ connective is outside the $\triangleright$ connective). This means that the trace must always outscope the pronoun, and by reasoning similar to the explanation for superiority, it follows that the trace must precede the pronoun.

A final detail relating to the interaction of *wh*-fronting with binding: Lasnik and Stowell (1991) note that a *wh*-trace embedded within a VP can bind into an adjunct it does not c-command, just like a quantifier can:

- (32) Which actress_i did you [admit you had an affair with $_i$] [after she_i died]?

The point is that the adjunct containing the bound pronoun modifies the entire complex verb phrase in which the *wh*-trace is embedded. After all, presumably it is the admitting event and not the affair that takes place after the dying event (thanks to Daniel Büring for this example). We derive a less deeply embedded example that makes the same point:

- (33) Who_i did Mary call $_i$ on his_i birthday?
 $F(Q \text{ who}) (E(S E(S(M B(L \text{ Mary}))(S L(M B(M F(L \text{ call})(\text{BIND } _))$
 $(M F(L \text{ on})(M B \text{ his}(L \text{ birthday}))))))))$
 $= e ? t : \mathbf{who}(\lambda x. \mathbf{on}(\mathbf{birthday } x)(\mathbf{call } x) m)$

In the same way that a quantifier embedded in a verb phrase can take scope over and bind a pronoun in a following adjunct, the binding version of the trace can in effect take scope over and bind a pronoun to its right. Once again, examples like these are problematic for theories that attempt to derive binding from surface c-command relations, but fall out without stipulation here.

6. EVALUATION ORDER AND THE META RULE

What precisely is the connection between order of evaluation and crossover and superiority? Perhaps the best way to understand the role of M in determining order of evaluation is to consider the following alternative version of the META rule, which differs only in that it evaluates expressions right to left instead of left to right. We'll call the alternative operator W (an 'M' turned upside down):

- (34) a. Left-to-right META (M) [same as (8d)]:
 $(A \Rightarrow B \Rightarrow C) \Rightarrow ((A \sim E) \rightarrow F) \Rightarrow ((B \sim D) \rightarrow E) \Rightarrow ((C \sim D) \rightarrow F)$
Semantics: $\lambda XLRc. L(\lambda l. R(\lambda r. c(Xlr)))$
b. Right-to-left META (W):
 $(A \Rightarrow B \Rightarrow C) \Rightarrow ((A \sim D) \rightarrow E) \Rightarrow ((B \sim E) \rightarrow F) \Rightarrow ((C \sim D) \rightarrow F)$
Semantics: $\lambda XLRc. R(\lambda r. L(\lambda l. c(Xlr)))$

There are subtle changes in the categories, but the clearest place to discern the change in evaluation direction is in the semantics: in the left-to-right version, the first, leftmost argument *L* has in view all of the information contained in *R*. In the right-to-left version, *R* has *L* in view, and the scope relations are reversed.

If we replace *M* with *W* in our grammar, the order of evaluation switches from left-to-right to right-to-left. Consequently, we should expect a corresponding reversal in the behavior of phenomena that are sensitive to order of evaluation. And this is in fact exactly what happens.

We can convince ourselves that evaluation order plays a crucial part in the explanation for superiority. With *W* in play, superiority predictions are reversed: the normally grammatical *Who did Tom say bought what?* fails to be generated, and the superiority violation can be derived as follows:

(35) *What did who buy __?

$F(Q \text{ what})(E(W B \text{ who}(W F(L \text{ buy } _))) = e ? (e ? t) : \text{what}(\lambda y. \text{who}(\lambda x. \text{buy } y \ x))$

In this derivation it remains true that the *wh*-trace must be evaluated before any in-situ *wh*-phrase. For left-to-right evaluation (using *M*), that means that the *wh*-trace must precede the in-situ *wh*-phrases; but for right-to-left evaluation (using *W*), the *wh*-trace must follow the in-situ *wh*-phrases, since expressions on the right get evaluated first.

We can now make precise our proposal that English evaluates expressions from left to right: this is nothing more than stipulating that the grammar contains *M* but not *W*. Such a grammar embodies a bias for linear scope, yet still allows inverse scope; allows quantificational binding, but not crossover; and generates multiple *wh*-questions, but not superiority violations.

Incidentally, unlike some types of ungrammaticality, crossover violations and superiority violations remain interpretable with enough mental effort, and violations are often judged as not so bad, especially in comparison with, e.g., strong crossover. In the context of our explanation here, we interpret this as suggesting that speakers are capable of resorting to a non-default processing strategy (temporarily using *W* instead of *M*) given sufficient motivation.

Thus our predictions of crossover and superiority both depend on the order of evaluation, and for both phenomena, reversing the order of evaluation reverses the pattern of predicted grammaticality. This is the sense in which left-to-right evaluation provides a unified account of scope, crossover and superiority.

7. CONCLUSIONS

We have presented a concrete analysis that explains how superiority violations follow directly from the assumption that expressions are evaluated from left to right: when the type-shifting rule *M* is replaced with *W*, the pattern of configurations predicted to violate crossover and superiority is reversed. Furthermore, our notion of order of evaluation is the same notion proposed independently for characterizing the evaluation disciplines of computer programming languages.

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SEMANTICS AND TYPOLOGY OF YES/NO PARTICLES: (ON THE GEORGIAN DATA)

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1. Introduction.

The main function of language is communication. During the communicative act it is usual to confirm or to deny some utterances, which can be made through particles like Yes/No.

Every utterance reflects a specific fragment of reality (some fact). So, when we confirm or deny something, certain ambiguity arises - what do we confirm (or deny), *the fact* or *the utterance* that reflects the fact? In case of the question in positive form, this ambiguity is not so important, because confirmation (or negation) of the fact and of the utterance positively reflecting it - are the same. E.g. "Is it raining? Yes(No)". Here Yes(No) means either "You are right, it is (is not) raining" or "It is (is not) actually raining". Yes(No) particle is natural in both cases. If we want to emphasize which is confirmed - the fact or the utterance special expressions like "you are right", "it's true", etc. for the confirmation of the utterance and "indeed" for the confirmation of the fact are used.

As for the negative question - e.g. "Isn't it raining?", the answer <Yes> here might mean "Yes, (you are right) it is not raining" <Yes> here confirms the utterance) or "Yes, it is raining (actually, in reality)" (<Yes> here confirms the fact). Therefore, <Yes> has two different meanings and this ambiguity can not be resolved by the particles. Each language tries to overcome such ambiguity differently. Some languages ignore the utterance and take into account only the fact, e.g. in English positive-negative answers for positive-negative questions are similar - *Yes* (if it is raining) and *No* (if it is not raining). This is an example of Yes/No Systems described in Pope's research. Other languages ignore facts and confirm/negate only utterances (e.g. Japanese). This is the agreement/disagreement System according to Pope's terminology.

But there is quite a number of languages which confirm (or deny) both the fact and the utterance (e.g. Hindi, Navajo). Thus, the answering System to the same negative question may be of two types:

- (2) *Yes, it is raining*
- (2) *No, it is not raining*
- (1) **Yes, it is not raining*
- (1) **No, it is raining*

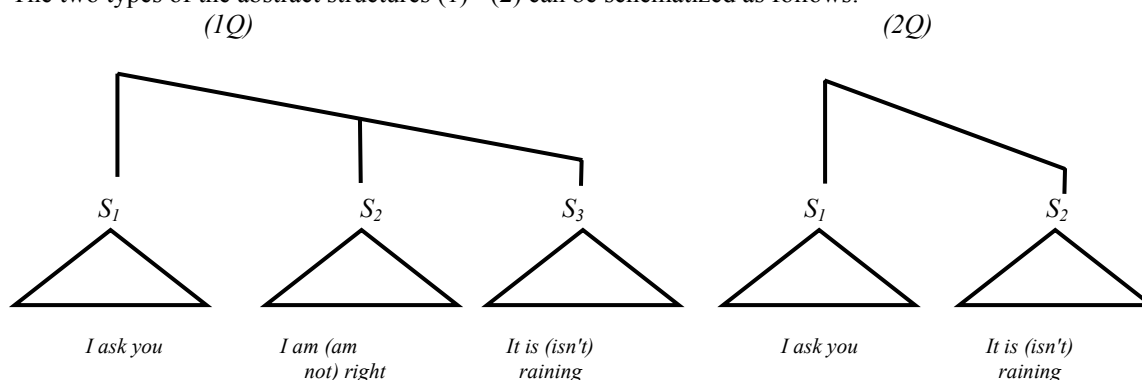
In order to clarify this problem, it seems necessary to assume two different abstract structures that are realized by the same surface structure:

- (1) <ask you to tell me if I am right>
- (2) <I ask you to tell me what is happening in reality>

If a language uses abstract structure (1), the answering system will be the agreement-disagreement type. If there is abstract structure (2) in a language, the answering system will be the positive-negative type. Thus, languages that have only one-type answering system simplify the abstract system and select only one abstract structure - either (1) or (2). But the analysis of languages with both types of answering systems allows us to conclude that in such languages both types of abstract structures function simultaneously.

II. The definition of abstract structures.

The two types of the abstract structures (1) - (2) can be schematized as follows:



Abstract structures (1Q) - (2Q) are realized on the surface level of the language by the following structures:

- (1Q) a. *I ask you to tell me if I am (am not) right and it is (isn't) raining.*
 b. *Am I (not) right and is (isn't) it raining?*
 c. *Is (isn't) it raining?*
- (2Q) a. *I ask you to tell me if it is (isn't) raining.*
 b. —
 c. *Is (isn't) it raining?*

The structures (a) fully reflect the respective abstract structures; in case of (b) S_1 is dropped out, although its trace appears in the surface structure through the definite structural transformations which are necessary for forming of interrogative sentences: changing of intonation, inversion of the word order, appearing of the auxiliary elements (question words, particles, auxiliary verbs, etc.). Even though these transformations are peculiar for each language, still there are some universal signs -intonation, question words and so on.

As for S_2 in (1Q), it is not represented in the surface structure (c) - its trace fully disappears. Only concrete situations and communicative contexts tell us what does the question mean and what does the speaker want to know: 1. What happens in reality (the abstract structure (2Q)); or 2. Is the speaker right or not? (The abstract structure (1Q)).

According to these abstract structures, the abstract structures of answers should be of two kinds:

- (1An) <I confirm (S_1) that you are (aren't) right (S_2) and it is (isn't) raining in reality (S_3)>.
 (2An) <I confirm (S_1) that it is (isn't) raining (S_3)>.

These abstract structures (1An) - (2An) can be represented on the surface level by the following structures:

- (1An) (a) *I confirm that you are (aren't) right and it is (isn't) raining.*
 (b) *You are (aren't) right and it is (isn't) raining.*
 (c) *It is (isn't) raining.*
- (2An) (a) *I confirm that it is (isn't) raining.*
 (b) —
 (c) *It is (isn't) raining.*

The process of reduction of these structures continues further in the majority of languages and results in appearance of special particles like <Yes/No>¹. The etymology of such particles is quite different for different languages. Originally they might be derived from modal particles, adverbs, question words, interjections and so on. These particles are clear examples of the general principle of communication - the Principle of Economy. So, the following reduced structures arise:

- (d) *Yes, it is raining (/No, it isn't raining)*
 (e) *Yes, (/No)*²

¹ <Yes/No> particles cannot be regarded as the universal ones, as there are some languages that have no special particles (e.g., as in Latin, Welsh) and the verb of the question is repeated in answer. Such languages are the examples of languages with so called Echo-systems.

² In some cases the structure of type (e) doesn't arise and short answers <Yes/No> are impossible. In such languages these particles usually are followed by verbs, which means that the simplifications of the deep structures are restricted to the structure (d): Yes, it is raining/No, it isn't raining.

The structures (d)-(e) are characteristic for the both types of the abstract structures. The structure (e) does not cause any confusions in case of (2An) or (1An), but it is ambiguous if both abstract structures (2An) - (1An) function simultaneously in a concrete language. It is unclear whether in (e) <Yes/No> stands instead of the embedded sentence S_2 or instead of the embedded sentence S_3

In order to understand these facts, we need to analyze the logic of question-answering Systems.

In case of abstract structure (2Q), there are two distinctive components: a) a sentence (S_3) which reflects the reality, e.g. "It is raining"; and b) the question, which asks something about the reality, e.g. "Is it raining?" or "Isn't it raining?" Answers to positive or negative questions are similar: the answer is positive, if it is raining in reality, and it is negative, if it is not raining in reality.

Table I

Question	Reality (S_3)	Values (S_3)	Answer
Is it raining?	It is raining	true	Yes (it is raining)
	It is not raining	true	No (it is not raining)
Isn't it raining?	It is raining	true	Yes (it is raining)
	It is not raining	true	No (it is not raining)

As we can see from the Table I, the particle repeats the form of the verb in the sentence that reflects the reality (S_3): it is positive (Yes), if the verb is positive; and negative (No), if the verb is negative. Some languages differentiate such structures and the different forms of particles show the difference between positive-negative questions, e.g. in Old English there are four particles:

Yea - is used for a positive answer to a positive question;

Yes - positive answer to a negative question;

Nay - negative answer to a positive question;

No — negative answer to a negative question.

In French the positive answer is distinguished formally by a special particle:

Oui - positive answer to a positive question;

Non - negative answer to a positive question;

Si - positive answer to a negative question;

Non - negative answer to a positive question.

And in German, also:

Ja/Nein - positive/negative answer to a positive question;

Doch/Nein - positive/negative answer to a negative question.

There are interesting examples in Dutch: *Ja*(<Yes>) / *Nee*(<No>) appear in answers to a positive question; and *Ja/toch wel*(<Yes>) / *Nee* (<No>) in answers to a negative questions.

Nevertheless, for the majority of languages with only abstract structure (2), the existence of two particles is more usual: the positive particles (like <Yes>) that confirm the fact and the negative particles (like <No>) that deny the fact.

Now let us review abstract structure (1). In this case, besides the sentence S_3 that reflects the reality, there is a sentence S_2 which evaluates the question. The intersection of their (S_2 - S_3) positive-negative forms give different variants:

Table II

Question	Evaluation (S_2)	Reality (S_3)	Values $S_2 \wedge S_3$	Answers
Is it raining?	It's true	It is raining	t	Yes, it is raining
	It's true	It isn't raining	f	0
	It isn't true	It is raining	f	0
	It isn't true	It isn't raining	t	No, it isn't raining
Isn't it raining?	It's true	It is raining	f	0
	It's true	It isn't raining	t	*Yes, it isn't raining
	It isn't true	It is raining	t	*No, it is raining
	It isn't true	It isn't raining	f	0

As we can see from Table II, in case of abstract structures (1An) <Yes/No> particles repeat positive or negative form of S_2 . The particle is positive when the evaluation of a question is positive, and it is negative, when the evaluation is negative. So, in case of (1An), the utterance that is described in question (S_2) is confirmed and the sentence that reflects the reality (S_3) plays no role (vice versa for (2An) - there S_3 is decisive).

In the languages where only abstract structures (2) function³, answers of type {Yes, it isn't} and {No, it is} are impossible, because the articles and the verb forms - both confirm (or deny) the fact, and the fact cannot be both positive and negative at the same time; thus, only structures of type (Yes, it is) and {No, it isn't} can be represented. As for the languages with only abstract structures (1), answers of the second type to a negative question are excluded, because the particles and the verb form reflect different structures: <Yes/No> particles are the answers to S_2 while the verb form reflects S_3 . And in case of the negative question they cannot be positive or negative at the same time. Thus, in case of abstract structure (1), <Yes/No> alternates with S_2 and it functions as an element of pro-sentence type. But in case of abstract structure (2) <Yes/No> repeats the verb form and it functions as the focus element shortening S_3 .

