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Preface ISIS 5

This volume contains research reports by six of the SFB projects.

Discussing *Quantificational Variability Effects* in sentences containing plural definites Cornelia Endriss and Stefan Hinterwimmer (project A2) explore the question of "Quantification over Individuals or Situations?". They introduce two constraints concerning the temporal location of situations that allow to convincingly distinguish frequency adverbs from adverbs of quantity.

Offering a new view on *nicht…sondern …* (contrastive *not … but …*) in German, Elke Kasimir (project A5) accounts for several interesting properties, some also yielding special intonational requirements and exhaustivity effects.

New results from research into focus marking in Gùrùntùm, a Nigerian West Chadic language is presented by Katharina Hartmann and Malte Zimmermann (project B2). The authors point out some cross-linguistically remarkable features of the language's morphological focus-marking system including one for which the integration of a grounding mechanism beyond the sentence-level is suggested.

Svetlana Petrova (project B4) presents a novel approach to explaining word order variation in the early Germanic languages, presenting evidence for her claim that the identification of information-structural domains in a sentence is best achieved by taking into account the interaction between the pragmatic features of discourse referents and properties of discourse organization.

Michaela Schmitz, Barbara Höhle, Anja Müller, Jürgen Weissenborn (project C3) discuss their results of a study on when and how young German-learning children acquire the regularities which underlie Focus-to-Stress Alignment. Their findings provide evidence for a development from predominantly prosodically driven processing of the input to a processing with an increased interaction between prosodic, lexical and syntactic knowledge of the child .

An evaluation of the auditory stimuli material for testing the role of Information Structural properties on words in L2 processing is presented by Ruben van de Vijver, Anke Sennema and Anne Zimmer-Stahl (project C4). Their data shows that accents in English and German are expressed through an increased duration and higher F0, while syntactic or lexical means of marking focus (such as cleft and focus-sensitive adverb *only*) do not show these correlates.

We would like to thank the authors for contributing to this volume, hoping that their reports from different research perspectives add to the discussion on information structural principles and expressions in human language.

Shinichiro Ishihara
Michaela Schmitz
Anne Schwarz

Contents

Quantificational Variability Effects with Plural Definites: Quantification over Individuals or Situations?*

Cornelia Endriss & Stefan Hinterwimmer

University of Potsdam; Humboldt University Berlin

In this paper we compare the behaviour of adverbs of frequency (de Swart 1993) like *usually* with the behaviour of adverbs of quantity like *for the most part* in sentences that contain plural definites. We show that sentences containing the former type of Q-adverb evidence that *Quantificational Variability Effects* (Berman 1991) come about as an indirect effect of quantification over situations: in order for quantificational variability readings to arise, these sentences have to obey two newly observed constraints that clearly set them apart from sentences containing corresponding quantificational DPs, and that can plausibly be explained under the assumption that quantification over (the atomic parts of) complex situations is involved. Concerning sentences with the latter type of Q-adverb, on the other hand, such evidence is lacking: with respect to the constraints just mentioned, they behave like sentences that contain corresponding quantificational DPs. We take this as evidence that Q-adverbs like *for the most part* do not quantify over the atomic parts of sum eventualities in the cases under discussion (as claimed by Nakanishi and Romero (2004)), but rather over the atomic parts of the respective sum individuals.

Adverbial Quantification, Situations, Tense Semantics, Adverbs of Frequency, Adverbs of Quantity

1 Introduction

Consider (1a) below, which has a prominent reading that can be paraphrased as in (1b):

* Parts of this paper have been presented at *Sinn und Bedeutung 9* in Nijmegen and at the *Semantics Circle* at ZAS, Berlin. We would like to thank the audiences of both events as well as Sigrid Beck, Andreas Haida, Christian Krause, Manfred Krifka, Peter Staudacher, and Malte Zimmermann for discussion, valuable comments, and technical help.

Interdisciplinary Studies on Information Structure 5 (2006): 1–59
Ishihara, S., M. Schmitz, and A. Schwarz (eds.):

(1) a. The people who lectured at the conference last summer were usually smart.

b. Most (of the) people who lectured at the conference last summer were smart.

Also the sentence in (2a) has a prominent reading that can be paraphrased as in (2b).

(2) a. For the most part, the lions that Peter saw during the safari had a mane.

b. Most (of the) lions that Peter saw during the safari had a mane.

The phenomenon that adverbially quantified sentences have readings that can be paraphrased by sentences where the respective Q-adverb has been replaced by a quantificational DP of corresponding quantificational force is generally referred to as *Quantificational Variability Effect* (QVE) (since Berman 1991). It is usually discussed in connection with adverbially quantified sentences that contain singular indefinites (3a) or bare plurals (3c) below, the QV-readings of which are given in (3b, d), respectively.

(3) a. A lion is usually brave.

b. *Most lions are brave.*

c. Lions are often brave.

d. *Many lions are brave.*

Notice, though, that the Q-adverb *for the most part* needs to be combined with a bare plural (or a plural definite, as seen above), as evidenced by the contrast between (4a) and (4c): while the most prominent reading of (4a) is the QV-

reading given in (4b), (4c) lacks such a reading and is deviant if *be smart* receives its standard interpretation as an individual level predicate (henceforth: *i-level predicate*) and is not re-interpreted as a stage level predicate (henceforth: *s-level predicate*) meaning *to behave in a smart way* (see Kratzer 1995 and Chierchia 1995a on the difference between the two types of predicates as well as on the possibility of re-interpreting i-level predicates as s-level predicates).

(4) a. For the most part, lions are smart.

b. *Most lions are smart.*

c. * For the most part, a lion is smart.

Concerning the QV-readings of sentences like the ones in (3) above, two different types of explanation have been offered in the literature. The first one treats QVEs as the direct result of a quantification over individuals that comes about in the following way: Q-adverbs are unselective binders, capable of binding free variables of any type in their scope. Furthermore, singular indefinites as well as bare plurals are analyzed as open expressions that introduce free variables the values of which have to satisfy the respective NP-predicate (see Kamp 1981, Heim 1982, Diesing 1992 and Kratzer 1995 for details).

The second type of explanation treats QVEs as the indirect result of a quantification over (minimal) situations/events that each contain exactly one individual satisfying the respective NP-predicate. The latter is a consequence of the respective DPs – which are interpreted as generalized quantifiers with existential force – being interpreted in the restrictor of the respective Q-adverb. Furthermore, as the (minimal) situations/events quantified over are exclusively individuated via the (value of the) respective DP, the individual variable bound

by the existential quantifier has to vary with the situation/event variable bound by the Q-adverb. This explains the "illusion" that the respective Q-adverb quantifies over individuals directly (see Berman 1987, de Swart 1993, von Fintel 1994, 2004 and Herburger 2000 for details).

Concerning sentences with plural definites, on the other hand, the only discussions of QVEs we are aware of are found in Graff (2001, to appear) and Nakanishi and Romero (2004). But neither of them deal with sentences like (1a): Graff is primarily concerned with sentences like (5a) below, where the definite DP is modified by a possessive PP that contains an indefinite DP. Nakanishi & Romero, on the other hand, exclusively deal with sentences like (5c), which contain the Q-adverb *for the most part*.

(5) a. The parents of a toddler usually have little time for relaxation.
(Graff 2006: ex. (44a)).

b. *Most parents of a toddler have little time for relaxation.*

c. For the most part, the students admire Mary
(Nakanishi and Romero 2004: ex. (31a)).

d. *Most (of the) students admire Mary.*

Graff (2001, to appear) explains the fact that a sentence like (5a) has a prominent reading that paraphrasable as in (5b) as follows: the definite article introduces a maximality condition. It turns the (characteristic function of the) set denoted by the respective NP-predicate into the (characteristic function of the) singleton that contains "the *highest-ranked* member of the extension of the common noun" (Graff 2001: 20). In line with Sharvy (1980) and Link (1983) she takes singular nouns to denote sets of atoms, and plural nouns to denote sets of sums of atoms. So in case the definite article combines with a plural noun, it returns the singleton set consisting of the maximal sum in the original set.

Concerning singular nouns, on the other hand, the definite article can only be combined with such a noun if it denotes a singleton set in the first place, as there is no natural ordering available for the members of a set of atoms.

The only difference between the approach of Sharvy (1980) and Link (1983), on the one hand, and the approach of Graff (2001, 2006), on the other, is that the former assume that the definite article turns a set into an individual, while the latter assumes that the definite article turns a set into a singleton set. Furthermore, Graff (2001, 2006) assumes that definites (as well as singular indefinites and bare plurals) in argument position function as the first argument (i.e. the restrictor) of either an overt Q-adverb (if present) or of a covert existential quantifier or generic operator. Accordingly, a sentence like (5a) can be interpreted as shown in (6) below if the definite DP functions as the first argument of the Q-adverb *usually*.

(6) Most x [∃y[y is a toddler ∧ x are the parents of y]] [x have little time for relaxation]

Note that the QV-reading in this case is a mere consequence of the fact that the maximality condition associated with the definite article is relativized with respect to the individuals introduced by the indefinite *a toddler*: for each such individual *y* there is a different sum individual that uniquely satisfies the predicate *parents of y*. As no element which may induce such a relativization is present in the case of (1a), this account is not general enough to cover the cases discussed in this paper.

The account of Nakanishi & Romero (2004) will be discussed in detail below. For the moment, suffice it to say that according to these authors the QV-reading of a sentence like (5c) comes about in a way that can roughly be described as follows: the Q-adverb *for the most part* quantifies over the atomic parts of a sum eventuality which is defined on the basis of the fact that the agent

of this sum eventuality is the maximal sum individual denoted by the definite DP *the students*. The sentence is thus true if most parts of this sum eventuality are also parts of an eventuality of admiring Mary. This reading corresponds to the QV-reading paraphrased by (5d) if one furthermore assumes that the atomic parts of the restrictor eventuality correspond to the atomic parts of the sum individual denoted by *the boys*.

Somewhat ironically, we will argue below that while there are indeed good reasons to adopt a similar approach in order to account for the QV-readings of sentences like (1a), which contain frequency adverbs like *usually*, there is evidence that the QV-reading of a sentence like (5c) does not come about in the indirect way assumed by Nakanishi & Romero (2004), but rather follows from the fact that the Q-adverb *for the most part* quantifies over the atomic parts of the sum individual denoted by *the students*. Our argument is based on contrasts like the ones in (7) – (9):

(7) a. The people who lectured at the conference last summer were usually smart.

b. Most (of the) people who lectured at the conference last summer were smart.

c. For the most part, the people who lectured at the conference last summer were smart.

(8) a. * The people who lectured at the conference last summer are usually smart.

b. Most (of the) people who lectured at the conference last summer are smart.

c. For the most part, the people who lectured at the conference last summer are smart.

(9) a. * The people who listened to Peter's talk at the conference last summer were usually smart.

b. Most (of the) people who listened to Peter's talk at the conference last summer were smart.

c. For the most part, the people who listened to Peter's talk at the conference last summer were smart.

Consider the contrast between (7a) and (8a) first: (7a), where the tense of the matrix verb and the tense of the relative clause verb agree, is grammatical, and receives a QV-reading. (8a) on the other hand, where the relative clause verb is marked for past tense, while the matrix verb is marked for present tense, does not have such a reading. It only has a reading according to which the sentence is true if everyone among a certain plurality of people that have the property of having lectured at the conference last summer is smart in most salient situations. The sentence is therefore odd if the i-level predicate *be smart* is not re-interpreted as an s-level predicate meaning *to behave in a smart way*.