Some difficulties arise when both structures (1)-(2) function in a language, especially in cases of answers to a negative question. Languages try to overcome these difficulties and exclude the functioning of one of abstract structures (1) or (2). Nevertheless, some communicational confusion still appears. Let's consider one situation: An Englishman buys some fruits in a supermarket and the cashier at the pay-desk (who is also an Englishman) says:

- *These fruits have no price tags.*
- *Yes - the man answers (that is he confirms that he understood. But the cashier doesn't understand him and repeats persistently):*
- *No, they are not. You must weigh them.*
- *Yes, yes, I know that they have no price tags. I'll weigh them now (and the situation is resolved).*

Despite the fact that they both were Englishmen with only one abstract structure (2) functioning such confusions may arise. That is because a man, who probably was in a hurry and wanted to be short in answer made a mistake and used the particle erroneously.

Such communicative ambiguities are usual, especially during conversations between foreigners, e.g. if somebody who is used to use structures <Yes, it isn't> or <No, it is> (e.g. Georgian), speaks with an Englishman, he/she usually makes the following mistakes:

- | | |
|---|--------------|
| - <i>Haven't you got a raincoat?</i> | (Englishman) |
| - <i>*No, I have (= Yes, I have)</i> | (Georgian) |
| - <i>Don't you play chess?</i> | (E) |
| - <i>No, I do (= Yes, I do)</i> | (G) |
| - <i>Aren't you going out this evening?</i> | (E) |
| - <i>Yes.</i> | (G) |
| - <i>Why, it's a nice evening, let's go for a walk!</i> | (G) |
| - <i>Yes, yes, I am going out.</i> | (E) |

That's because an Englishman always answers to the fact (English is the language where only (1) functions); but a Georgian usually answers to the utterance (in Georgian both structures (1) and (2) function). So, for Georgian the usage of <Yes/No> is quite different from English.

III. Semantics and functions of <Yes/No> particles in Georgian

The *Georgian language* seems to be characterized by the agreement-disagreement system, but the answers common for the positive-negative systems are possible and natural for it as well. There are five types of <Yes/No> particles in Georgian: *ki*, *xo(m)/ho*, *diac* are positive ones, and *ara*, *vera* - negative.

As in Georgian both abstract structures (1)-(2) are commonly used, the answers to the negative questions are more various:

- *deda, ninos ar daurekavs?*
- Mother, Nino not called?*
- *ara*
- No.*

Ara here means "No, she didn't" (abstract structure (1)). If mother is angry that Nino hasn't called, the answer will be:

- *diac, batono, ar daurekavs.*
- Yes, sir, not called.*

If mother wants to emphasize that she is right and is angry at the same time, the answer will be:

- *diacac, ar daurekavs.*
- Yes-too, not called.*

³ So, the question-answering system of the 16th century English does not differ from the system of modern English - both have the positive-negative answering system determined by deep structure (2); the only difference is that the number of particles in Old English reflects the difference between the positive-negative questions.

The intonation in abstract structures (1) and (2) is quite different. When *ara* means "No, she didn't", the intonation is neutral (=comma); when *ara* means "Yes, she didn't", the intonation rises, the first vowel is stressed and the particle has the ending intonation (=period); *ara*. There are quite numerous examples of this kind:

- *kajis ar gešinia?*
Evil-man not you-afraid?
- *ara. mešinia.*
No. I-am-afraid.

Note that structures with negative particle and positive verb usually aren't used in neutral answers:

- *simartle mitxari, ar momatqueb?*
Truth tell-me, not deceive-will-me?
- *ara, mogatqueb - gaejibra bici.*
No, I-will-deceive-you - mimicked the boy.

- *ar ici im gogos saxli?*
Not know that girls house?
- *ara. vici, magram ar getqvi.*
No, I-know, but not tell-will-you.

Usually, the answer *<No, it is> has no ending intonation and is followed by a definite sentence with the opposite meaning:

- *nino araa lamazi?*
Nino not-is beautiful?
- *ara, lamazia, magram me ar momcons.*
No, beautiful-is, but I not like-her.

Abstract structure (1), which determines such answers displays the orientation to communicative act and all semantic details that characterize concrete situations are reflected by it more easily. As for abstract structure (2), which displays the orientation to facts, it represents more neutral situations that are merely confirmed and/or denied. Such interpretation clarifies that in written texts answers of type (1) are rare and they appear mostly in oral conversations. The rareness of the answer <No, it is> in Georgian can be explained by the fact, that in Georgian only one negative particle exists and therefore it is quite difficult to distinguish abstract structures (1)-(2) in the answers. As for the answer <Yes, it isn't> it is more natural even in short answers, because opposition *ki* : *diax/ho/xo* particles clearly distinguish whether it is the fact that is confirmed (*ki*), or the utterance (*diax/ho/xo*). Thus, *diax* (for polite answers) and *ho/xo* (for neutral or familiar answers) usually appear in the structure <Yes, it isn't>:

- *mgoni dilit puli ver dagitove.*
I think morning-in money can't I-left-you.
- *ho, ara ucirs.*
Yes, no matter.

- *šen ra, cakitxuli ara gakvs, kaco?*
You what, read not have, man?
- *ho. mxolod gadatvalierebuli.*
Yes (=I haven't). Only reviewed.

- *ar unda gameqida is saxli?*
Not must I-have-sold that house?
- *diax, mšvenieri saxli iqo.*
Yes (=You must'not have), beautiful house was.

Sometimes *ki* appears instead of *diax*. Generally the function of *ki* is wider - it is compatible with the functions of all other positive particles. In case of positive questions *ki* usually replaces *diax*, but in case of negative questions, there are only few instances of such alternations.

- *ar myeri kartul simyerebs?*
Not sing Georgian songs?
- *diax.*
Yes (= Yes, I do not).
- But:
- *rogor, ar myeri kartui simyerebs?*
What, not sing Georgian songs?
- *ki, ar vmyeri magram momcons.*
Yes, not I-sing, but I-like.

The answer *diax, ar vmyeri* (=Yes, I don't) would be more official and in this communicational context more irritating - the speaker is surprised that the other person doesn't sing Georgian songs and when he answers in polite form it irritates him. That's why the answer *ki, ar vmyeri* is more acceptable in this communicational context.

We gave examples of (1An), but (2An) is characteristic for Georgian as well:

- *ar cvims?* (=Not rains?)
- *ki, cvims.* (=Yes, rains)
- *ara, ar cvims.* (=No, not rains)

Sometimes negative questions have a function of encouragement of some action. In such cases answers of type (1) are rare:

- *ar cavidet satamashod?*
Not will-go for-play?
- *ki (cavidet).*
Yes (Let's go).
- *qavas ar miirtmevt?*
Coffee not drink you (polite)?
- *ki, madlobt.*
Yes, thank you.

As for the positive particle *xom*, its function is quite unique. It appears only on questions or assertions and is used when speaker expects a positive answer. When *xom* is used with a negative question (or assertion), it changes the abstract structure of answers from (1) to (2) and answers of type (2) <No, it isn't> appear:

- *vaxtangi xom ar casula?*
Vaxtang yes not have-gone?
- *ara, ara.*
No, no (=he hasn't gone)
- *švilo, qvavilebi xom ar dagavicqda?*
child, flowers yes not forgot?
- *ara, deda.*
No, (=I didn't), mother.

Examples of answers with the positive particles are rare and usually appear in answers to questions with function encouragement:

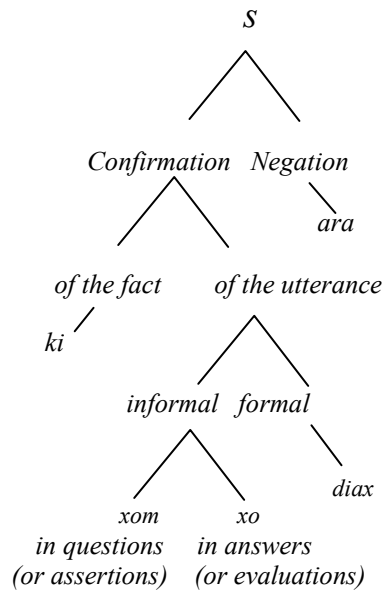
- *xom ar tamašob cadraks?*
Yes not play-you chess?
- *ki, modi vitamasot.*
Yes, come to play (=Let's play).

Frequently sentences with *xom* are followed by sentences that have opposite meaning to the question:

"xom lamazia es cemi coli, magram me upro lamazi minda"
yes beautiful this my wife, but I more beautiful I-want

The speaker expects that everybody agrees with him that his wife is beautiful, but he wants her to be more beautiful.

After the comparison of all given data from literary texts, oral practice and the testing experiments, some generalizations about semantics and functions of <Yes/No> particles can be schematized as follows:



For Georgian two types of abstract structures are relevant and it is quite difficult to say, which one is more natural:

- (1) <I ask you to tell me if I am right> —————> xom
 (2) <I ask you to tell me what is happening in reality> —————> Ø

And, respectively, for answers (or evaluations):

- (1) <I confirm that you are/are not right> —————> (ki),diax,xo//ho / ara
 (2) <I confirm that this is/is not actually happening in reality> ———> . (ki),diax / ara

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Biased Yes/No Questions

MAIN DATA. Two main kinds of epistemic bias in *yes/no yn*-questions have been discussed in the recent literature. On the one hand, a positive *yn*-question with the particle *really*, as in (1S'), necessarily conveys an epistemic bias, namely it conveys that the speaker originally believed the correct answer to that question to be in the negative. The corresponding version without *really* does not necessarily carry this bias and it is thus acceptable in unbiased scenarios like (1), witness the contrast (1S)-(1S') (Romero and Han (To appear)). Similarly, a *yn*-question with preposed negation like *Doesn't he drink?* in (2S') necessarily conveys a bias, namely it conveys that the speaker believed the correct answer to be in affirmative (Ladd (1981), Gunlogson and Büring (2000)). The corresponding version (2S) with non-preposed negation, not carrying this bias necessarily, is acceptable in the unbiased scenario (Han (1999), Romero and Han (to appear)). This type of bias, with opposite polarities in the question and in the propositional content of the bias, is called "epistemic implicature" in Romero and Han (to appear).

- (1) A: Jorge just visited Birgit and Jorn's newborn boy.
S: Did he bring a present for him?
S': # Did he really bring a present for him? (Negative epistemic implicature *He didn't bring a present*)
- (2) Scenario: The speaker is organizing a party and she is in charge of supplying all the non-alcoholic beverages for teetotalers. The speaker is going through a list of people that are invited. She has no previous belief or expectation about their drinking habits.
A: Jane and Mary do not drink.
S: OK. What about John? Does he not drink (either)?
S': # OK. What about John? Doesn't he drink (either)? (Positive epistemic implicature *John drinks*)

On the other hand, Gunlogson and Büring (2000) discuss a type of bias where the polarity of the question itself and the polarity of the content of the bias are the same. The idea is that contextual evidence for p may prompt the speaker to ask the *yn*-question $p?$ (e.g. *Is it raining?* in (3S)) rather than $\neg p?$ or a similar alternative (e.g. *Is it sunny?* in (3S')):

- (3) Scenario: Addressee enters Speaker's windowless computer room wearing a dripping wet raincoat.
S: What's the weather like out there? Is it raining? (Contextual evidence bias for *It is raining*)
S': # What's the weather like out there? Is it sunny? (Contextual evidence bias for *It is sunny*)

An analysis of the bias in (1)-(2) is developed in Romero and Han (To appear), who make crucial use of the conversational epistemic operator VERUM and of the non-formalized notion of "intent" of a question. A second approach has been pursued by Nilsenova and van Rooy (2003) and by van Rooy and Safarova (2003) to cover the data (2)-(3) using Decision Theory. The goal of the present paper is to compare the VERUM-based approach and the Decision Theory approach and to argue that, while the Decision Theory approach provides an adequate formal characterization of the notion of "intent", the operator VERUM is still needed to derive the data.

THE TWO APPROACHES. A central piece of the VERUM-based approach is the operator VERUM defined in (4), where $Conv_x(w')$ is the set of worlds where all the conversational goals of x in w' are fulfilled. This operator is introduced by the particle *really* in (1S') and by the preposing of negation in (2S'). VERUM derives the following data. First, a *yn*-interrogative with VERUM produces an unbalanced partition ($\{ VERUM p, \neg VERUM p \}$) that questions the validity of adding p to the Common Ground (CG). By conversational economy, this is allowed only when there are reasons to question such addition, e.g., when an epistemic conflict would arise from such addition. This derives the existence of a previous epistemic bias for (1S')-(2S'). Second, the scopal interaction between VERUM and negation yields the two readings of preposed negation *yn*-questions observed in Ladd (1981): the p -reading where the speaker is double-checking p arises when negation scopes over VERUM, as in (5), and the $\neg p$ -reading where the speaker is double-checking $\neg p$ obtains when VERUM scopes over negation, as in (6).

- (4) $\llbracket VERUM_i \rrbracket^{gx/i} = \llbracket really_i \rrbracket^{gx/i} = \lambda p_{<s,t>} \lambda w. \forall w' \in Epi_x(w) [\forall w'' \in Conv_x(w') [p \in CG_{w''}]]$
- (5) A: Ok, now that Stephan has come, we are all here. Let's go!
S: Isn't Jane coming too?
a. LF: $[_{CP} Q \text{ not } [_{IP} \text{ Jane is coming too }]]$
- (6) Scenario: Pat and Jane are two phonologists who are supposed to be speaking in our workshop on optimality and acquisition.
A: Pat is not coming. So we don't have any phonologists in the program.
S: Isn't Jane coming either?
a. LF: $[_{CP} Q \text{ VERUM } [_{IP} \text{ Jane is coming }] \text{ either }]]$

The key notion of the Decision Theory approach is the notion of utility value of a proposition. A proposition p has a high utility value if its becoming true brings the speaker closer to her goal or its addition to the speaker's epistemic state would trigger

a wide revision of it. A *yn*-question *r*? (where *r* can have a positive form *p* or a negative form $\neg p$) is an instruction to partition the CG in two cells: the cell *r* and the cell $\neg r$. Which one of the two cells is pronounced is important: the speaker pronounces the cell whose utility value is higher (both cells have equal utility values in *r* or *not*?). This accounts for the following data. First, as noticed in Bolinger (1978), a request for *p* can only be posited by asking *p*?, as shown in (7), since *p* becoming true, but not $\neg p$ becoming true, would bring the speaker closer to her goal. Second, *p*- and $\neg p$ -readings depend on the epistemic state checked: the *p*-reading in (5) arises when the utility value is computed with respect to the speaker's current information state, whereas the $\neg p$ -reading in (6) obtains when the utility value corresponds to a previous information state of the speaker.

(7) Request for help:

- a. Will you help me? b. # Will you help me or not? c. # Will you not help me?

COMPARISON BETWEEN THE TWO APPROACHES. The question is how labor is divided between VERUM and the utility value of a proposition. In particular, while Romero and Han (To appear) use both VERUM and the notion of "intent" of a question (an informal version of utility value), van Rooy and Safarova (2003) claim that only the utility value of a proposition is needed to derive the data. The present paper argues that we still need VERUM. With the utility value and without VERUM, van Rooy and Safarova (2003)'s account fails to derive the following three empirical patterns.

First, however one may decide to characterise the semantic difference between *p*- and $\neg p$ -readings of preposed negation *yn*-questions, that difference must be correlated with the use of Positive Items (NIs like *too*, *some* and *already*) versus Negative Items (NIs like *either*, *any* and *yet*). Examples (5) with *too* and (8a) with *some* unambiguously have the *p*-reading double-checking *p*, whereas examples (6) with *either* and (8b) with *any* unambiguously have the $\neg p$ -reading double-checking $\neg p$. In Romero and Han (To appear), the distribution of PIs and NIs follows from the way the two readings are derived: when negation scopes over VERUM, as in (5a), the *p*-reading obtains and PIs are licensed because they are not in the immediate scope of negation (Ladusaw (1980), Linebarger (1987)); when VERUM scopes over negation, as in (6a), the $\neg p$ -reading arises and NIs are licensed under the immediate scope of negation. In van Rooy and Safarova, for *p*-readings the utility value is computed with respect to the speaker's current information state, and for $\neg p$ -readings the utility value corresponds to a previous information state. It is not obvious how the temporal anchoring of the utility value may correlate with the distribution of PIs and NIs in these questions. Furthermore, according to them, negation in PI-questions simply negates the proposition *p* (without VERUM) in the question, leaving totally unexplained why PIs that require a positive clause can be licensed here.

- (8) a. Isn't there some vegetarian restaurant near here? (PI-question with *p*-reading double-checking *p*)
b. Isn't there any vegetarian restaurant near here? (NI-question with $\neg p$ -reading double-checking $\neg p$)

Second, preposed negation NI/ $\neg p$ -questions in English necessarily have a strong epistemic implicature –like preposed negation PI/*p*-questions– and not just a mild contextual evidence bias –as non-preposed negation question sometimes do. For example, (9S) may convey a mild bias towards $\neg p$ (=John not going out) given the received contextual evidence, but (9S') necessarily conveys a strong epistemic implicature towards *p*. The account in van Rooy and Safarova, not having VERUM, lumps together questions like (9S) and (9S') and is not able to make the desired distinction.

- (9) Scenario: Late on Saturday night, S hears noises in his son John's room.
S: Is John not going out with anybody?
S': Isn't John going out with anybody?

Third and finally, given that epistemic *really* is a way of expressing VERUM in declaratives, as in (10), we need a VERUM-based account for *really*-questions. Once we have it, and since the epistemic effects in *really*-questions and in preposed negation questions are parallel (strong implicature, oppositive polarity between the question and the content of the implicature), the same account can explain the behavior of preposed negation questions. Under van Rooy and Safarova's account, the parallel behaviors must be derived from different sources.

- (10) Sandra really is clever.

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‘How to do things with questions’: interactional power and stance taking

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Abstract

This paper presents a pragmatic analysis of interrogative utterances (what is said) and ‘questions’ (what is done) in 32 spontaneous task-oriented conversations of 96 Dutch 15-year old girls and boys in same-sex triads (henceforth: ‘the corpus’). A detailed study of this corpus reveals that the girls strategically exploit the poly-pragmatic functions of questions, interrogatives and final rise or high pitch, to a considerably higher extent than the boys. The results contradict the current interpretation given to the preference of women to use questions or final rise or high pitch which suggests that this would be the result of ‘submissiveness’ or ‘dependence’ on the hearer (Gussenhoven 2002, Haan 2002; see for an overview _afā_ová 2004) because the questioner would be dependent on the information given by the hearer. The results challenge this interpretation of the data in two different ways: 1. not all questions are designed to request information and 2. not all women use questions out of submissiveness and/or dependency. The conclusion of the paper is that the interpretation of questions in terms of epistemicity is necessary but insufficient and should be widened up to that of discourse stances.

1. Introduction: women and questioning

For over more than a century scholars of all sorts are searching for gender differences in speech. During this time many myths have been falsified: men do not always interrupt (James and Clarke 1993), women do not always speak less (James and Drakich 1993), girls are not always indirect (van Alphen 1999), to name but a few. Nevertheless it is conspicuous that, regardless of theoretical background or scientific paradigm, asking questions, use of interrogative form and/or high pitch is persistently considered to be a ‘feature’ of feminine speech. Whether ‘questioning’ is an outcome of psychological insecurity (Lakoff 1973), a form of doing the ‘household’ of a conversation (Fishman 1983), an expression of cooperation and other-orientation (Maltz & Borker 1982, Sheldon 1990) or a biologically based predisposition of showing submissiveness and dependency towards the hearer (Haan & van Heuven 1999, Haan 2002, following Ohala 1984, _afā_ová 2004) it is supposed to be ‘feminine’ to ask questions and ‘masculine’ to give orders.

In this paper I will investigate ‘questioning’ and its functions in adolescent same gender interactions. My aim is particularly driven by the current interpretation that questioning or use of high rise is used by women because of ‘submissiveness’ and that female speakers do not hesitate to show *dependency* on the hearer because high rise “can be seen as a powerful tool for giving expression to the speakers dependence on the listener’s goodwill.” (Haan 2002:214)

2. The corpus

For this paper I reanalyse my corpus of Dutch adolescent same-gender conversations (Van Alphen 1999). For this project, 96 fifteen year olds girls and boys same sex triads (peers) were asked to negotiate a joint ‘wish’ to be fulfilled for a well-known Dutch television program, ‘Geef Nooit Op’ (‘Never Give Up’; BBC: ‘Jim will fix it’). These conversations show the same basic interactional pattern: someone formulates a desire or wish (e.g. ‘*let’s go bungee jumping*’) which could be modified, elaborated, refused or agreed upon. The interaction is organized (*shut up!*), there is wit and humour (‘*what about some growth hormones?*’), laughter, and questions are being asked: ‘*where shall we go bungee jumping?*’, ‘*do you like that too?*’ The corpus consists of 6308 utterances, divided into four main interactional types: Turns (60%), Back Channels (8%), Laughter (17%), and a remaining category Varied (15%). The conversations last approximately 7 minutes and are fully transcribed and coded by means of CHILDES. For every utterance the turn taking type is established: initiation or reaction. The turns (interactional moves on the topic of negotiating a wish, n=3947, girls 2252 boys 1695) are further analyzed according to the type of speech act (‘what is done’, e.g. questions), and lexical-grammatical form (‘what is said’, e.g. interrogatives and tag questions.) The data are analyzed with SPSSPC, mainly with the T-test (*p<.05). The unit of analysis is the interactional move, here called ‘turn’. The data are collected in two regions in the Netherlands (Texel and Gouda), with an equal amount of female and male speakers from every region. All speakers are native Dutch.

3. Questioning and Question design

3.1. Quantifications on Questioning

In order to verify generalisations about women and ‘questionhood’ (is it about the use of interrogative form and/or the speech act ‘question’?) I will first give some – general - quantitative facts.

As was shown in van Alphen (2003), quantitative analyses of the corpus give no evidence that supports generalizations about females using more utterances with an *interrogative form* (y/n questions, wh-questions, declarative or alternative questions, *regardless of speech act type*). Out of the 2252 turns of the girls 14% have an interrogative form, out of the 1695 turns of the boys, 12%. Since the *tag question* has played a central role in the discussion about women using more questions or final rise than men, this interrogative form is separately coded but there is no significant gender difference in the use of tag questions either: a mean of 2% of the female and of the male turns (*regardless of speech act type*) end with a post clausal interrogative tag such as *hè?*, *toch?*, *niet?* ‘isn’t it?’¹

There is also no significant gender difference in the amount of *Questions (as a speech act)*, defined as a request for information or confirmation, *regardless of interrogative form*²: 5% (n=113) of the female turns is a question, for the males this is 3% (n=51).

In general, quantitative generalisations about ‘questioning’ and ‘women’ do not hold for these conversations: there is no significant gender difference in the total amount of questions, interrogatives and tag questions. But there is one exception to this: girls do ask significantly more initiating questions (7% of 493 initiating turns) than the boys (3% of 582 initiating turns) ($p=.026$). An initiating question is a question which is not a reaction to an utterance of a conversation partner; it is an independent question, as in ‘*Let’s go bungee jumping*’ (speech act: proposal), ‘*don’t you think that’s fun?*’ (speech act: question). In section (4.1) I will discuss the nature and cause of this ‘female’ preference in the use of questions.

3.2. Biased questions

In the above we have seen that a quantitative generalization across the whole corpus gives little reason to associate female speakers more than male speakers with interrogatives, tag questions or questions. So now it could be interesting to focus on the linguistic design of the Questions and analyse whether there is a gender difference in the use of *traditional* interrogative forms (wh, y/n, decl. etcetera). From a pragmatic point of view, however, in order to establish what questions ‘do’ in conversations, this is less relevant as can be seen in the following examples. In the a- and b-versions of the questions 1-4, the interrogative form remains the same, but the interactional function of the question changes considerably [b-versions are from the corpus].

- | | |
|--|---|
| 1. y/n Q: a. ‘heb je dat gezien?’
did you see that? | b. ‘heb je dat <i>niet</i> gezien?’
didn’t you see that? |
| 2. decl. Q: a. ‘jij wou iets met kinderen?’
you wanted something with children? | b. ‘jij wou <i>toch</i> iets met kinderen?’
you <i>did</i> want something with children? |
| 3. tag Q: a. ‘is tof, <i>hè?</i> ’
is cool, <i>isn’t it?</i> | b. ‘is <i>toch</i> tof, <i>hè?</i> ’
is cool <i>indeed</i> , <i>isn’t it?</i> |
| 4. wh-Q: a. ‘wat vind je daar aan?’
what do you like about it? | b. ‘wat vind je daar <i>dan</i> aan?’
what do you like about it <i>then?</i> |

The b-versions of these questions are more conducive or leading than the a-versions: unstressed ‘*niet*’ (not) or negative polar questions, and discourse particles as *toch* (indeed) and *dan* (then) signal a stronger answer preference to the hearer than the a-versions. And it is particularly this type of questions that is used more by the girls than the boys. Out of the 101 questions of the girls (with a proposition!, see section 4.2) 63% are **biased questions**. They either are a tag question or they contain one (or more) discourse particles (or both, see example 3 b.). Out of the 49 questions (with a proposition) of the boys, 42% are biased questions. This difference is significant ($p=.002$). Half of the biased female questions are ‘build’ by using a *tag question* (*toch*, *hè?*) or the intra clausal *toch* ‘indeed, surely’. The Dutch modal particle *toch* has many meanings (‘after all, surely, all the same, anyway, anyhow, still, indeed, even so, rather, actually’) and therefore many functions. *Toch* in post clausal position is the Dutch version of *isn’t it* as a tag question as in 5a. intraclausal *toch*, even more signals the attitude - more certain - of the speaker as in 5b:

- | | |
|---|---|
| (5) a. dat kunnen ze niet menen, <i>toch?</i> | they can’t be serious, <i>can they?</i> |
| b. dat kunnen ze <i>toch</i> niet menen? | <i>surely</i> they can’t be serious? |

¹ The interactional counterpart of *tag questions*, the so-called *tag enforcers*, post clausal elements as ‘hoor’, or ‘zeg’, which stress the propositions in the sentence, also has no significant gender difference: girls 2%, boys 3%.

² Excluding specific Requests for Clarification/repetition (Bungeewhat?) and Problemizing Acts (also no gender differences).

Both versions signal that the speaker expects a confirmative answer, but the b-version of this question is more biased than the a-version. In 5a. the speaker believes that p, but in the b-version (as well as the b-version in examples 1-4) the speaker not only believes that p, but believes that p is more likely.

The second device that is almost exclusively used in the female conversations is the Dutch modal/discourse particle *dan* 'then' as in (4b). *Dan* expresses affective stances such as impatience or displeasure and expresses doubt to the truth of a statement, especially when used in elliptical questions used by the speaker to challenge a statement about a person or a state of affairs: '*nobody knows that I'm here*' '*and your brother then?*' as well as in the male question '*are you allowed to bungee jump then?*' ('*mag jij dan wel bungee jumpen?*') with the implication 'you're not allowed'. And see fragment 10, line 15 in section 4.3 for a very impatient and irritable female 'then'.

The male speakers use these discourse or stance markers only a few times (6%) in their biased questions. The remaining male biased questions are polar questions such as: '*you do want to go to Iceland?*', '*why not?*', '*don't you think so?*'

The aforementioned particles *toch* or *ook* and *dan* are discourse markers which specify certain relations between the utterance and context parameters such as *topic* and *common ground*. These have to be reconstructed by the hearer (Zeevat 2004). The girls regulate not only more than the boys the exact interpretation of their questions, but since it is obligatory to answer a question (and preferably the answer which is suggested in the particle!), the girls also regulate more than the boys the exact content of the answer. In the mean time their questions are 'designed' in such a way that the female speakers express their attitudes or affective stance (displeasure, feelings, impatience, persistence) towards the proposition contained within the question.

This leads to the conclusion that if the meaning of a question is its possible set of answers (Groenendijk & Stokhof 1996) then the meaning of a question for these girls seems to be *preferably* a very strictly defined subset of all possible answers, because the female question-design is more tailored to reach the goal of the questioner: a preferred answer. At least in first instance, as is illustrated in fragment (1) Beverley Hills, in which TAN and BRE both wish to play a role in the Beverley Hills series. INA agrees (line 3) with 'yes' but stops after '*that*'. So TAN asks again for agreement (line 4 '*yes?*') BRE complies in line 5, and/but INA acts out an evasive manoeuvre: she pretends the microphone to talk (line 6), this is followed by laughter but BRE insists for a positive answer from INA by negative polar questions (line 8, 10), helped by TAN with an elliptical question [*isn't it fun*] *playing Beverley Hills together?* INA first gives in (line 12) '*yeah sure, but*' and then - finally - is brave enough to say '*no*' (line 13), although '*not yet*'.

FRAGMENT (1) BEVERLEY HILLS

- | | |
|--|--|
| 1. TAN: yes, sure go play in Beverley Hills!. | ja, echt wel in Beverley Hills spelen! |
| 2. BRE: ok we send this in. | ok we sturen 'm op |
| 3. INA: yes that+... | ja dat+... |
| 4. TAN: yes? | ja? |
| 5. BRE: yes that's seems fun to me : — | ja dat lijkt me wel leuk |
| 6. INA: shut up! _[joke to microphone] | houd je kop!_ |
| 7. TAN: hehehehe | hahahaha |
| 8. BRE: doesn't it seem fun to you? — | lijkt het je niet leuk ? |
| 9. TAN & INA: hehehehe | hahahaha |
| 10. BRE: yes, isn't it? — | ja, hè ? |
| 11. TAN: playing Beverley Hills together? — | Beverley Hills spelen met z'n allen? |
| 12. INA: yeah sure, but. | ja wel, maar. |
| 13. INA: no not yet | nee nog niet. |
| 14. All three laugh & say okay, yes. | Alliedrie lachen en beamen. |

The power of the questioner over the hearer is evident, as the last fragment shows, were it takes INA several turns (and one evasive action) to finally escape the agreement forcing questions of the two other girls: she does *not* think it is fun to play Beverley Hills together, at least, not yet.

In this section I have demonstrated that the girls use significantly more **biased questions** than the boys. In the case of a tag question even a whole statement is presented to be confirmed, and needs to be disputed if the hearer 'accidentally' doesn't agree. In this respect the interesting tendency should be noted that the female speakers predominantly use their tag questions in the speech act Question (40% out of 45 *tag*

questions). The male speakers use only 10% of their *tag questions* (100%=34) in Questions. They use most of their tag questions (28%) in jocular and humorous speech acts, as in: ‘*well, everybody does feel lonely sometimes, isn’t it?*’ or ‘*our inventor, isn’t it?*’ as funny answer to the serious question ‘*who can think of something?*’ In the distribution of interrogatives in non serious speech acts, we also find a similar tendency: 17% for boys, 12% for girls. Boys reframe the conversation from serious to non serious, by ‘countering’ serious proposals by means of high rise ‘*a beauty salon?*’ followed by ‘*what about some growth hormones?*’ (to an apparently small size boy) . Here we get insight in the function of humour as ‘*male bonding*’: the elicitation of confirmation of the presuppositions in the (*tag*) *questions* reinforces their *common funny ground*. A second explanation of the salient use of interrogatives and question contour in non-serious sequences in the male conversations could lie in another important function of humour for males: to attract an audience. (Hay 2000). So what could be better attracting an audience and forcing a reply than interrogatives and tag questions? A third explanation is that humour can be a powerful interactional device because the speaker re-frames a serious conversation into a non-serious one. Witty contributions change or stop the ongoing topic and make an unmarked topic marked. By using interrogatives and tag questions the boys also exploit their interactional power because it makes the listeners dependent on the speaker.

This analysis of the linguistic design of the questions shows that the girls ‘do’ more with their questions: they reinforce the *common ground, the shared opinions of the participants*. The answers are strongly dependent on the preference structure which is ‘given’ along by the female questioner. The hearer is therefore dependent on the words of the questioner (in stead of the reverse, as Haan 2002 states).