The crucial point to note is that the same lack of agreement between the respective tense markings does not seem to matter if the Q-adverb *usually* is replaced by the determiner quantifier *most* or the Q-adverb *for the most part*: (8b, c) are both just as acceptable as (7b, c). A plausible explanation for this difference relies on the assumption that the domains of quantification differ in the respective cases: while this domain consists of eventualities/situations in the case of (7a) and (8a), it consists of individuals in the case of (7b, c) and (8b, c). Based on this assumption, we will argue below that quantification over eventualities/situations must obey a constraint called the *tense agreement constraint*, which does not hold for quantification over individuals. This constraint is violated in the case of (8a).

Next, consider (9a): the sentence is odd in spite of the fact that the tenses of the matrix verb and the relative clause verb agree. The only difference between (7a) and (9a) concerns the internal constitution of the eventualities introduced by the respective relative clauses: in the case of (7a) it is plausible to assume that this eventuality consists of parts that are temporally distributed, as there is no reason to assume that all lectures given at a conference take place at the same time. In the case of (9a), on the other hand, it is almost inevitable to assume that the relative clause eventuality consists of parts that coincide temporally (or at least overlap to a very high degree), as one normally listens to a talk from start to finish. It seems that this difference in the internal constitution of the respective eventualities is responsible for the fact that (9a) in contrast to (7a) does not get a QV-reading. We refer to this constraint on the internal constitution of the eventualities introduced by the respective relative clauses as the *coincidence constraint*.

Again, we take the fact that both (9b) and (9c) are acceptable to constitute evidence in favor of our assumption that the respective quantificational domains differ. Furthermore, we will show below that the oddity of (9a) is not an isolated fact, but fits into a general pattern that can be explained by assuming that quantification over situations/events is constrained in a way that does not hold for quantification over individuals.

The paper is structured as follows. In section 2 we summarize the results of Endriss and Hinterwimmer (to appear), which discusses the conditions under which adverbially quantified sentences with singular indefinites get QV-readings. As we will see, lack of tense agreement between relative clause verbs and matrix verbs also leads to unacceptability in those sentences. In order to account for this fact, we introduced the *tense agreement constraint* referred to above.

In section 3 we discuss a prima facie plausible way of accounting for QVEs in sentences with plural definites under the assumption that Q-adverbs solely quantify over situations/events. While this account works well in many cases, we show that it does not apply correctly to sentences such as (1a).

In section 4 we discuss Nakanishi & Romero's (2004) analysis of QVEs in sentences with the Q-adverb *for the most part*, and in section 5 we show how a similar analysis can be combined with the results of section 2 in order to account for the *tense agreement constraint* exemplified by (8a). In section 6 we discuss these results in light of the *coincidence constraint* in order to account for the oddity of sentences like (9a).

In section 7 we critically evaluate the original motivation for Nakanishi & Romero's (2004) assumption that *for the most part* quantifies over the atomic parts of sum eventualities, and sketch an alternative account that treats *for the most part* as a quantifier over the atomic parts of sum individuals in the cases under discussion. Section 8 summarizes the main results of this paper.

2 Tense Agreement with Q-adverbs and Singular Indefinites

2.1 Data

In this section we discuss the conditions under which adverbially quantified sentences with singular indefinites get QV-readings and introduce the *tense agreement constraint*, which is also in effect in the case of adverbially quantified sentences with plural definites, and which we will return to in section 5. Note that we assume the respective indefinite DPs to be de-accented in the examples discussed below, while the main accent of the clause (which is indicated by capital letters) is on the most deeply embedded VP-internal element. This has the consequence that the indefinite DP is interpreted as non-

focal, while the rest of the clause is interpreted as focal (see Selkirk 1995 for details regarding the relation of accent placement and focus interpretation).

This is important because it is well known that the arguments of Q-adverbs are determined on the basis of information structure – in contrast to the arguments of determiner-quantifiers, which are provided by the syntax. Glossing over some differences, most approaches to adverbial quantification agree on a mapping algorithm that can be informally described as follows (and that we will also assume for the time being; but more on this in sections 2.3 below): the first argument (the restrictor) of a Q-adverb is the denotation of the non-focal or topical part of the clause containing it, while the second argument (the nucleus) is the denotation of the whole clause minus the Q-adverb (see Rooth 1985, 1995, Chierchia 1995a, Krifka 1995, 2001, Partee 1995 and Herburger 2000 for details; cf. von Fintel 1994, 2004 and Beaver and Clark 2003 for a slightly different approach). Thus, in order to be mapped onto the restrictor of a Q-adverb, a DP needs to be interpreted as non-focal or even topical (the difference does not matter for our present purposes).

With this in mind, consider the contrast between (10a) and (10c):

(10) a. A car that was bought in the eighties was usually BLUE.

b. Most cars that were bought in the eighties were BLUE.

c. ?? A car that was bought in the eighties is usually BLUE.

Whereas (10a) is acceptable and receives an interpretation that can be paraphrased as in (10b), (10c) can only be interpreted as saying that there is a specific car such that this car is blue in most relevant situations. As it is very implausible to assume (at least in the absence of a special context) that cars

change their color so often that the periods of them having a certain color can be quantified over, (10c) is odd.

The contrast between (10a) and (10c) is plausibly due to the fact that in the former case the tense marking of the matrix verb agrees with the tense marking of the relative clause verb, while in the latter case the tense marking differs. Note, however, that such an effect is entirely missing in sentences that contain quantificational DPs modified by relative clauses: (11) is just as acceptable as (10b), the only difference between the two sentences being that (10b) in contrast to (11) implicates that the cars quantified over do not exist anymore at the time of utterance (at least in their majority).

(11) Most cars that were bought in the eighties are BLUE.

2.2 Basic assumptions

In Endriss and Hinterwimmer (to appear; see also Hinterwimmer 2005 for more details) we argue that unselective binding approaches are unable to account for the contrast between quantificational determiners and Q-adverbs with respect to tense agreement. This is due to the fact that those approaches do not assume a relevant difference between a sentence like (10c) and a sentence like (11) at the level of semantic interpretation: both receive the (simplified) representation in (12).

(12) Most x [car(x) $\wedge$ was_bought_in_80s(x)] [is_blue(x)]

On the other hand, if one assumes that Q-adverbs can only quantify over situations or eventualities, the two sentences are interpreted differently: While (11) is represented as in (13a), (10c) receives a representation like the one given in (13b) in simplified form (cf. de Swart 1993, von Fintel 1994 and Herburger

2000)[1]. Note that we take the situation variables quantified over to be introduced by the respective verbal elements (more on this below). Furthermore, we assume a simplified tense semantics that assigns past and present tense markings the interpretations in (14).

(13) a. Most x [car(x) $\wedge$ $\exists$s´[is_bought(x, s´) $\wedge$ τ(s´) < t_0 $\wedge$ in_80s(s´)]]
[$\exists$s. blue(x, s) $\wedge$ $t_0 \subseteq \tau$(s)]

b. Most s [$\exists$x. car(x) $\wedge$ $\exists$s´[is_bought(x, s´) $\wedge$ τ(s´) < t_0 $\wedge$ in_80s(s´)]
$\wedge$ in(x, s)]
[$\exists$x. car(x) $\wedge$ $\exists$s´[is_bought(x, s´) $\wedge$ τ(s´) < t_0 $\wedge$ in_80s(s´)]
$\wedge$ blue(x, s) $\wedge$ $t_0 \subseteq \tau$(s)]

(14) a. [[present tense]] = $\lambda P_{<s, t>} \lambda$s. P(s) $\wedge$ $t_0 \subseteq \tau$(s)

b. [[past tense]] = $\lambda P_{<s, t>} \lambda$s. P(s) $\wedge$ τ(s) < t_0,

where t_0 is the time of utterance and $\tau(s)$ is the temporal trace of *s*, i.e. the temporal location of the situation *s* (see Ogihara 1998, which is based on Krifka 1989, 1992).

While the semantic representations of the two sentences obviously differ, there is nothing wrong with (13b) as it stands: according to (13b), (10c) is true if most (minimal) situations *s* containing a car that was bought in the eighties are also (minimal) situations *s* such that this car is blue in *s* and such that *s* is located at an interval that contains the time of utterance. These truth conditions are perfectly coherent. Yet, (10c) is judged as odd.

[1] Note that we have suppressed the minimality condition that would have to be added in order to avoid the so-called "requantification problem" (von Fintel 1994, see also Krifka 2001 for discussion)): it has to be assured that the variable bound by the existential quantifier in the nucleus is resolved to the same individual as the variable bound by the existential quantifier in the restrictor. This is guaranteed if Q-adverbs are only allowed to quantify over situations that are minimal in the sense that they do not have parts that also satisfy the respective situation predicate

2.3 The interval resolution strategy

Endriss and Hinterwimmer (to appear) assume that the unacceptability of sentences like (10c) can be explained as follows. We follow von Fintel (1994), Stanley (2000), and Marti (2003) in their assumptions that quantifiers – i.e. quantificational determiners as well as Q-adverbs – come with a covert domain restriction in the form of a free variable *C* ranging over predicates. This variable is added conjunctively to the overtly given predicate that functions as the first argument of the respective quantifier. Furthermore, as situations/eventualities need to be located in time (cf. Lenci and Bertinetto 1999), we assume that the *C*-variable introduced in the restriction of Q-adverbs is resolved to the situation predicate in (15).

(15) $\lambda s.\ \tau(s) \subseteq i_s$,
where i_s is a time interval.

Now, according to our assumptions so far, (10a) (which is repeated as (16a) below) is initially represented as given in (16b) below:

(16) a. A car that was bought in the eighties was usually BLUE.

b. $\text{Most } s\ [\exists x.\ car(x) \wedge \exists s'[is\_bought(x, s') \wedge \tau(s') < t_0 \wedge in\_80s(s')] \wedge in(x, s) \wedge \tau(s) \subseteq i_s]\ [\exists x.\ car(x) \wedge \exists s'[is\_bought(x, s') \wedge \tau(s') < t_0 \wedge in\_80s(s')] \wedge blue(x, s) \wedge \tau(s) < t_0]$

The next step consists in finding a value to which the free interval variable i_s can be resolved. We assume that this value is determined according to a pragmatic strategy we dubbed the *interval resolution strategy (IRS)*, which is given in (17).

(17) 1. Take direct, overt information, where intervals denoted by temporal adverbs modifying the matrix verb count as *direct, overt information*.

2. If not available: take the most specific indirect information originating from the same domain, where the restrictor and the nucleus of a Q-adverb count as domains, respectively.

3. If not available: take either indirect information originating from the other domain, or the default interval t_{world}, which denotes the whole time axis.

The rationale behind this strategy is the general principle that local information is preferred to non-local information. In the case of (16a), step 1. is not applicable, as there is no temporal adverb that applies to the situation variable introduced by the matrix verb (although there is of course one that applies to the situation variable introduced by relative clause verb – namely *the eighties*). On the other hand, the relative clause introduces a salient situation within the same domain (i.e. the restrictor): the buying situation *s´*. Therefore, step 2. applies, and i_s is resolved to the temporal trace of the respective situation. This has the consequence that the final semantic representation of (16a) is the one given in (18) below[2]:

(18) $\text{Most s } [\exists x.\ car(x) \wedge \exists s'[is\_bought(x, s') \wedge \mathbf{\tau(s') < t_0} \wedge \mathbf{in\_80s(s')}] \wedge in(x, s) \wedge \mathbf{\tau(s) \subseteq \tau(s')}]$
$[\exists x.\ car(x) \wedge \exists s'[is\_bought(x, s') \wedge \tau(s') < t_0 \wedge in\_80s(s')] \wedge blue(x, s) \wedge \mathbf{\tau(s) < t_0}]$

According to (18), sentence (16a) is true if most (minimal) situations *s* that contain a car that was bought in the eighties and that are furthermore temporally

[2] Note that we assume that the second occurrence of s´ is bound dynamically by the existential quantifier that also binds this variable within the relative clause (see Staudacher 1987, Groenendijk and Stokhof 1990 and Chierchia 1995b for a detailed discussion of the principles of dynamic binding).

located within the respective buying situations are also (minimal) situations such that a car that was bought in the eighties is blue in *s* and such that *s* is temporally located before the time of utterance. This is perfectly coherent, and (16a) is accordingly predicted to be acceptable.