To conclude and illustrate this section, I present two comparable questions, (6a) and (6b), from the corpus. Both speakers are ‘questioning’ if a particular wish should be send in, the location is the same, the illocutionary force too, but the interactional force of the a-version is less powerful than the b-version because of its modal verb ‘should’ and two hesitant markers ‘eh’ around ‘like that’.

- (6) a. *would* you send that eh in like eh that? *zou je dat eh nou zo eh insturen?*
 b. you’re *surely not* going to send (this) in, are you? *ga je toch niet insturen?*

In view of what has been said earlier it will come as no surprise that the a-version is spoken by a male, the b-version by a female. Actually, both get the expected answer ‘no’.

4. Interactional functions of questions

Here I present three types of questions which are predominantly used by the female speakers and which are very hard to categorize into existing taxonomies: 1. Opinion Questions (labelled in terms of content: ‘*don’t you think that’s fun?*’), 2. Floorgetting Questions (labelled in terms of interactional function: ‘*you know what’s fun too?*’). 3. False Questions (labelled in terms of tone and questionable question-status: as in ‘*well so what are we going to do?*’

4.1. Opinion questions. Almost half of the initiating questions (see section 3.1) of the girls elicit opinions, judgements from the others. When giving a proposal such as ‘*let’s go bungee jumping*’ this is often followed by a question ‘*don’t you think that’s cool?*’ or after a positive judgement is given ‘*don’t you think so too?*’ is added. These – mostly – negative polar questions reinforce confirmative responses such as ‘*yes that’s fun*’. And indeed: 13% of the female turns is a positive judgement against 7% of the male turns ($p=.000$). However, before reinforcing another myth, the female speakers also pass significantly more *negative* judgements on someone’s proposals (‘*no not that, man!*’, ‘*that’s rubbish, hey!*’ ‘*yuk I hate that*’) than the male speakers: 6% versus 2% ($p=.000$). So the sharing of mutual opinions seems to be a fundamental interactional norm in these female negotiations: on average 1 in 5 turns is a judgement (positive or negative). In the male conversations this is 1 in 10 turns. A consequence (or cause) of this interactional norm is therefore that opinions are not only elicited by questions, but also reinforced, as was shown in fragment 1. Ergo: these female speakers do ask each other more initiating questions, because they want to know/share/reinforce each others opinion. It is not unknown in sociolinguistics that sub cultural differences exist in asking particular questions. In some cultures or circumstances, for instance, it is obligatory to ask questions about someone’s well-being or family. In other cultures these questions are taboo. My point is that in generalizations about types of people using ‘more’ or ‘less’ questions, these sort of sociolinguistic factors and local contexts should be taken into account (see also Eckert and McConnell-Ginet 1992).

4.2. Floorgetting Questions. The second type of questions – also known as pre-requests - are almost solely used by the female speakers – and can hardly be put into existing taxonomies - are questions as the following: (7) ‘*do you know what we can do too?*’ (8) ‘*do you know what I hate too?*’ (9) ‘*do you know were I want to go?*’ I discuss two more examples from the corpus in detail:

FRAGMENT (2) BANANA

1. ILS: do you know what's fun too?
2. JIR: no
3. ILS: on a banana
4. JUD: what?
5. ILS: in France

FRAGMENT (3) SKI JUMP

1. RIE: do you know what seems cool?
2. ANK: yes?
3. EVA: err what?
4. RIE: skiing from a ski jump!
5. ANK: no stupid, act normal!

Theoretically the first sentences in both fragments are yes/no questions, and as we can see in lines 2 they do receive a 'no' and a 'yes' answer, but *de facto* it is impossible to answer these questions because only the questioner knows the answer. A semantic analysis in terms of truth value of the proposition or presupposition is not possible here. These are neither requests for information nor requests for confirmation. These questions seem to have 'only' a function at discourse level: a. they (re)organize the turn taking: the speaker 'requests' for the floor, and b. they (re)organize the topic development, since they announce a new topic or subtopic: 'I would like to talk about a p which I like/hate/want to do, can I have your attention? if yes, I tell you what p is' The empirical fact that these questions can be answered by 'no' (*I do not know the new p*, line 2 in 2) as well as 'yes' (*-tell us p*, line 2 in 3) or even 'what' (*is a cool p?* line 3 in 3) proves the polypragmatic function of these questions. The factive 'know' gives the suggestion that the speaker herself is already aware of p and in the case of a question this makes the hearer (if interested) epistemic dependent on the questioner. Even more eroded or bleached in meaning is the empirical finding in natural conversations of the semantically empty, by rising intonation nevertheless floor holding '*whatsit?*' or '*howsitcalled?*' ('hoeheettut') often at the beginning of a new topic, as in (13) in which the female adult speaker changes from 'doubts' to a completely new topic 'marriage', with 'by the way' (trouwens) as *topic shift marker* and '*whatsitcalled?*' as floor holder:

(10) I doubt that too. *whatsitcalled?* Joan married John by the way.

While it is somehow possible to retrieve some presupposition in examples 7-9 and 2-1 & 3-1 (the speaker has a plan or an opinion), in (10) this is not the case, except – at the discourse level - **that** someone wants to tell something. In these examples the speaker exploits apparently two basic properties of questions:

1. the attention getting high pitch of questions and 2. the conversational routine that a question demands an answer, or at least a non-verbal response (attention, vision) or a minimal form *yes* or *no* or *what*. In all these cases the questioner may/must – because of lack of information by the addressees – answer the question themselves, by which the 'questioner' holds or gains the floor. I call these questions Floor Getting questions, which rather should be classified as metalinguistic or discourse managing speech acts, since the conversational implicature is actually: 'listen, I want to say something'³.

As shown above, the female speakers in my corpus (and other data) make - in a very ingenious way – use of the interactional power of questions. There is only one boy (out of 48!) who uses this type of question: '*do you know what's cool for me?*' (no answer) and '*do you know what I do want?*' (funny answer: '*drink a lot!*' 'veel zuipen'). Because of the vague semantic content of these floor getting questions many of the responses are themselves interrogative: '*no?*', '*yes?*', '*what?*' These sequences seem characteristic a 'female' 'questioning' speech style. But as shown in fragment 2 (BANANA) it is not the questioner who is dependent on the goodwill of the listener, but the reverse: the initial questioner ILS gives away scantily her information about her wish: a trip to France and then play on a big plastic banana in the sea.

4.3 False Questions (Orders for Confirmation).

The last finding I will present here is that not only is a female questioner interested in some possible *worlds*, she is also interested in some possible *words*. As will be shown below, the girls use False Questions by prompting the hearer – in falsetto - to give precise and definite answers. This question type plays a major role in my current quest into the interactional functions of questions, and my objections against a 'dependent' interpretation of female use of questions and high rise. I therefore discuss in detail fragment (4) 'ACT NÓRMAL' in which one girl tells - not asks - the others what to do and this is taken as a very blunt order⁴, but nevertheless leads to a sequence of more blunt orders, followed and accompanied by a more than salient use of 'feminine' questions, interrogatives, tag questions and high rise

³ In Greenwood (1996:89) an eleven year old girl asks two times '*you know what?*' '*you know what?*' but get no response. Then she utters the above postulated central meaning of this question and calls out: '*listen!*'

⁴ This is a fine illustration of Goodwin's (1980:169) observations that "though boys seldom discuss the form of their commands, girls, when wanting to characterize someone as having been particularly bold, cite instances of the usage of direct commands"

The fragment starts when ANS ‘tells’ FEM to summarize their negotiations about their wish (canoeing on the Amazon river) ‘you give a summary’ The two other girls inflame with anger about the fact that ANS is ‘just prescribing them’ (line 10). In line 3 and 11 ANS’ ‘order’ is cited with a high and false tone of voice ‘yeah WHAT NOW “SUMMARY”?’ (peak 480Hz) and ‘yes wait a minute hey, I’m gonna summarize, hey’ After that, they pursue ANS with a sequence of (socializing) prescriptions themselves (lines 4,7,8). In line 19 FEM tries to release the tension with a metalinguistic speech act ‘are we fighting here over a summary’ ended with a little laugh to express the humorous side of it. ANS immediately joins in and tries to correct her mistake by the little joke ‘let’s rewind’ (line 20). This, nevertheless, makes everything worse: ‘no don’t bullshit!’ is the imperative response (line 21)

In the meantime, besides bald statements or imperative utterances, the girls exploit the use of ‘feminine’ interrogatives, tag questions stressed by duration of the vowel in HÈ::? (8,10), and high rise questions such as ‘why thén must that (be) thén?’ or ‘well so what are we going to do:?’ (15,18,22)

[Overlap not coded for clearness; +...=speaker stops voluntarily; # =1 sec silence; i:, a: = lengthened vowel; CAP = loud; é á, = stress on vowel]

FRAGMENT (4) ‘ACT NÓRMAL’

GEWÓÓN DOEN’

- | | | |
|----------|--|---|
| 1. ANS: | you give a summary | jij geeft een samenvatting. |
| 2. FEM: | why me? | waarom ik? |
| 3. MAI: | yeah WHAT NOW “SUMMARY”? # | ja WAT NOU “SAMENVATTING”? # |
| 4. MAI: | hey we’re not in Dutch class here, héé ! | we zitten niet bij Nederlands hoor hier héé! |
| 5. ANS: | well! [=please stop] | nou! [=toe nou] |
| 6. FEM: | no we sit here eh+... | nee we zitten hier eh+... |
| 7. MAI: | well you must not act so pósh! | nou je moet niet zo déftig doen. |
| 8. MAI: | you must act nórmal
they always say, I:SN’T I:T? | je moet gewóón doen
zeggen ze altijd, HÈ::? |
| 9. FEM: | you just prescribe it to us! | je schrijft ‘t ons gewoon voor! |
| 10. FEM: | yes, I:SN’T I:T? | ja HÈ::? [HÈ as MAI in 9] |
| 11. MAI: | well then you just go “yes wait a minute
hey, I’m gonna summarize, hey” [false voice] | nou loop jij dan gewoon “ja wacht effe
hoor, ik ga effe samenvatten hoor”. |
| 12. ANS: | hihihu [nervous giggle] | hihihu [zenuwachtig gegiechel] |
| 13. FEM: | well yóu do it than! | nou doe jij dat dan! |
| 14. ANS: | no I+... | nee ik+... |
| 15. MAI: | why thén must that (be) thén? | waarom dán moet dat dán? |
| 16. ANS: | you (one) can surely just+... | je kunt toch gewoon +... |
| 17. FEM: | no ok. | nee oké. |
| 18. MAI: | well so whát are we going to do:? # | nou wát gaan we dus doe:n?# |
| 19. FEM: | are we fighting over a summary hehe | zitten we hier ruzie te maken over een
samenvatting hihi . |
| 20. ANS: | let’s rewind! [moaning] | effe terugspoelen! [kreunend] |
| 21. MAI: | don’t bullshit! | nee lul niet! |
| 22. MAI: | so whát are we going to do:? | wát gaan we dus doe:n? |
| 23. ANS: | well. | nou. |
| 24. FEM: | well that is. | nou dat heb. |
| 25. FEM: | that is: said+it+yet ok | dat wordt: zei+ik+al ok. |
| 26. MAI: | yeah well CANOEING simply! | ja nou KANOVAREN gewoon! |
| 27. ANS: | okay | oké. |

Two interactional norms show up in this fragment. First, that it is ‘not normal’ to give orders among the girls, not even in a bald statement as ‘you give a summary’. Secondly it is apparently ‘not abnormal’ that MAI prescribes the others - by using interrogatives, high rise and vowel duration - that what ‘we’ are going to do is ‘simply canoeing’ (line 26). MAI is ‘prompting’ (Schiffrin 1994) the other girls to say what she wants (compare the motherly ‘so what are you saying then?’ to children receiving gifts). Following Goodwin et al (2002) the prominence and duration of the tag question Hè:? (line 8 en 10), the intonation contour (LH*L 195Hz - 650Hz) and extreme high rise in (15) ‘why thén must that (be) thén?’ accompanied by persistent ‘then’, the extreme final rise in (18) ‘well so whát are we going to do:?’ (LH* 590Hz, and a range from 120Hz -590Hz) is used to *highlight* the opposition in this fragment. As Goodwin et al (2002) show for Latina

and Afro American girls, both vowel length and intonation contour are critical to the construction of *stance* in oppositional talk. Especially in conflict talk, pitch prominence, as indicated through vowel length and fundamental frequency, on negative statements in female conversations is very common. Whereas the normal pitch range of a speaker's talk in ordinary conversation can be between 250 and 350 Hz, in opposition moves the pitch is considerably higher, around 600Hz. It should be noted that Goodwin et al (2002:1643) found a significant difference between the two groups of girls: the Latina girls were much more likely to pitch their opposition turns outside the range of 500Hz than the AAVE groups, but both groups "(...) make use of contours and duration to call attention to what is being said." Brown (1993) calls the use of sarcastic questions in conflict talk among women in Tenejapa, Mexico (as well as in Japan) a form of rudeness and a characteristic female stance: exploiting mutual knowledge and shared agreement strategies to emphasize disagreement.

The above analysis makes clear that besides the use of lexical items ('then') and syntactic shape (interrogative, tag question) in opposition moves the girls also make use of prosodic means such as high rise and vowel duration to express their negative stance which – again - make the listener completely dependent on the questioner. This type of question could be better classified as an Order for Confirmation. An order (command) usually intends to control the addressees *non-verbal* behaviour, this type of order intends to control the *verbal* behaviour of the addressee: compliance by producing the exact and literally words preferred by the questioner.

5. Discussion

In this paper I have shown that questioning is the tool *par excellence* to create and maintain (or impose) shared ideas and desires in the common ground. Support for this statement is found in the fact that most interrogatives and tag questions in the boys' conversations are located in humorous or jocular sequences, establishing a common *funny* ground: humour as male bonding, attracting an audience, control the interaction. I have also shown that the girls exploit the whole range of interrogatives, questions and question contour, to a higher extent than the boys, and that doing so is not (always) a sign of their being uncertain or dependent on the addressee: in fact the reverse could be maintained equally well.

Secondly, I demonstrated that the girls make use of questions in which no propositional content or truth value can be established, but are nevertheless answered. These independent questions, also known as pre-requests, as '*do you know what's great too?*' seem to function at the discourse level only, as bids for the floor and/or topic changing devices. These question strategies, as well as the False Question, make *parasitical* use of the properties of 'proper' questions: a (very) high rising tone as an attention getter, the obligation to answer, and the knowledge that dispreferred answers will be avoided by the hearers (as the boys do in their funny sequences). Questions are therefore powerful interactional devices which minimal control the turn taking mechanism in a conversation (discourse level) and maximally put the literally words in the mouth of another (lexical level). The power of questions therefore stretches out over all linguistic levels: discourse level, conversational topic, subtopic, proposition, and lexical level. This is mainly done by the female speakers but also the male speakers exploit questioning in humour-sequences, to attract attention, change topic and reinforce shared common ground.

Based on these findings it is my strong opinion that the analysis of questions and questionhood in terms of epistemic modality (and therefore uncertainty) remains necessary, but is insufficient if one wants to account for the whole range of question-like utterances (questionoids?) that occur in natural conversations. Support for this view can be found in Sinclair & van Gessel (1990) who found only very few classical information questions and state that even referential questions have an expressive content which is independent of their information content. *_afá_ová* (2004) considers, for certain languages, 'question contour' as a modal expression of epistemic uncertainty, but she also wants to account for *attitudinal* associations as friendliness, politeness and submissiveness. We have, however, seen that questions and question contour can be hostile too, since questions do not only contain answer preferences, but express just like rhetorical questions, hidden epistemic 'stances' (strong opinions), which are – in stead of being answered - denied or confirmed by the addressees (see e.g. Heritage 2002). With respect to question contour, I have shown that high and final rise and extended vowel length in Dutch is used in the context of strong disagreement among girls, thereby exploiting these prosodic devices – not as a means of submissiveness, politeness or dependency – but as a powerful contextualisation cue that signals a negative, disagreeing attitude (not hidden, but *overt* stance) towards the listeners. This finding is supported by Goodwin et al (2002) who also stress that there are differences in the use of prosodic devices between Latina and African American female groups, so generalisations should not be made too hasty (again).