Let us turn to (10c) next, which is repeated below as (19a). If the same strategy is applied in this case, we get the semantic representation in (19b) below:

(19) a. ?? A car that was bought in the eighties is usually BLUE.

b. Most s [$\exists$x. car(x) $\wedge$ $\exists$s´[is_bought(x, s´) $\wedge$ **τ(s´) < t_0 $\wedge$ in_80s(s´)**] $\wedge$ in(x, s) $\wedge$ **τ(s) $\subseteq$ τ(s´)**]
[$\exists$x. car(x) $\wedge$ $\exists$s´[is_bought(x, s´) $\wedge$ τ(s´) < t_0 $\wedge$ in_80s(s´)] $\wedge$ blue(x, s) $\wedge$ **t_0 $\subseteq$ τ(s)**]

In this case, the tense specification in the restrictor contradicts the one within the nucleus: according to the restrictor, the situations quantified over have to be located in the eighties (as they are set to the temporal traces of the respective buying situations that took place in the eighties). On the other hand, the tense marking of the matrix predicate *is blue*, which is interpreted in the nucleus, requires the very same situations to be located within an interval that includes the time of utterance. But this has the consequence that the intersection between restrictor and nucleus is necessarily empty, as there can be no situations that satisfy both requirements.

We assume that this is the reason why (19a) does not get a QV-reading and is therefore very odd, as the only other interpretation that is available requires the hearer to make the very unlikely assumption that there is some specific car that constantly changes its color (see section 1).

In Endriss and Hinterwimmer (to appear) we discuss some cases where the *interval resolution strategy* – which is, after all, a pragmatic strategy – is

overridden by other factors. One such case is sentence (20) below, which has a QV-reading in spite of the fact that the tense of the matrix verb does not agree with the tense of the relative clause verb. We argue that the relevant factor in this case is that the matrix verb is a verb of creation.

(20) A car that was built in the eighties is usually BLUE.

We assume that in such cases the IRS does not apply, and i_s is set to the default time interval t_{world} for the following reason: setting the matrix verbs to past tense and then applying the IRS to the resulting sentence would have the consequence that the resulting minimal variant of (20) could only be true if the individuals contained within the situations quantified over were already in the state denoted by the matrix verbs *before* they came into existence, i.e. before the respective relative clause situations were completed. In other words, in contrast to the case of (10a) vs. (10c) there is no way to (minimally) alter the sentence in such a way that the resulting semantic representation conforms to the IRS and has non-absurd truth conditions at the same time[3]. We assume that this is reason enough for the IRS (which is just a pragmatic strategy) to be cancelled. This has the consequence that i_s is set to the default time interval t_{world}. As a consequence of this move, sentences like (20) receive non-contradictory QV-readings in spite of the non-agreeing tense markings.

[3] In Endriss and Hinterwimmer (to appear), we furthermore discuss the fact that also in sentences where there is a plausible (direct or indirect) causal relation between the respective relative clause situations and the matrix situations, the tense agreement constraint does not seem to hold (as is evidenced by the contrast between sentence (i) and sentence (ii) below). We argue that in these cases a similar reasoning applies as in (20) above: If the matrix verb was set to past tense, and if the interval resolution strategy was applied, the most plausible reading of the respective sentence could not be conveyed.

(i) A lawyer who was educated in Berlin is usually competent.

(ii) ?? A lawyer who was educated in Berlin is usually blond.

In the next section we return to the question of how QVEs in sentences with plural definites can be accounted for and discuss a prima facie plausible analysis. We will see, however, that this analysis does not work in the cases under consideration.

3 First Attempt: Co-varying Individuals

Let us return to sentence (7a), which is repeated below as (21a). As already mentioned, (7a) also obeys the *tense agreement constraint*, as is evidenced by the unacceptability of (8a), which is repeated below as (21b). Prima facie, it thus appears likely that these cases, too, involve quantification over situations.

(21) a. The people who lectured at the conference last summer were usually SMART.

b. * The people who lectured at the conference last summer are usually SMART.

Now, what options are there to explain the fact that those sentences receive QV-readings if one wants to stick to the assumption that Q-adverbs are only able to quantify over situations? It is clear that QVEs in sentences with definites do not come about in the same way as QVEs in sentences with indefinites: in contrast to the indefinite determiner, the definite determiner is not allowed to pick out different individuals from one and the same set in different situations. Rather, it has to pick out the maximal sum individual contained within the set it is applied to (see Sharvy (1980) and Link (1983)). This has the consequence that co-variation with the situations quantified over by a Q-adverb is excluded if the set denoted by the NP-complement of the definite determiner does not vary itself. To put it the other way around, co-variation is only possible if the NP-

complement of the definite determiner includes a situation variable that allows the set denoted by this NP to vary with the situations quantified over.

There are indeed cases where it is plausible to assume that QVEs arise precisely in this way. As argued for in detail in Hinterwimmer (2005) and Hinterwimmer (in preparation), though, in all of these cases the definite DP is interpreted in the nuclear scope of the Q-adverb, while the restrictor contains a situation predicate that can be accommodated on the basis of contextual or clause internal information and that fulfils the following condition: it characterizes a set of situations such that each of those situations can plausibly be assumed to contain either exactly one (in the case of singular definites) or a plurality of individuals (in the case of plural definites) that satisfy the respective NP-predicate. In other words: it is not the case that the situations quantified over are defined on the basis of the denotation of the DP (as with indefinites). Rather, it has to be made sure independently that each of those situations contains individuals/exactly one individual of the required kind.