My empirical analysis of questions in real conversations leads therefore to the conclusion that questions, interrogativity and ‘question contours’ should be analyzed in terms other than epistemic modal ones. The things that questions can do go far beyond the scope of epistemicity and I would therefore propose to use the more abstract and analytically better notion of discourse stance, since it encompasses both *epistemic* stance as well as *affective* stance (see e.g. Berman et al 2002). Stance is the linguistic expression of *attitudes*, feelings, judgments, or commitment concerning the propositional content of a message. To my knowledge, questions are seldom or not described in terms other than *epistemic* stance, although Koshik (2002:1855) in a note does mention that “other stance displays may also be expressed through these questions”.

By using the more abstract notion of discourse stance, which comprises the attitudes, feelings, opinions but also the epistemic knowledge of the speaker when producing questions, not only logicians and language philosophers, but interactional linguists and others working with ‘real’ questions too, can get a theoretical grip of all the Things that can be done with Questions.

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Deriving selectional properties of ‘exclamative’ predicates*

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1 Background

Grimshaw (1979) and many subsequent authors have described the distribution of complements shown in (1)-(4) using lexical entries that not only contain syntactic subcategorization frames (e.g. [__NP] or [__ {NP, CP}] ...), but also semantic selectional frames. The semantic categories Grimshaw assumes include proposition (P), interrogative (Q) and exclamative (E) (e.g. [__Q], [__E], [__{P, E}]...).

- (1) a. ✓John believed [_{CP/P} that Mary is tall].
b. *John believed [_{CP/Q} whether Mary is tall].
c. *John believed [_{CP/E} how very tall Mary is].
- (2) a. *John asked/wondered [_{CP/P} that Mary is tall].
b. ✓John asked/wondered [_{CP/Q} whether Mary is tall].
c. *John wonders [_{CP/E} how very tall Mary is].
- (3) a. ✓John was amazed [_{CP/P} that Mary is tall].
b. *John was amazed [_{CP/Q} whether Mary is tall].
c. ✓John was amazed [_{CP/E} how very tall Mary is].
- (4) a. John {✓asked | ✓wondered} [_{CP/Q} what the time was].
b. John {✓asked | *wondered} [_{NP/Q} the time].

A number of questions arise immediately. What is the relation of Grimshaw’s features E, Q, and P to the semantic types in formal semantics (e.g. $\langle s, t \rangle$, $\langle \langle s, t \rangle, t \rangle$ etc.). If the predicates in (1)-(4) are modeled as belonging to some higher functional type (e.g. $\lambda p_{\langle s, t \rangle} \lambda x_{\langle e \rangle} \lambda w_{\langle s \rangle} \dots$ for ‘believe’), does the obligatory typing of the arguments also encode semantic selection? What is the justification for calling the embedded clauses in (1c), (2c), and (3c) exclamative? In other words, what if any properties do they share with matrix exclamative sentences? What, if anything, distinguishes them from matrix exclamatives? What do exclamatives and questions have in common? What distinguishes them?

It is sometimes claimed that exclamation is a matrix phenomenon (though see Bolinger 1977; Hooper and Thompson 1974; Lakoff 1984) and that the complements in (1c), (2c), and (3c) therefore cannot be exclamatives. Be that as it may, we require a description and explanation of the distribution of various types of embedded clauses whether we call them exclamative or not, i.e., the facts shown in (1)-(4) need to be described and explained independently of terminological choices.

This paper should be understood as a step in a research program which aims at describing facts such as those in (1)-(4) without recourse to Grimshaw’s features P, Q, and E. The idea is to treat embedded exclamatives semantically as interrogatives (type $\langle \langle s, t \rangle, t \rangle$) and to deduce the observed distribution from independent assumptions. This paper concentrates exclusively on the question why examples like (3b) are ungrammatical, leaving aside the equally important question why (1c) and (2c) are ungrammatical. Some implications of the present approach to the broader study of exclamatives for the conclusions.

The paper is structured as follows. Section 2 makes explicit the assumptions about interrogative semantics underlying the formal proof of section 4. Section 3 summarizes previous findings concerning the semantics of *surprise*-predicates (Heim 1994; d’Avis 2001, 2002). In section 4 it is proved that *surprise*-predicates systematically give rise to contradictory presupposition when embedding polar interrogatives. Section 5 concludes the paper. For an informal exposition and a summary of well-known criticism of Grimshaw’s account of the selectional properties of *surprise*-predicates see Abels in press.

* The research reported on here was funded through a Deutsche Forschungsgemeinschaft grant to the project D2 in the Forschergruppe Sprachtheoretische Grundlagen der Kognitionswissenschaft: Sprachliches und konzeptuelles Wissen. This is a compressed version of Abels in press.

2 On the Meaning of Questions and Answers

Wh-interrogatives and polar interrogatives denote sets of propositions as in (5a)¹ (Hamblin 1973) and (5b).² I will call these sets of propositions Q_H , the question denotation according to Hamblin (see fn. 2 for a minor caveat concerning (5b)).

- (5) a. $Q_H = [\text{What did Frank buy}] = \{p \mid \exists x \text{ thing}'(x) \ \& \ p = \{w' \mid \text{bought}(x)(f')(w')\}\}$
 b. $Q_H = [\text{Did Frank buy milk}] = \{p \mid p = \{w' \mid \text{bought}(m')(f')(w')\}\}$

To illustrate this, if we let the *wh*-word *what* range over objects, then the set in (5a) contains such propositions as *that Frank bought milk*, *that Frank bought cheese*, *that Frank bought sugar*, *that Frank bought bread*, *that Frank bought a Jaguar*, etc. And the set specified in (5b) simply contains the proposition *that Frank bought milk*.

Heim's (1994) 'weakly exhaustive answer' (answ_1^w) can easily be derived from Q_H .³ The weakly exhaustive answer is the conjunction of all the answers in Q_H that are true in the evaluation world (6).

$$(6) \quad \text{answ}_1^w = \bigcap \{p \mid p \in Q_H \ \& \ p(w)\}$$

Consider an example. Suppose that Frank has bought milk and cheese in the evaluation world, then for (5a) the propositions *that Frank bought milk* and *that Frank bought cheese* are true but not the propositions *that Frank bought sugar*, *that Frank bought bread*, *that Frank bought a Jaguar*. answ_1^w to (5a) is therefore the proposition *that Frank bought milk and cheese*. In the same scenario answ_1^w for (5b) is the set containing the proposition *that Frank bought milk*.

Note that if no member of Q_H is true in the evaluation world, then $\text{answ}_1^w = W$ (the set of all worlds). This follows from the definition of intersection ((7)). We derive W , i.e., the tautology, as answ_1^w to (5a) just in case Frank didn't buy anything and as answ_1^w to (5b) just in case Frank didn't buy milk.

$$(7) \quad \bigcap S =_{\text{def}} \{x \in D \mid \forall M \in S \rightarrow x \in M\}; \text{ thus, if } S = \emptyset, \text{ then } \bigcap S = U.$$

Next we can derive Heim's 'strongly exhaustive answer' (answ_2^w) from answ_1^w . Contentwise, the strongly exhaustive answer is the conjunction of all true answers, i.e. answ_1^w , with the conjunction of the negation of all false answers. Heim offers a more elegant formulation based on answ_1^w as shown in (8).

$$(8) \quad \text{answ}_2^w(Q_H) = \{w' \mid \text{answ}_1^{w'} = \text{answ}_1^w\}$$

The definition says that answ_2 in a particular world (w) is the set of worlds p such that answ_1 in all $w' \in p$ is the same as answ_1 in w . In our example if Frank has bought milk and cheese in w and nothing else, then answ_1 in the actual world (w) is the proposition p *that Frank bought milk and cheese (and possibly other things)*. In all worlds w' where Frank also bought milk and cheese and nothing else, $\text{answ}_1^{w'}$ will be that same proposition p *that Frank bought milk and cheese (and possibly other things)*, i.e., $\text{answ}_1^{w'} = \text{answ}_1^w$. However, if Frank bought only cheese in w' , $\text{answ}_1^{w'}$ will be the proposition p' *that Frank bought cheese (and possibly other things)*. Evidently $p \neq p'$. Likewise, if Frank had bought

¹ Properly speaking, we would of course have to treat questions not extensionally (as sets of propositions) but as functions from possible worlds to sets of propositions. Since nothing in this paper hinges on using question intensions, I will ignore this technical complication here, it would only unnecessarily complicate the exposition.

² In (5b) the polar interrogative is represented as a singleton set of propositions. In this regard, I deviate from Hamblin's view where (5b) would have had the representation (i).

(i) $Q_H = [\text{Did Frank buy milk}] = \{p \mid p = \{w' \mid \text{bought}(m')(f')(w')\} \vee p = \{w' \mid \neg \text{bought}(m')(f')(w')\}\}$

(Roberts' (1998) account of discourse coherence in terms of her subquestion relation requires polar interrogatives to be singleton sets as in the main text. d'Avis (2001) shows that, given Heim's (1994) notions of answerhood to be discussed below in the text, no information is lost by treating polar interrogatives as singleton sets.

The approach advocated here is different from Karttunen's (1977) despite the fact that for Karttunen polar interrogatives also denote singleton sets: the set containing the true answer in the evaluation world. Relying on Karttunen's denotation for polar interrogatives but not for *wh*-interrogatives would introduce an unwarranted asymmetry between polar and *wh*-interrogatives.

³ There is a strong affinity between Heim's notion of weakly exhaustive answer and Karttunen's (1977) approach to question denotation. For Karttunen a question denotes the set of all true propositions in Q_H , Heim's weakly exhaustive answer is the intersection of this set.

milk and cheese and bread in w' , $\text{answ}_1^{w'}$ would be the proposition p' *that Frank bought cheese and milk and bread (and possibly other things)*. Again p' is clearly different from p . In other words, $p=p'$ in exactly those worlds where Frank bought milk and cheese and nothing else. Thus answ_2^w is the proposition that Frank bought milk and cheese and nothing else. Notice that if Frank didn't buy anything, i.e. the case where answ_1 is the tautology, answ_2 comes out as the proposition *that Frank didn't buy anything*.

Similarly for the polar question. In all worlds where the answer to (5b) is 'yes', answ_1^w is the same proposition p expressed by the question, thus $\text{answ}_2^w = \text{answ}_1^w = p$ in those worlds. On the other hand in all and only those worlds where the answer to (5b) is 'no', answ_1 is the tautology. The set of worlds where answ_1 is the tautology is just the complement of the worlds where the answer is p , thus if Frank didn't buy milk, $\text{answ}_2^w(\llbracket(5b)\rrbracket) = \neg p$.

It is easy to show that answ_2 to a given question in a particular world is always a subset of answ_1 to that question in that world. I call this the Entailment Corollary and it is given in (9).⁴

(9) Entailment Corollary

$$\text{answ}_2^w(Q_H) \subseteq \text{answ}_1^w(Q_H) \Leftrightarrow \neg \text{answ}_1^w(Q_H) \subseteq \neg \text{answ}_2^w(Q_H).$$

As we will see, it will be expedient to also have the notion of positive partial answer at our disposal. Unlike the strongly and weakly exhaustive answers that are unique given a question and an evaluation world, questions will in general have sets of positive partial answers. The set of positive partial answers can be characterized by taking a subset of the true propositions in Q_H and intersecting them (10). Clearly answ_1^w is a member of the set of partial positive answers. In fact, from an informational viewpoint it is the strongest one in that it entails all the other.

(10) The set of positive partial answers to a question Q in evaluation world w is the set S_{pos} with

$$S_{\text{pos}} = \{p \mid p(w)=1 \wedge \exists w' \ p=\text{answ}_1^{w'}(Q_H)\}$$

In the example above, if Frank bought milk and cheese, then the tautology and the propositions *that Frank bought milk*, *that Frank bought cheese*, and *that Frank bought milk and cheese* are partial answers to the question. However, the proposition *that Frank didn't buy bread* is not.

This last proposition, *that Frank didn't buy bread*, could be called a negative partial answer - it is a proposition in Q_H which is false. We can define negative partial answers in the obvious way based on (10) as shown in (11). Clearly again the negative partial answers are partially ordered in terms of informativity by entailment relations.

(11) The set of negative partial answers to a question Q in evaluation world w is the set S_{neg} with

$$S_{\text{neg}} = \{p \mid p(w)=1 \wedge \exists S [S \in \wp Q_H \wedge p=\neg \bigcup S]\}$$

We are now equipped with the necessary concepts to tackle the question what *surprise*-predicates mean.

3 On the Meaning of Surprise-Predicates

In my exposition of the semantics of *surprise*-predicates, I will follow d'Avis 2001, 2002 in detail. D'Avis himself builds on Heim 1994. The main aim of this section is to formalize d'Avis' results to a slightly higher degree than he himself does this. This is a necessary precondition without which I could not give the proof in the next section.

Consider again a simple example like (12a). The example carries a number of presuppositions.

- (12) a. John is surprised at who Mary invited.
b. John is surprised at Q

An example like (12a) can only be uttered in a situation where John knows (at least partially) who Mary invited. If John didn't know this, he couldn't possibly be surprised at who she invited. In this case (12a)

⁴ A simple proof can be given by reductio ad absurdum. Suppose $\text{answ}_2^w(Q_H) \subseteq \text{answ}_1^w(Q_H)$ is false. Then there exists a world w' , such that $w' \in \text{answ}_2^w(Q_H)$ and $w' \notin \text{answ}_1^w(Q_H)$. By definition of answ_2 , $\text{answ}_1^{w'} = \text{answ}_1^w$. $\text{answ}_1^{w'}$ is defined as the intersection of a number of sets. Every set that goes into the construction of $\text{answ}_1^{w'}$ contains w' ($p(w')=1$ in (6)); thus, $w' \in \text{answ}_1^{w'}$ contrary to the assumption.

isn't simply false since its negation (*John isn't surprised at who Mary invited*) isn't true either. Thus something like (13a) is presupposed by (12a).

- (13) a. John knows partially who Mary invited.
b. John knows some proposition p , which is a positive partial answer to Q .

John does not need to know the complete strongly exhaustive answer to Q in order to be surprised. In fact, he doesn't even need to know the complete weakly exhaustive answer. It is sufficient that he knows part of the answer to Q . However, the part that he knows must concern people that were invited – not people that were not invited. Thus, if John only knows that Mary didn't invite Frank and Peter but knows nothing else, sentence (12) is infelicitous. (13b) captures this intuition correctly.⁵ This condition is a lexical presupposition of *surprise*.

A second condition that must be met by example (12), is that John must somehow be surprised by the invitees, i.e. there must be a proposition *normp* describing what John would have thought to be normal or what he might have expected. This expectation must conflict with what he knows to be the case (partial though that knowledge may be). In other words, *normp* must entail that the proposition p actually known by the subject of the *surprise*-predicate is false ($\text{normp} \rightarrow \neg p$ or equivalently $\text{normp} \cap p = \emptyset$). If the subject of the *surprise*-predicate is completely informed about all invitees and all non-invitees, then $p = \text{answ}_2^w(Q)$. Thus in the limiting case *normp* must entail that $\text{answ}_2^w(Q)$ is false.

However, this is a very weak requirement as a look at the Entailment Corollary (9) reveals. Every proposition that contradicts $\text{answ}_1^w(Q)$ also contradicts $\text{answ}_2^w(Q)$ but not vice versa. Moreover, because $\text{answ}_1^w(Q)$ entails every positive partial answer to Q , every proposition that contradicts a given positive partial answer to Q will also contradict $\text{answ}_1^w(Q)$ and thus also $\text{answ}_2^w(Q)$. Since John cannot be surprised about something unless he knows it, we can demand that *normp* contradict the most informative positive partial answer to Q that Frank knows in accordance with (13b), i.e. $\text{normp} \rightarrow \neg p$, where we identify p with the proposition mentioned in (13b).