Hinterwimmer (2005; in preparation) argues that this is due to the fact that the definite determiner *presupposes* that the set it applies to contains a unique maximal element. Therefore, in order for this presupposition to be fulfilled at the point where the meaning of the respective definite DP is computed, it has to be guaranteed that each of the situations quantified over makes available such a set. In order to see this, consider the contrast between (22a) and (23a), on the one hand, and (22b) and (23b), on the other

(22) a. ?? The piano-player is usually SMART.

b. I love going to jazz-concerts: The piano-player is usually SMART (and it's nice to talk to him after the show).

(23) a. ?? The violin-players are usually TALL.

b. There's a funny generalization concerning classical concerts: The violin-players are usually TALL.

In the absence of a context that makes available a suitable situation predicate, the respective definite DPs cannot be interpreted as co-varying with the situations quantified over, and the sentences containing them are very odd, as the matrix predicates are i-level predicates. If such a context is provided, on the other hand, the same definites can be interpreted as co-varying: in (22b), the piano-players vary with the jazz concerts, and in (23b), the violin-players vary with the classical concerts.

There are also cases where no context is required in order to accommodate a suitable situation predicate, but where this is possible on the basis of clause-internal information alone: namely, if the respective NP-predicate is stereotypically associated with a set of situations such that each of those situations contains either exactly one or a plurality of individuals that satisfy this predicate. Such examples are given in (24) below:

(24) a. Peter's students are usually SMART.

b. The pope is often ITALIAN.

In the case of (24a), the noun *students* is naturally associated with a set of suitable situations, namely a set of courses. Also in the case of (24b), the noun is stereotypically associated with a set of situations, albeit "world-size" ones: namely the terms of office of the respective popes.

Technically, we follow Hinterwimmer's (2005; to appear) account of how co-variation arises in the cases under consideration: nouns contain a free variable ranging over situations (see Kratzer 1989, 2004, von Fintel 1994, 2004, Percus 2000, Büring 2004 and Elbourne 2005). These variables can either be

resolved to w_0 (i.e. to the actual world) by default, or to a contextually salient situation, or they can be bound by a Q-adverb that c-commands the respective DP at LF. In cases like (22b), (23b) and (24), the last option is chosen. The relevant reading of a sentence like (24a), for example, can thus roughly be represented as shown in (25) below.

(25) Most s [course_taught_by_Peter(s)]
[smart(σ{x: student_of_Peter(x, s)}, s)],
where *x* ranges over sums as well as over atomic individuals and
where σ{x: P(x)} $=_{def}$ ιx [P(x) $\wedge$ $\forall$y [P(y) $\rightarrow$ y $\leq$ x]] (see Link (1983).

Returning to the examples in (21), we have to decide whether in those cases QVEs come about in the way just described. Obviously, there is no contextual information on the basis of which a suitable situation predicate could be accommodated – i. e. a predicate that characterizes a set of situations such that each of those situations contains a (different) plurality of individuals that satisfy the respective NP-predicates. This only leaves open the possibility that such a predicate is accommodated on the basis of the NP-predicates themselves.

But is it plausible to assume that these NPs provide the necessary information? Of course, they both contain relative clauses that introduce situations. But those situations already contain *the whole sum of individuals that satisfy the respective predicate* – i. e. the whole sum of lions seen by Peter during his safari (cf. ex. (2a)), and the whole sum of individuals who lectured at the conference (cf. ex. (1a)) mentioned. This implies, however, that on the basis of these situations no suitable predicate can be accommodated, i. e. no situation predicate such that each of the situations characterized by this predicate contains a *different* set of lions, or a *different* set of people giving lectures.

On the other hand, it is not plausible that the NP-predicates are in some other way stereotypically associated with a set of situations of the required kind,

as they are far too special. We therefore conclude that the QV-readings of sentences like (21a, b) do not come about via co-variation of the individuals denoted by the plural definites with the situations quantified over.

Consequently, only the following possibility seems to be left: the Q-adverb quantifies over the atomic parts of the sum individuals denoted by the respective DPs. But if this really was the case, it would be completely unexpected that sentences such as (21a) have to obey the tense agreement constraint, as evidenced by the unacceptability of (21b) above. After all, in the case of singular indefinites the tense agreement constraint was our main motivation for assuming that QVEs come about as indirect effects of quantification over situations. We therefore have to look for a solution that allows us to stick to the assumption that Q-adverbs only quantify over situations. This is what we will do in the next section, where we discuss Nakanishi and Romero's (2004) analysis of *for the most part* and show that a similar mechanism gives the right results for the cases under consideration, which involve frequency adverbs like *usually*. Somewhat ironically, however, we will see later on that there are good reasons to analyse adverbs of quantity like *for the most part* in a manner that does not necessarily involve quantification over situations/eventualities.

4 Second Attempt: Quantification Over Situations

4.1 Nakanishi and Romero (2004) on the Q-adverb *for the most part*

As already mentioned in section 1, a sentence like (26a) has a QV-reading that can be paraphrased as in (26b):

(26) a. For the most part, the students admire $[\text{Mary}]_F$
(Nakanishi & Romero (2004): ex. (31a)).

b. Most of the students admire Mary.

Based on differences regarding focus-sensitivity and the availability of collective readings in sentences with accomplishment verbs, Nakanishi & Romero (2004) argue that while the quantificational determiner *most* operates on plural individuals, the Q-adverb *for the most part* operates on plural eventualities. We postpone the discussion of their arguments to section 7, and simply discuss the mechanism they propose in this section, as this mechanism contains the basic ingredients that are necessary to account for the data discussed above.