An alternative might be to demand that *normp* simply contradict the aggregate of the information that Frank has about invitees, i.e. the aggregate information contained in the positive and negative partial answers that John knows. In the definitions given above this would amount to intersecting the most informative positive and negative partial answers John knows. However, Heim 1994 has argued for the limiting case, i.e., the strongly exhaustive answer, that knowledge about non-invitees is irrelevant. If John knows the strongly exhaustive answer to the question *who Mary invited*, the negative partial answer known by John plays no role in determining the truth of (12). The argument goes as follows: Suppose John expected Mary to invite Peter and Frank, i.e., *normp* is the proposition *that Mary invites Peter and Frank*. Suppose furthermore that Mary actually invited Peter and nobody else and that John is aware of this, i.e. Frank knows answ_2^w . In this situation, (12a) is not felicitous; instead, we must say (14).

- (14) John is surprised who Mary didn't invite.

Note that in a world w the questions *who Mary invited* and *who Mary didn't invite* have the same strongly exhaustive answer, however they differ in their weakly exhaustive answers. We cannot possibly use the strongly exhaustive answer to differentiate between (12a) and (14) because the strongly exhaustive answer is the same in both cases. Moreover, since John by assumption knows answ_2^w , presupposition (13b) is also fulfilled in both cases. It is, apparently, not sufficient that *normp* contradict answ_2^w , rather, *normp* must contradict answ_1^w . Because $\text{answ}_2^w(Q)$ entails all negative partial answer to Q in w , it follows that all negative partial answers are similarly irrelevant.

We can arrive at the same conclusion via a different route. If initially John only knows that Peter and Frank were invited, (12a) might fail to be true. However, when John's knowledge increases and he finds out that Andrew was invited, too, (12a) may well become true all of a sudden. In other words, adding information to the positive partial answer that John knows has an effect on the truth of the proposition.

On the other hand, if John knows that Peter and Frank were invited and (12a) as before is not true, no amount of additional information concerning non-invitees will ever be able to change this.

⁵ The observant reader will have noted that the tautology is a positive partial answer, but if all John knows about a particular question is the tautology, we would not say that he actually knows anything. In fact, John must know a non-trivial positive partial answer to Q . I do not include this as a stipulation in (13b), because it follows independently once more components of the meaning of *surprise* have been considered. The issue is taken up below in the discussion of the limiting cases.

Since one can only be surprised about things that one knows, we can now deduce that *normp* must contradict the maximal positive partial answer that John knows according to (13b).⁶ This requirement is stated in (15).⁷

- (15) John entertains a proposition *normp* that he considers normal. *normp* contradicts the maximal positive partial answer to *Q* that John knows.

Before going on, we need to consider a number of limiting cases. We consider the cases where $\text{normp} = W$, where $\text{normp} = \emptyset_w$, the case where Mary in fact invited nobody, and finally the case where John expected Mary to invite nobody.

It is plausible to demand that *normp* be a contingent proposition. If *normp* were not contingent it would have to be the tautology or the contradiction. *Normp*, as we just saw, has to contradict what is known by the subject of the *surprise*-predicate, but the tautology does not contradict any contingent proposition. Hence, *normp* cannot be the tautology. *Normp* also cannot be the contradiction. We demanded above that the subject of the *surprise*-predicate must consider *normp* more normal (or more likely) than the state of affairs that actually obtains. Certainly, the contradiction is a less likely proposition to hold than any other proposition known to hold in the evaluation world by the subject of the *surprise*-predicate; hence, *normp* cannot be the contradiction.

In fn. 5 I noted that what the subject of the *surprise*-predicate knows must be contingent. This now follows. If the proposition *p* known by the subject of the *surprise*-predicate were not contingent it would have to be either (i) the tautology or (ii) the contradiction. If *p* were the tautology, *normp* would have to be the contradiction otherwise (15) could not be fulfilled. But we just saw that *normp* cannot be the contradiction, hence, *p* is not the tautology. *p* cannot be the contradiction either. This follows from (13b) where we demanded that *p* be a positive partial answer. Positive partial answers are never contradictory. This follows since all positive partial answers to a question in a given evaluation world are supersets of (i.e., entailed by) the weakly exhaustive answer. The weakly exhaustive answer to a question in an evaluation world *w*, always contains *w* as a member (see fn. 4). Hence all positive partial answers to a question in an evaluation world have at least one member: the evaluation world. They are therefore never the contradiction. This discussion shows that the proposition *p* known by the subject of the *surprise*-predicate must not be contingent.

Consider the case where Mary invited nobody in *w*. If Mary invited nobody, then the weakly exhaustive answer to the question who Mary invited is the tautology (i.e., $\text{answ}_1^w(Q) = W$). The tautology is then the maximally informative positive partial answer to the question. However, as we saw in the previous paragraph, the subject of the *surprise*-predicate must know a contingent partial positive answer, hence we correctly predict that (12a) cannot be uttered if Mary in fact invited nobody. Instead we must say (16).⁸

- (16) John is surprised that Mary invited nobody.

Finally, we must consider the case where John expected Mary to invite nobody. In this case, *normp* is the proposition *that Mary invited nobody*. Example (12a) is not acceptable under these circumstances and neither is its negation (*John isn't surprised who Mary invited* – read with normal intonation). The situation can appropriately be described by (17) though.

- (17) John is surprised that Mary invited anybody/people.

⁶ d'Avis 2002 agrees with a referee comment that it might be possible to formulate this condition in terms of contradiction with answ_2 after all. I don't see a way of realizing this suggestion.

⁷ There are some cases that at first blush appear to require us to take negative partial answers into account. Suppose Mary invited Andrew, Christopher, and Elmar and nobody else. Suppose that John knows this, but he expects Andrew to always be invited together with his friend Bert and Christopher together with his friend Dave so that *normp* would be the proposition *that Mary invites Andrew and Bert or Christopher and Dave or all four of them together (or none of the four)*. In this situation it does seem to be possible to say that John is surprised who Mary invited despite the fact that *normp* is not incompatible with the weakly exhaustive answer *that Mary invited Andrew and Christopher and Elmar*. If we want to maintain the account given in the text, the most obvious solution to this problem is to assume that our characterization of *normp* was wrong. Given that John knows that Bert and Dave were not invited, *normp* becomes the proposition *that Andrew and Christopher were not invited* and this version of *normp* actually does contradict the weakly exhaustive answer as expected. Cases like this then do not require changing the rather stringent condition concerning the relation between *normp* and the weak partial answer known by the subject of the *surprise*-predicate.

⁸ d'Avis treats (16) by invoking an additional presupposition of *surprise*-predicates. However, the additional presupposition that is needed is not logically independent from the assumptions already in place, but follows from them as shown in the text.

Of course, in (12) answ_1^w is the set of all worlds W just in case Mary invited nobody. We can state this by putting a further condition on normp as in (18), which says that normp is incompatible with a world where answ_1 is the tautology, i.e., with worlds where Mary invited nobody.

$$(18) \quad \text{normp} \cap \{w' \mid \text{answ}_1^{w'} = W\} = \emptyset$$

We can sum up the discussion so far as follows. *Surprise*-predicates contribute certain presuppositions (19) that make reference to normp , which additionally must answer a general condition (20).

- (19) a. $\text{normp} \cap p = \emptyset$, where p is the maximally informative partial answer to the question embedded under the *surprise*-predicate known by the subject of that predicate
b. $\text{normp} \cap \{w' \mid \text{answ}_1^{w'} = W\} = \emptyset$
(20) $\emptyset \subset p_{\text{Erw}} \subset W$

4 Why you can't be surprised whether this is true

I will now show that example (21) is excluded on the assumptions outlined and motivated independently in the previous sections. The idea is the following. Given a question whose denotation is a singleton set of propositions, there are only two partial positive answers to that question: the tautology and the proposition which is the single member of the question. Based on this, there is no construal of normp that does not violate one of the conditions stated in (19) and (20). This renders such sentences unusable.

Consider now example (21).

- (21) John is surprised whether Mary invited Peter.

From the assumptions concerning the denotation of polar questions described in section 2 the embedded question in (21) denotes the proposition given in (22).

$$(22) \quad Q_H = \{p \mid p = \{w' \mid \text{invited}(m')(p')(w')\}\}.$$

Notice that according to the reasoning given in the preceding section, John must know a non-trivial partial positive answer to Q in the evaluation world. There is only one such positive partial answer: p . Now there are two cases to consider: $p(@)=0$ and $p(@)=1$.

If $p(@)=0$, we derive an immediate contradiction since, by assumption, John knows p , which requires that p be true.

If $p(@)=1$, then normp must contradict what John knows, i.e., (i) $\text{normp} \cap p = \emptyset$ ((19a)). Furthermore, (ii) $\text{normp} \cap \{w' \mid \text{answ}_1^{w'} = W\} = \emptyset$ ((19b)). We saw above in section 2 that for a polar question $Q=\{q\}$ $\text{answ}_1^w(Q) = W$ iff $q(w)=0$. Therefore (ii) reduces to (iii) $\text{normp} \cap \neg p = \emptyset$. From (i) and (iii) we deduce that $\text{normp} = \emptyset$, which violates the condition that expectations must be contingent ((20)).

In other words the presuppositions of (21) cannot be satisfied in a non-contradictory manner. This makes the example unusable (see for similar argumentation concerning the distribution of NPIs Krifka 1995; Lahiri 1998).

None of this hinged on the content of the proposition p . What we have shown is that questions that denote singleton sets cannot be embedded under *surprise*-predicates. Obviously this builds on the assumption that polar interrogatives are singleton sets of propositions.

It might be attempted to replicate this result on the assumption that polar interrogatives contain two propositions ($Q=\{p, \neg p\}$) after all. However, on this assumption the crucial step from (ii) to (iii) does not go through.⁹ In fact if $Q=\{p, \neg p\}$, then (ii) above reduces to the trivial statement (v) $\text{normp} \cap \emptyset = \emptyset$ since there are no worlds w where $\text{answ}_1^w(Q)=W$. This leaves us then with (i) as the only relevant constraint on normp .

One could attempt to still maintain the idea that polar interrogatives are two membered set and blame the status of (21) on the fact that the two members of the question are logically dependent upon each other. Even if it were workable, this solution would be conceptually inferior to the one advocated in this paper, because it would require adding another difficult to motivate presupposition into the lexical entries

⁹ Also the claim that there is only one non-trivial positive partial answer has to be (irrelevantly) relativized to in any given world there is only one non-trivial positive partial answer: p in the worlds where p is true and $\neg p$ in the worlds where p is false.

for *surprise*-predicates. Apart from this conceptual flaw, the suggestion seems to be wrong empirically as a comparison of (23a23b) with (23b) shows. The embedded question in (23a) is a two membered set ($\{p, \neg p\}$) and the two members are logically dependent on each other. On the account where polar questions are two-membered sets, the embedded question in (23b) denotes the same object ($\{p, \neg p\}$) leaving the contrast between the two examples unexplained.

- (23) 123,456,789 is either prime or not.
 a. ✓Frank is surprised which one of the two it is.
 b. *Frank is surprised whether it is prime.

I thus interpret the account of (21) given in this paper as an argument for treating polar interrogatives as singleton sets.

5 Conclusion

In this paper I have reported on work in progress aimed at accounting for the fact that polar interrogatives cannot be embedded under *surprise*-predicates. I claim that all *surprise*-predicates share the presuppositions in (19) and that the natural condition (20) holds. Together with a treatment of polar interrogatives as singleton sets, this explains the ungrammaticality of (21) and the initial example (3b). For this class of examples the need for Grimshaw's clause-type feature is therefore obviated and the hypothesis according to which exclamatives have the same denotation as questions is strengthened.

I have to leave the question of whether the restriction against embedding 'exclamatives' under *interrogative*-predicates, i.e. (2c), for future work. One idea discussed by d'Avis 2001, 2002 is to say that the embedded question in (2c) is degenerate, maybe because it presupposes its own unique answer. However, there are technical difficulties with this account, since the most straightforward implementations of it would treat the embedded question in (2c) as a singleton set leading to an immediate contradiction with the account of (3b) developed in the preceding sections.

The work reported here also has consequences for the study of unembedded exclamatives. If the thesis pursued here is correct that embedded exclamatives simply denote questions, then the differences between matrix questions and matrix exclamatives must basically be that between asking and exclaiming, i.e., it must be a pragmatic effect.

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The interaction of clausal syntax, discourse roles, and information structure in questions

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Linguistic markers of speech acts or illocutionary force, such as the morphosyntactic reflexes of questions, have traditionally been treated as indicators of pragmatically-salient information, with little relevance to clausal syntax. However, research on the syntax of the left (or right) periphery of the clause has resulted in proposals for a number of syntactic projections for clausal elements. Of these, two play a fundamental role in the contrast between a declarative and an interrogative sentence: the Speech Act Phrase (SAP) (Rizzi 1997, Rivero 1994, Cinque 1999), and an Evidentiality Phrase (EvidP) (Cinque 1999, Speas and Tenny 2003). Speas and Tenny 2003 have argued that: (i) there is a small and highly constrained set of *grammaticalized* (and *grammaticalizeable*) speech acts; (ii) this is true because they are constrained by principles of grammar; and (iii) there is a speech act argument (speaker /hearer) associated with the SAP, and an evidential argument associated with the EvidP. The *discourse roles* of speaker and hearer have been recognized as salient in grammar (Sells 1987, Kamp 1984, Ross 1970). We argue in this vein that the essential *grammatical characterization* of the declarative/interrogative contrast lies in how they mediate the relation between the speech act argument and the evidentiality argument, and that this makes predictions for some interesting facts in the domain of information structure.

Speas and Tenny have argued that basic syntactic principles constrain projections of pragmatic force as well as the inventory of grammatically relevant pragmatic roles. It appears that languages never

grammaticize more than four different illocutionary forces (which is quite surprising given the potentially infinite numbers of speech act types). They argue that familiar syntactic and lexical principles operate on primitives of a *Sentience Domain*, which includes the Speech Act Phrase and the Evidentiality Phrase, and restricts the pragmatics-syntax interface. Speas (forthcoming) has argued that evidentiality is also grammaticized, permitting only four general classes of evidentiality. This grammaticized *discourse role* of the evidential argument will be shown to be fundamental to question formation.

Sentences of natural language invoke an evaluator of propositional truth, or the sentient individual who is responsible for the truth of a proposition. This is the evidential argument, representing a *seat of knowledge*. Evidential verbs (*appears*, *seems*) and adverbs (*evidently*, *apparently*), refer to it:

- (1) The bicyclist has **evidently_s/apparently_s** escaped injury in the crash.
- (2) The bicyclist **appears_s/seems_s** to have escaped injury in the crash.

When the sentence is switched from declarative to interrogative, evidentials, *in a reading where they maintain their strictly evidential sense*, shift from being speaker-oriented to being hearer-oriented (indicated by the subscript *h*). In the interrogatives the hearer is the one who is able to tell what appears to have happened to the bicyclist; and it is the hearer who is granted that responsibility:

- (3) Has the bicyclist **evidently_h/apparently_h** escaped injury in the crash?
- (4) Does the bicyclist **appear_h/seem_h** to have escaped injury in the crash?

In a declarative sentence it is the speaker who knows the truth of the proposition; in an interrogative sentence it is the addressee who can evaluate the truth of the proposition. The speech act relation simply mediates between the discourse participants of speaker and hearer, and the *seat of knowledge* or evidential argument invoked in the sentence. We can represent these two speech acts as differing in their assignment of the *seat of knowledge* to the participants in the discourse (represented by underlining the appropriate person):

- (5) declarative: [Speaker, Hearer]
- interrogative: [Speaker, Hearer]

Under the view taken here, the grammatical switch of a declarative sentence to an interrogative sentence is a simple flip of the evidential argument with respect to speaker and hearer.

Taking as a jumping-off point this view of question formation as a negotiation between the discourse roles of speaker, hearer, and the evidential role, the goal of this paper is to extend this work into the area of information structure. In information structure such things as shared versus speaker

knowledge, and given versus new knowledge, come into play. These kinds of distinctions seem to be related to the speaker and hearer trading the evidential role back and forth, and therefore (under this approach) must be an integral part of question formation.

Consider what happens in the following sentences. In the declarative sentences in (8), the indefinite NP is ambiguous between: (a) a reading where there is one particular individual referred to (doctor or artist) and (b) a reading in which the NP is not referential:

- (6) Dudley wants to marry a Swedish doctor.
Marisa wants to study an 18th century artist.

In the (a) readings, the identity of the doctor or artist is known to the speaker but not disclosed to the hearer. In the (b) readings, neither the speaker nor the hearer knows the identity -- because it has not been identified. In (8) the indefinite NPs reflect speaker knowledge. When the sentences in (8) are changed to questions, and the seat of knowledge is passed to the hearer, the reading referring to a particular individual is no longer available:

- (7) Does Dudley want to marry a Swedish doctor?
Does Marisa want to study an 18th century artist?

Here the speaker has encoded the *doctor* and the *artist* as indefinite NPs, but does not have a particular individual in mind. If she did, she would be more likely to say:

- (8) Is the woman Dudley wants to marry a Swedish doctor?

These facts illustrate the tripartite interaction of the evidential discourse role, the syntax and semantics of question formation, and information structure. We argue that they hinge on this link between the evidential argument and the speaker or hearer, and furthermore that that link is essential to an understanding of the nature of questions.

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Interrogative Mood as Content-Type-Driven Epistemo-Volitional Modality

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1. Sentence mood as a modal category

What is modality? A partial answer is given by Angelika Kratzer at the beginning of her article on this topic in the handbook *Semantics* (Kratzer 1991: 639): "Modality has to do with necessity and possibility." What is sentence mood? Formal clause types that share a common canonical function type are said to belong to a common sentence mood. Examples are the declarative, imperative, exclamative, and interrogative mood. So at first glance they don't seem to have much in common. Using a sufficiently general notion of modality, however, it is possible to subsume both root sentence moods and canonical modal operators such as modal verbs under the modal categories and to reduce the difference between them to the difference between interpropositional operators, mapping propositions into propositions, and transpropositional operators that map propositions into act types (cf. Zaefferer 2001). Equipped with this view of force operators as modal operators it is easy to show (Zaefferer 2001a) that Searle's (1975) subsumption of the Questions under the Directives is misguided and should be replaced by an approach that accounts for the close relationship between declarative and interrogative sentence moods.

A radical way of phrasing this idea is the minimal-difference theory of the relation between canonical interrogatives and declaratives, henceforth md-theory. It says that at a certain level of abstraction there is no difference between the modal part of the interrogative and the declarative mood of root sentences, and that the obvious modal contrast of default interpretations can be derived from the interaction of their distinct propositional content with normality assumptions.

This entails that the only fundamental difference between erotetic and assertive speech acts, as they are canonically expressed by the utterance of interrogative and declarative sentences, respectively, is that the former have floating propositional content where the latter have grounded propositional content. Apart from that, the modal operators on these different kinds of content are basically the same, with an epistemic inner layer and a volitional outer one, and the differences in detail, which certainly exists, can be derived from the different kinds of propositional content and some (mainly Gricean) default assumptions about canonical linguistic interaction.

2. Transparent and opaque epistemic attitudes

Embedded under an epistemic operator the different kinds of propositional content mentioned above yield two different kinds of knowledge or epistemic attitudes: If g is a grounded proposition, then $EPSTM(g)$ as

well as its negation are transparent attitudes, and if f is a floating proposition, then $\text{EPSTM}(f)$ as well as its negation are opaque attitudes. In other words, the combination of an epistemic attitude with a grounded proposition makes the former transparent, its combination with a floating proposition makes it opaque.

The distinction between these two cases shows in their different entailments: If p is any grounded proposition, q is the grounded proposition that John is exponent of the transparent attitude $\text{EPSTM}(p)$, and if Mary is exponent of $\text{EPSTM}(q)$, then she is exponent of $\text{EPSTM}(p)$ too. This does not hold if p is a floating proposition. Cf. the following examples:

- (1) *The defense counsel knows that the defendant is innocent.*
- (2) *The District Attorney knows that
the defense counsel knows that the defendant is innocent.*
- (3) *The District Attorney knows that the defendant is innocent.*

The conjunction of (1) and (2) entails (3).

- (4) *The defense counsel knows whether the defendant is innocent.*
- (5) *The District Attorney knows that
the defense counsel knows whether the defendant is innocent.*
- (6) *The District Attorney knows whether the defendant is innocent.*

The conjunction of (4) and (5) does not entail (6).

Note furthermore that the inference from exponents of an opaque epistemic attitude plus reality to exponents of the corresponding transparent attitude is always valid whereas the inverse holds only for binary (yes-no) floating propositions: Knowing that Bill is on the list of participants is not sufficient for knowing who is on the list of participants.

Crucially, the difference between transparent and opaque knowledge is visible only from the outside. For me my knowledge what time it is and that it is eight pm are the same, but for you my knowledge what time it is (opaque for you; you see only the floating proposition) is rather different from my knowledge that it is eight pm (transparent for you; you see the grounded proposition). This has consequences for the coactivation of knowledge across individuals: As soon as knowledge is coactivated all participants come to the inside and both opacity and floating propositions disappear.

3. Declaratives and interrogatives as close relatives

The common modal denominator of declaratives and interrogatives is that both are epistemo-volitional modalities, modalities that aim at a certain epistemic state. The default use of a declarative sentence licenses the inference that its agent has an active volitional attitude towards the creation of an activated epistemic attitude and the same holds for the default use of an interrogative sentence.

But the different kinds of propositional content (grounded vs. floating proposition) yield a significant markedness asymmetry with respect to the intended exponent of the activated epistemic attitude.

Most real dialogues are cooperative in the sense that their participants share the goal of expanding the common ground. So in general, if an agent utters a declarative sentence, licensing thus the inference that

he wants the creation of an activated epistemic attitude towards the respective grounded proposition, he assumes that such a coactivation of the same attitude in both participants is possible, and this implies that it was not there before the utterance. Since in general (but see below) activation on the speaker's side is obviously given, the lack of coactivation can only be due to the addressee. So canonical uses of speech acts with grounded propositional content aim at the activation of the addressee's knowledge. Note that on this level of abstraction there is not difference between informing somebody and reminding him of something.

Let's now consider the case of an agent who utters an interrogative sentence. In doing so he licenses the inference that he wants the creation of an activated epistemic attitude towards the corresponding floating propositional content, he again assumes that such a coactivation of the same attitude in both participants is possible, and this implies that it was not there before the utterance. In most cases this lack of coactivation is due to the fact that one partner's knowledge is opaque for the other one, so coactivation cannot be achieved by the utterance itself, but by a subsequent utterance of the corresponding partner.

If one of the participants has the required knowledge, then given the common goal of expanding the common ground he is expected to share this information. Note that on this level of abstraction, there is no difference between asking the addressee to give the pertinent information and preparing the ground for something the speaker himself is going to say via the thematic use of an interrogative.

This explains that an utterance of an interrogative where both participants already have the desired knowledge and are able to ground the floating propositions functions basically like an utterance of a corresponding declarative: as a reminder.

Sharing the required knowledge cannot be done, incidentally, by self-ascribing an opaque epistemic attitude, but the self-ascription of a transparent epistemic attitude is not only possible but has also some emphatic impact.

- (7) *Is he innocent?*
- (8) *I know that he is innocent.*
- (9) *I know whether he is innocent.*

(8) is fine as an answer to the question (7), whereas (9) is not.

4. Monological uses of declaratives and interrogatives

Sometimes it does make sense to activate one's own epistemic attitude. As is well-known, monological uses of (10) or (11) may be very effective in a kind of self-verifying speech act which differs from declarations in that the result state is not brought about by convention, but by mental causality, and which belongs to the autosuggestive uses of language.

- (10) *I am totally relaxed.*
- (11) *You are totally relaxed.*

Being a content-type driven theory of the declarative-interrogative distinction, the md-theory predicts that monological uses of (12) and (13) cannot have the same psychological effects.

- (12) *Am I totally relaxed?*

(13) *Are you totally relaxed?*

The reason is that the actual relaxation state of the agent plays a different role in the two cases. If the agent is only partially relaxed, then the use of (10) or (11) still aims at an activation of the transparent epistemic attitude towards the grounded proposition that he is totally relaxed and this tension between the active and the to-be-activated knowledge is likely to be resolved (if he is lucky or has practiced a lot) in the favour of the latter.

If, however, under the same circumstances the agent uses (12) or (13), he aims at an activation of an epistemic attitude towards the adequate grounding of the given floating proposition, therefore no tension between the active and the to-be-activated knowledge arises and the grounding of the floating proposition in its negative variant is much more likely.

5. Other non-canonical uses of declaratives and interrogatives

We noted in section three above that on a certain level of abstraction, there is no difference between asking somebody to give the pertinent information and preparing the ground via a thematic use of an interrogative for something the speaker himself is going say. The prerequisite in both cases is that the required knowledge is present in the speaker or may be present in the addressee.

In the absence of both conditions, in many languages the use of an unmarked root interrogative is not correct. Instead, marked constructions are used. Suppose we speak German, we are waiting for a call from Hans and the phone rings. Then (14) is very strange, but (15) is completely normal:

(14) *Ist das der Hans?*

Is this the Hans?

(15) *Ob das der Hans ist?*

Whether this the Hans is?

According to the theory advocated here the default formula for the epistemo-volitional moods - declarative and interrogative - can be extended if the propositional content is implicitly modalized. So root occurrences of the form of an embedded interrogative as in (15) are taken as an indicator for such an implicit modalization, yielding an interpretation along the following lines: Agent wants to bring about an activated epistemic attitude towards the grounded proposition that she is curious about the adequate grounding of the floating proposition that identifies Hans as the source of the salient phone call in the topic situation. So the semantics is that of an assertion (with a grounded propositional content) although the syntax seems to indicate an erotetic, given its floating propositional content.

The extremely simple core of md-theory together with the general assumption of coding iconicity (markedness of coding form corresponds to markedness of coded content) makes universal predictions of markedness asymmetries. Examples from different languages will be used in the presentation to test these predictions.

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Slovenian Clitics: VP Ellipsis in Yes/No Questions and Beyond

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1. Introduction and background

In this paper we point out a relatively unusual kind of elliptical phenomenon arising most productively in polar question-answer contexts (particularly both in questions and in answers) in some Slovenian dialects, draw attention to some of its caprices by fleshing out the relevant issues with data, and subsequently propose an analysis which aligns it with syntactically more well-behaved elliptical appearances (specifically VP ellipsis, VPE hereafter) within South Slavic and in other languages.

For quite some time, a principled distinction – culminating in certain respects with Hankamer & Sag’s seminal (1976) work (H&S) and in the meantime covering a wide range of data – has been shown to correlate with what are now known as deep vs. surface anaphora.¹ While interesting, and occasionally even shared issues can be raised for both types of anaphora,² most research has also indicated that the majority of syntax-semantics effects, ranging from extraction to parallelism, are to be sought in the realm of surface anaphora. This may be a natural consequence if that is the class with more, syntactically active, structure, as proposed by H&S, and holds regardless of how one implements the treatment of the class, say, as “copied vs. deleted,” hybrid solutions being available, with syntactic representation under proform accounts of surface anaphora (cf. the discussion in Winkler 2003 and references therein for VPE).

From just as early on as H&S too, speech-act situations have added a quirk to the neat (and in principle strong) generalization of deep vs. surface forms. From a bird’s eye view, performatives have some interesting, apparently enhanced, properties when it comes to licensing elision of communicative material. This might also lead straight to the distinction between situative vs. linguistic ellipsis, where performative acts might be taken to *be* the situation. Note, for instance, that H&S themselves (p. 409, fn. 19) have explicitly excluded clauses other than declarative from the classification. Imperatives (e.g., in particular without antecedents) have haunted VPE research ever since, as in (1) (cf. Johnson 2001).

- (1) [Mabel Minerva, a Central Park rental horse, begins galloping at full speed with the terrified Fred atop.] Fred: “No, no! Don’t _!”

In question-answer pairs ellipses are perhaps even more prolific across languages. Here the puzzling fact is usually not the lack of an antecedent, but rather the way the relationships between antecedent and ellipsis site are established. If a question is the set-theoretic union of certain propositions, and if the set consists of a pragmatically bounded number of elements (the possible answers), it might seem natural to have short-key means to refer to the handful of elements and call them by those names when giving the answer. The most common of the short-keys are the equivalents of words like *yes* and *no* for polar questions. However it is a moot point to investigate ellipses in those particular cases. The action starts where signs of structure are left over in the short-keys, or remnants, with VPE as one of the best studied cases. A much more sophisticated short-key gadget is the English auxiliary *do*, at least in its finest details an unusual species cross-linguistically.³ A further type of ellipsis, attested in various languages comes about through verb movement (cf. Holmberg 2001 for a discussion of Finnish w.r.t. polar questions).

* The work in progress reported here has been partially supported by the *Deutsche Forschungsgemeinschaft* through SFB 441/B13, which is hereby acknowledged. For comments and encouragement, we thank the audiences at ZAS Berlin and the University of Tübingen, where parts of the present material have previously been presented. We listed our names in alphabetical order.

¹ Cf. Hoji (2003), Winkler (2003), Cyrino (2004) for recent discussions and applications of this and some related divisions.

² Despite the important syntactic differences, similarities also exist, e.g., with regard to distribution, such as is the case with the *Backwards Anaphora Constraint*, or with regard to *some* of the so-called sloppy-identity readings, (cf. Fiengo & May 1994 for a suggestion how far this similarity goes).

³ Cf., e.g., Denison (1993), who mentioning seemingly similar cases regarding *do*’s cognates from Germanic, including diachronic stages of English, diligently stresses the current auxiliary’s outstanding status within Indo-European.

2. Pronominal clitics in elliptical structures

Though South Slavic has the aforementioned possibility of ellipsis through verb movement, Slovenian additionally has the cross-linguistically rare option of licensing elliptical structures through what under normal circumstances are sole clitic pronouns. A straightforward instantiation of this phenomenon (that for expository purposes we'll refer to as *ga-ga* ellipsis and abbreviate as GGE hereafter) comes from question-answer data, on which we concentrate in this contribution, as in (2).

- (2) A: A **ga** vídiš?
Q-compl. cl.3.ACC.sg.m see.2.sg 'Do you see him?'
B: **Ga** _ / *Jò.
cl.3.ACC.sg.m/ cl.3.ACC.sg.f 'I do ~~see him~~.' / I do ~~see~~ her.

Elliptical clauses such as (2) have full semantic and syntactic representations. Due to the overt presence of the object clitic (and the dialogue situation), the thematic participants in the answer are one-to-one retrievable from the question. Moreover, they are fixed. Antecedent and ellipsis licenser must morpho-syntactically agree with regard to four features: case, gender, number, and person. Deviance from this strong identity condition is ungrammatical even in context where the construction could be motivated for pragmatic/semantic reasons, e.g., of contrastiveness. Note that such elliptical constructions exist in natural language. For instance, the putative equivalent to a pseudogapping structure (Levin 1978) with a meaning along the lines of 'I see her' is not licensable in the configuration – cf. the ungrammatical *jò* 'her' in (2).

Descriptively, at a certain point of the conversation, the clitic behaves as if obtaining verbal characteristics – accepting the possibility of being followed or preceded by particles (e.g., interrogative, negative) or adverbs, and even of being reduplicated for affirmative purposes (in answers), as illustrated by the repeated question in the dialogue segments in (3):

- (3) A: A poznaš téga človeka?
Q-compl. know.2.sg Dem.ACC. man.ACC 'Do you know this man?'
B: **Poznám.**
Know.1.sg. 'I do.'
A: A ga poznaš?
Q-compl. cl.3.ACC.m.sg know.2.sg 'Do you know him?'
B: **Ga.**
cl.3.ACC.sg.m 'I do.'
A: A ga?
Q-compl cl.3.ACC.m.sg 'Do you know him?'
B: **Ga, ga.**
cl.3.ACC.m.sg (reduplicated) 'I really do.'
A: A ga rés?
Q-compl cl.3.ACC.m.sg Adv. really 'Do you really?'
B: Rés ga.
Adv. really cl.3.ACC.m.sg 'I certainly do.'