Nakanishi & Romero (2004) assume that a sentence of the form *For the most part NP VP* has the truth conditions in (27) below, where **p** corresponds to the denotation of the non-focussed material, while **q** corresponds to the denotation of the focussed material. Note furthermore that they assume a neo-Davidsonian event semantics (see Parsons 1990, Schein 1993, Herburger 2000, and Landman 2000 for discussion), according to which verbs only introduce an event argument directly, while the individual arguments of verbs are introduced via thematic-role predicates like *Agent*, *Theme*, etc., and are combined with the predicate denoted by the verb via conjunction.

(27) $\exists e\,[\mathbf{p}(e) \wedge \exists e'[e' \leq e \wedge |e'| \geq \frac{1}{2}|e| \wedge \forall e''[e'' \leq e' \rightarrow \mathbf{q}(e'')]]]$
(op. cit.: 8).

> "There is a general (possibly plural) event e for which **p**(e) holds and there is a (possibly plural) event e' that is a major part of e such that, for all subevents e´´ of e´, **q**(e´´) holds."
> (Nakanishi and Romero 2004: 8).

Nakanishi and Romero assume that a QV-reading "with respect to a given NP arises as a side effect of the following choices" (op. cit.: 9):

(28) (i) The semantic content and thematic predicate on the NP are within the restrictor **p**.

(ii) The general event e is 'measured' by counting its atomic event units in $[[V^0]]$.

(iii) The NP is interpreted distributively in a one-to-one mapping.

According to Nakanishi & Romero (2004), sentence (26a) above is thus interpreted as given in (29):

(29) a. $\exists e [*admire(e) \wedge Agent (e, the students) \wedge \exists e'[e' \leq e \wedge |e'| \geq ½|e| \wedge \forall e''[e'' \leq e' \rightarrow Theme (e'', Mary)]]]$ (op. cit.: (31b))

b. "There is a general (possibly plural) event e such that *admire(e) $\wedge$ Agent (e, the students) and there is a (possibly plural) event e´ that is a major part of e such that, for all subevents e´´ of e´, Theme(e´´, Mary)" (op. cit.: (31c)).

Note that this analysis only works under the following two assumptions:

(a) The individual arguments of verbs are separated from the respective verbal predicate at the level of semantic interpretation.

(b) The denotation of the whole clause minus the Q-adverb is "cut" into two parts: one part that contains non-focal material, and one part that contains focal material.

As Nakanishi & Romero (2004) acknowledge themselves, these two assumptions are crucial for the following reason: if **q** in the formula above was replaced by an eventuality predicate that contains the NP relative to which the QV-reading arises, one would not get the desired reading, as the sum individual denoted by this NP would stand in the respective thematic relation to each atomic part of the smaller event *e´´*.

The second assumption is problematic for the following reason: Nakanishi and Romero (2004) do not offer a mapping algorithm that would give us the desired result, and it is not at all clear what such a mechanism would look like. One possibility would be the following: the whole clause minus the Q-adverb is adjoined to the XP dominating the Q-adverb, leaving behind a copy (see Chomsky 1995). In the higher copy the focus-marked constituents are deleted, while in the lower copy the non-focus-marked constituents are deleted. This is similar to the algorithm proposed by Herburger (2000), the only difference being that according to the latter nothing is deleted in the lower copy, i. e. also non-focal material is repeated there.

What is problematic about this algorithm as well as about the one proposed by Herburger (2000) is the fact that it is hard to imagine how the parts of the original clause should be interpreted in a compositional manner. How, for example, should an object like *the students admire* (with *Mary* deleted) be interpreted correctly (i e. with *the students* as the Agent, not the Theme), and why should the focus-marked DP *Mary* be interpreted as *Theme(e, Mary)*?

This problem could only be avoided if deletion did not apply to syntactic objects at LF, but to the denotations of these objects at the level of semantic interpretation, i. e. if the two copies were both interpreted semantically before the objects corresponding to the focus-/non-focus-marked parts of the original sentence get deleted. This, however, is a dubious assumption, as deletion is normally conceived of as a syntactic operation.

Despite these problems, which are specific to this particular implementation, the underlying ideas of the mechanism just outlined can be applied to our problem concerning the interpretation of sentences with plural definites. We propose that QVEs in sentences with plural definites come about as indirect effects of a quantification over the atomic parts of complex situations. In the next section we develop an approach that avoids the problems

mentioned above and can be applied in the context of sentences that contain frequency adverbs like *usually*[4].

4.2 Applying Nakanishi and Romero's (2004) idea to our cases

Let us assume that frequency adverbs like *usually* can quantify over the atomic parts of complex situations. This means that such Q-adverbs have to be ambiguous: in order to account for the QV-readings of sentences with singular indefinites and singular definites (and also co-varying plural definites, of course; see section 3), one still has to assume that there is a version of the respective Q-adverb that establishes a relation between two sets that have (minimal) situations as elements. But in light of the fact that sentences containing non-covarying plural definites get QV-readings (cf. section 3), a second, closely related meaning of the respective Q-adverb has to be available.

This second meaning is modelled after the denotation Nakanishi and Romero (2004) assume for the Q-adverb *for the most part*. It introduces two existential quantifiers over (possibly complex) situations, and establishes a relation between the atomic parts of those situations: the cardinalities of the sets of atoms the two situations consist of have to stand in the respective relation.

But now the crucial question is: how to determine the two complex situations that are related this way, i.e. which part of the (denotation of the) original clause is predicated of the first one, and which part is predicated of the second one?

In order to avoid the problems of Nakanishi and Romero's (2004) analysis mentioned above, we assume a mapping algorithm that builds on Diesing (1992) and Chierchia (1995a). Its main features can be summarized as follows:

- Q-adverbs are base generated in vP-adjoined position.

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[4] As already mentioned, a discussion of the sentences that motivate Nakanishi and Romero's (2004) account is postponed to section 7.