Note that GGE also appears in embedded constructions, as shown in the examples in (4), which are related to the yes/no frame, especially after conjunctions or by means of particles (e.g., *pa*, see below).

- (4) A: A ga poznáš?
Q cl.3.ACC.m.sg know.2.sg 'Do you know him?'
B: Ne vém, če ga.
NEG know.1.sg, if cl.3.ACC.m.sg 'I don't know if I do.'
C: Mislim, da ga.
think.1.sg, that cl.3.ACC.m.sg 'I think I do.'
D: Mislim sem, da ga NE, pa GA
think.past.m aux, that cl.3.GEN.m.sg NEG Prt.adv cl.3.ACC.m.sg
'I thought that I didn't, but I do.'
A: Vprašal sem, če GA.
Ask.past.m.sg aux, if cl.3.ACC.m.sg 'I asked, if (you) do.'

3. Dimensions of the construction

In this section, we explore the set of relevant data, which are actively used, e.g., in the Ljubljana dialect, and either actively or passively confirmed in other Slovenian varieties as well (Dvořák 2003). There are a range of phonological, morpho-syntactic, and semantic factors that characterize the GGE construction, of which the category of transitivity of the verb used in the question is one of the most important ones to be mentioned, followed by temporal and case categories, as a construction with predicative use of a clitic can characteristically only occur after a present tense question, the clitic being posed in the dative or accusative and (very rarely) in the genitive case. To these dimensions we turn next.

We begin the grammatical discussion by offering an overview of the potential licensing forms (*ga* from above being but one of them) comprising their morphological marking in three genders, three numbers, and three cases, with the paradigms rendered in table 1 below.

Table 1

Sg	1.	2.	3.m	3.f	3.n
(NOM)	jaz	ti	on	ôna	ôno
(GEN)	mêne, me	têbe, te	njêga, ga	njê, jè	njêga, ga
(DAT)	mêni, mi	têbi, ti	njêmu, mu	njej, ji	njêmu, mu
(ACC)	mêne, me	têbe, te	njêga, ga	njó, jò	ôno, ga
(LOC)	pri mêni	pri têbi	pri njêmu	pri njej	pri njêmu
(INS)	z menój	s tebój	z njim	z njó	z njim

Dual	1.m	f	2.m	f	3.m	3.f	3.n
(NOM)	mídva	médve	vidva	védve	ônadva	ônidve	ônidve
(GEN)	náju	váju	njiju, ju				
(DAT)	<i>náma</i>	<i>váma</i>	njíma, jíma				
(ACC)	<i>náju</i>	<i>váju</i>	njiju, ju				
(LOC)	pri náju/náma	pri váju/váma	pri njiju/njíma				
(INS)	z náma	z váma	z njíma				

Pl	1.m	1.f	2.m	2.f	3.m.	3.f	3.n
(NOM)	mi	mé	vi	vé	ôni	ône	ôna
(GEN)	nàs		vàs		njih, jih		
(DAT)	<i>nàm</i>		<i>vàm</i>		njim, jim		
(ACC)	<i>nàs</i>		vàs		njê, jih		
(LOC)	pri nàs		pri vàs		pri njih		
(INS)	z námi		z vámi		z njími		

The clitic forms in boldface in the chart differ from their tonic counterparts. Forms in italics may all accept a predicative (elliptical) use (which is much less frequent and somewhat unusual for the genitive forms); forms in italics but not in boldface are formally identical with the tonic forms, showing, however, a different use in the discourse context, as in (9), where the function changes in the same dialogue. Some more examples show some of the possibilities given by the morphological variety of the clitics paradigm:

- (5) A: A te bolí?
Q-compl cl.2.ACC.sg ache.3.sg ‘Does it ache you?’
B: Me.
cl.1.ACC.sg ‘It does.’
- (6) A: A mi verjameš?
Q-compl cl.1.DAT.sg believe.2.sg ‘Do you believe me?’
B: Ti.
cl.2.DAT.sg ‘I do.’
- (7) A: A ju ne vidiš?
Q-compl cl.3.GEN.dl NEG see.2.sg ‘Don’t you see them?’
B: Ju, ju.
cl.3.ACC.dl (reduplicated) ‘I do, I do.’

- (8) A: Rekel sem ji, da ji paše obleka.
Say.past.m. aux cl.3.DAT.f.sg,conj cl.3.DAT.f.sg suit.3.sg dress.
'I told her that the dress suits her.'
- B: Pa ji?
Prt.advers. cl.3.DAT.f.sg *'But does it (really)?'*
- A: Jí, jí. Rés jí.
cl.3.DAT.f.sg (red.). Really cl.3.DAT.f.sg *'It does. It really does.'*
- (9) A: Kóga vábi, a váju?
Whom invite.3.sg, Q-compl tonic pron.2.ACC.dl
'Whom does (s)he invite? The two of you?'
- B: Ne.
NEG *No.'*
- A: Pa váju.
Prt.adv. cl.2.ACC.dl *'But (s)he does.'*

There are, additionally, reflexive pronouns to be mentioned in this context, which do not differ in number and case, with their own clitic forms licensing the GGE in the same way, as illustrated in table 2:

Table 2	Sg/Dl/Pl	1st, 2nd, 3rd P, m/f/n
	(NOM)	0
	(GEN)	sêbe, sè
	(DAT)	sêbi, si
	(ACC)	sêbe, sè
	(LOC)	pri sêbi
	(INS)	s sebój

- (10) A: Rad se učím.
Glad.Adj.m.sg cl.refl.ACC learn.1.sg *'I like learning.'*
- B: A sè?
Q-compl cl.refl.ACC *'Do you?'*
- A: Sè.
cl.refl.ACC *'I do.'*
- B: Pa si vse zapomniš?
Prt. cl.refl.DAT all remember.2.sg *'But do you memorize everything?'*
- A: Si.
cl.refl.DAT *'I do.'*

All these forms are clitic-like and generally contrast in the lexical entries with full-fledged pronominal counterparts. For instance, the appropriate answer to a *wh*-question, as in (11), can only be the strong pronoun and not the clitic, as opposed to GGE.

- (11) A: Kóga vídiš?
Whom see.2.sg *'Who(m) do you see?'*
- B: Njêga
(tonic pronoun.3.ACC.sg.m) *'Him.'*

GGE stems from the ability of the licensing pronouns to receive stress, despite the fact that in the unmarked cases they appear as atonic forms clustering proclitically around the verb, as illustrated by (12). Note, however, that with additional discourse functions this 'unmarked' situation can independently be overridden as well; cf. (13).

- (12) A ga vídiš? *'Do you see him?'*
Q-compl. cl.3.ACC.sg.m see.2.sg
- (13) A GÀ vídiš? *'Do you really see him?'*

Identity of reference is not a necessary condition for licensing VP ellipsis (VPE), as is well known. In the case of clitic-licensed ellipsis we see that it is not a sufficient condition either. Having a referent mentioned in previous discourse cannot license GGE, as (14) shows. Instead, the pronominal clitic-based ellipsis is only licensed if the corresponding clitic form can be directly retrieved from the antecedent (most commonly interrogative) utterance. Interestingly, a more common pattern of VPE, well-known,

e.g., from other South-Slavic languages can be used in this case, namely via licensing through the verbal head, as illustrated in (14).

- (14) A: vídiš ptíča? 'Do you see the bird?'
 Q-compl. see.2.sg bird.ACC
 *Ga./ Vidim.
 cl.3.ACC.m.sg/ see.1.sg 'I do _.'

However, an answer by the clitic (in the present case: *ga*) is still possible after a question even when the object referent is mentioned – but the sense of the answer consequently must change from an affirmative to an assertive (like, e.g., German *doch* or French *si*), which means a retro-interpretation of the question as a dubitative statement by the answering speaker.

In addition to the cases illustrated above, more complex constructions with sequences of two clitics are possible too – and very frequent in use, with the accusative clitic generally following the dative one, e.g.:

- (15) A: Plačújejo mu honorár.
 pay.3.pl cl.3.DAT.m.sg fee. 'They pay him a fee.'
 B: A mu ga? / *A ga mu?
 Q-compl. cl.3.DAT.m.sg cl.3.ACC.sg.m 'Do they_?'
 (16) A: Jemljejo ji svobodo.
 take.3.pl cl.3.DAT.f.sg freedom.ACC 'They take her freedom.'
 B: A ji jo? / *A jo ji?
 Q-compl. cl.3.DAT.f.sg cl.3.ACC.f.sg 'Do they_?'

However, with a reflexive clitic involved, the dative clitic follows:

- (17) A: Mudí se mú.
 hurry.3.sg cl.refl.ACC cl.3.DAT.m.sg 'He must hurry.'
 B: A se mú? / *A mu sé?
 Q-compl. cl.refl.ACC cl.3.DAT.m.sg 'Must he?'

Even triple clitic sequences are possible by using a reflexive form within the construction:

- (18) A: Diplómo se mu prizná.
 diploma.ACC cl.refl.ACC cl.3.DAT.m.sg recognize.3.sg
 'They recognize his diploma.'
 B: A se mu jò?
 Q-compl. cl.refl.ACC cl.3.DAT.m.sg cl.3.ACC.f.sg 'Do they_?'
 A: Se mu jò, se mu jò.
 cl.refl.ACC+cl.3.DAT.m.sg+cl.3.ACC.f.sg (red.)

As aforementioned, the predicative use of genitive clitics is not as stable as that of accusative and dative ones – due to the fact that this phenomenon is widely associated with the ability of the clitic to take on stress (see below), which is mostly not the case in genitive constructions. However, a reflexive construction makes it possible, if preceding a genitive clitic, cf. (19):

- (19) A: Bojí se me.
 frighten.3.sg cl.refl.ACC cl.1.GEN.sg '(S)he's afraid of me.'
 B: A se tè?
 Q-compl. cl.refl.ACC cl.2.GEN.sg 'Is (s)he_?'

On the other hand, the cases allowing predicative use of genitive clitics are mostly partitive constructions with the forms themselves, however, formally not differing from the accusative except in the f.sg. form.

- (20) A: A jih pozná pet?
 Q cl.3.GEN.pl know.3.sg five 'Does he know 5 of them?'
 B: Jih.
 cl.3.GEN.pl 'He does.'
 (21) A: A ne popíje dovòlj vode?
 Q NEG drink.3.sg. enough water.GEN 'Does he drink enough wine?'
 B: Jè.
 cl.3.GEN.f.sg 'He does.'

The ability of Slovenian clitics to function as VP licensors overlaps widely with the possibility of getting stressed – this being a further, mostly independent characteristic also occurring in constructions with full verb or/and auxiliaries, in which the clitic shows an obvious tendency to assume the stress for the purpose of, e.g., expressing adversity in a sentence:

- (22) A: A jo vídiš?
Q cl.3.ACC.f.sg see.2.sg 'Do you see her?'
B: Vidim JO, ampak...
see.1.sg cl.3.ACC.f.sg, but... 'I DO see her, but...'
(23) A: A si me slišal?
Q be.2.aux cl.1.ACC.sg hear.past.m 'Did you hear me?'
B: Slišal sem TE, videl pa NE.
hear.p.m aux cl.2.ACC, see.ppa prt NEG 'I've heard, but haven't seen you.'

In the case of negated answers the order of the negative particle is fixed; 'ne+clitic' always indicates a negative imperative, whereas the combination 'clitic+ne' stands for a negative indicative clause:

- (24) A: A te vábi?
Q cl.2.ACC.sg invite.3.sg 'Does (s)he invite you?'
B: Me nè. / *Nè me.
cl.1.GEN.sg NEG '(S)he doesn't.'
A: A te povábim?
Q cl.2.ACC.sg invite.1.sg 'Should I invite you?'
B: Nè me. / *Me nè.
NEG cl.1.ACC.sg. 'You should not.'

With regard to transitivity as a condition for GGE, the verb *iméti* 'have' presents a *prima facie* exception despite its traditional 'transitive' use. Ellipsis retrieving an object of this verb is ungrammatical: cf. (25).

- (25) A: Avto/Smòlo imá.
Car/Bad luck have.3.sg 'He has a car/ bad luck.'
B: *A gà /jò?
Q cl.3.ACC.m.sg /cl.3.ACC.f.sg 'Does he?'

One might attempt to assume that the verb 'have', although being in some sense transitive, does not show the category of activity in the amount needed for the construction. An alternative syntactic explanation for this exception would, however, recommend to assume a representation in which 'have' is but 'be' with an incorporated D/P element (Kayne 1993). Note that this would explain why rough synonyms such as 'possess' do allow GGE, and derives 'have's restriction from the restriction which hold independently for 'be' in this language. Moreover, GGE is also restricted in its straightforward form with potentially further functional material such as modals, e.g., in (26).

- (26) A: A ga móraš povabíti?
Q cl.3.ACC.m.sg must.2.sg invite.inf. 'Must you invite him?'
B: Móram./*Gà. /Móram ga.
Must.1.sg 'I must.'

Finally note that the clitic cannot be stressed in front of the verb *iméti* 'have' – but it can be stressed in the position after it, as the results from some experiments (Dvořák 2004) indicate. This contrasts with the situation of verbs like 'see' as shown in (13) above.

4. Ga-ga ellipsis as VP ellipsis

GGE has elliptical properties that speakers of Slovenian make use of in dialogue situations. It is ellipsis based on the licensing property of pronominal clitics which can become stressed to mark the edge of deleted material. It is subject to some interesting peculiarities within the language, as we have said. Furthermore, there are, clearly, also differences when considering other languages. These are: (A) cross-linguistic variation with regard to the interplay of clitics and ellipsis, in, e.g., Romance languages (the latter do not usually allow clitic climbing out of an ellipsis site, López 1995); and (B) parameters of microvariation (e.g., with Serbo-Croatian, which only allows the familiar types of ellipsis via a verbal

licenser mentioned in the introduction). Taking note of this variation, we argue that a proper analysis of GGE consists in treating it on a par with VPE and summarize here some (further) arguments. First, GGE bears phonological hallmarks of VPE configurations. Second, though restricted in its distribution, it can crucially nevertheless occur, e.g., also in embedded clauses (as opposed to, say, gapping), as illustrated in section 2. Third, recall the role of discourse mentioned above, which can independently also coerce stress on an otherwise clitic form in Slovenian. This, again, is expected if one considers that VPE is equally a discourse-based phenomenon (Williams 1977, Winkler 2003). A fourth factor is to be found in the licensing properties. As numerous case-studies reveal, the properties of tense and of polarity usually have a strong say in VPE licensing (cf., e.g., Lobeck 1995, López & Winkler 2000, Holmberg 2001). In this respect, GGE shows an interesting tense-selection restriction in that its licensing is only felicitous with an active [+present, +polarity] covert head in the inflectional domain to which it cliticizes and whose necessarily stressed status it thereby assimilates. Fifth, note that *wh*-extraction is allowed out of a GGE site, as shown in (27). And finally, consider (28) and (29).

- (27) A: A ne poznaš Omanovih?
 Q NEG know.2.sg the Omans 'Don't you know the Omans?'
 B: Ne. Kdó pa JIH?
 no who Part. cl.3.ACC.pl 'No (I don't). Who else does_?'
 (28) Marketplace (Ljubljana 1982): Woman speaking to the merchant selling watermelons (and intending to cut one by a knife in two halves):
 A: NE mi je, prosim!
 NEG cl.1.DAT.sg cl.3.GEN.f.sg, please 'Don't cut it for me, please!'
 (29) In a similar situation, someone shows a cake to another person, asking:
 A: A JO?
 Q cl.3.ACC.f.sg 'Should we (eat) it?'
 where *jo* refers to morphologically retrievable: *potíca* (f.sg.) (sort of Slovenian cake).

What these two final examples might show is that GGE is as close to VPE as to inherit even some of its quirks we started out with (recalling that antecedentless VPE is possible, after all, as, e.g., in (1)).

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