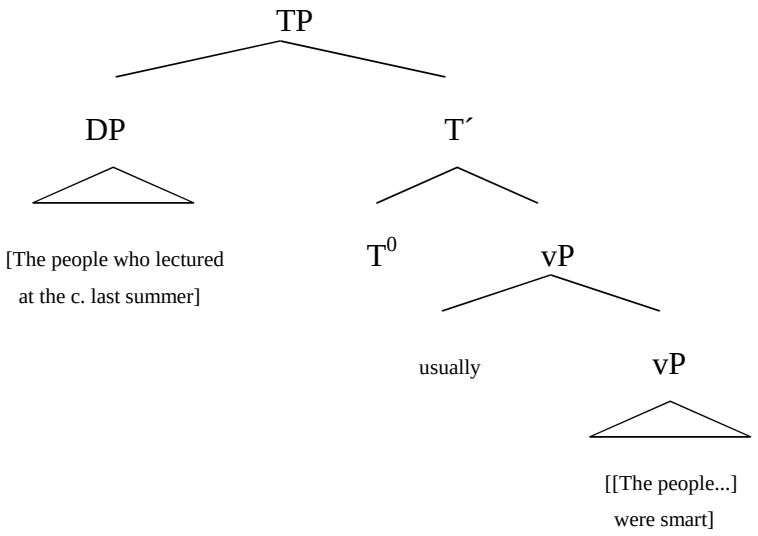
- All the arguments of a verb (including subjects) are base generated in vP-internal position (see Sportiche 1988 and Fukui 1988).
- Topical material cannot be interpreted in the nuclear scope of a quantifier and therefore has to be interpreted in a position where it c-commands the respective Q-adverb (see Endriss and Hinterwimmer to appear-b).
- Focal material has to occupy a vP-internal position at LF.
- Moved DPs leave behind full copies.
- There are various options to interpret the resulting chains: either the highest copy is deleted (this corresponds to reconstruction, which is needed anyway), or the lower copy is interpreted as a variable that is bound by a lambda-operator inserted directly beneath the higher copy (as in Heim and Kratzer 1998), or both copies are interpreted. The last option yields a well formed result only in the presence of a Q-adverb, as we will see shortly.
- DPs that c-command a Q-adverb at LF are optionally turned into situation predicates via a simple type shift the details of which are given below.
- The denotations of Q-adverbs are set up in such a way that the material they c-command at LF is interpreted as their "nuclear scope", while the material that c-commands them at LF is interpreted as their "restrictor" (cf. Chierchia 1995a).

In order to see how this works, let us apply this mechanism to a concrete example – our familiar (21a), which is repeated below as (30).

(30) The people who lectured at the conference last summer were usually SMART.

Assuming that the definite DP is interpreted as topical, and that the chain created by moving this definite DP into (Spec, TP) is interpreted according to the third option mentioned above, the sentence gets the (simplified) LF-representation given in (31).

(31)



Let us first turn to the interpretation of the Q-adverb *usually*: according to our assumptions, it comes in two closely related versions (given in (32a, b)), of which the second is relevant in the present context.

(32) a. $[[\text{usually}]]_1 = \lambda P \lambda Q. \mid \{s: Q(s) \wedge C(s)\} \cap \{s_1: P(s_1)\} \mid > ½ \mid \{s: Q(s) \wedge C(s)\} \mid$

b. $[[\text{usually}]]_2 = \lambda P \lambda Q. \exists s [Q(s) \wedge C(s) \wedge \exists s_1 \leq s [\mid s_1 \mid > ½ \mid s \mid \wedge P(s_1)]]$

Consider next the higher copy of the definite DP. Its original denotation is given in (33). Note that we assume that the free situation variable contained within the higher copy is resolved to w_0 by default[5].

[5] Note that it cannot be interpreted as bound by the Q-adverb, as the latter does not c-command it.

(33) [[the people who lectured at the conference last summer]] =
$\sigma\{x: person(x, w_0) \wedge \exists s_1[lecture(x, s_1) \wedge at(the\ c.\ last\ summer, s_1) \wedge \tau(s_1) < t_0]\}$

As already mentioned above, we assume that DPs can be turned into situation predicates in a rather simple and straightforward manner: if they are of type *e*, the situation predicate *λxλs. in (x, s)* applies to them, if they are of type *<<e, t>, t>*, they apply to this situation predicate. In the case of (33), this gives us the object in (34):

(34) $\lambda s.\ in(\sigma\{x: person(x, w_0) \wedge \exists s_1[lecture(x, s_1) \wedge at(the\ c.\ last\ s., s_1) \wedge \tau(s_1) < t_0]\}, s)$

Let us turn to the lower copy of the definite DP next. As this copy is c-commanded by *usually*, the free situation variable contained within it can be turned into a variable bound by this Q-adverb. Let us assume for concreteness that this comes about as follows: a situation variable binding operator that is modelled after the individual variable binding operator proposed by Büring (2004)[6] is inserted below the Q-adverb, which has the consequence that every free situation variable in the scope of this operator (and therefore in the scope of the Q-adverb) is bound by a lambda-operator. This has the consequence that it is turned into a variable bound by the respective Q-adverb when the denotation of this Q-adverb is applied to the resulting object. The operator (which is labelled

[6] Büring (2004: 47) himself also proposes an extension of his pronoun binding rule to situation pronouns. This extension, however, is not intended to apply to adverbially quantified sentences (which he does not discuss in his paper), but rather to a different phenomenon: to the indirect binding of situation variables that are contained within definite descriptions and E-type pronouns (which he, following Elbourne 2001, takes to be nothing but definite descriptions the descriptive content of which has been elided) by c-commanding quantificational DPs. It is thus formulated differently.

γ) is defined in (35) below, and the result of applying it to the vP-segment c-commanded by *usually* is given in (36):

(35) $[[\gamma_n \text{ XP}]]^{w,g} = \lambda s.\ [\ [[\text{XP}]]^{w,\ g[n \rightarrow s]}\ (s)\ ]$

where $g[n \rightarrow s]$ is the assignment function that (possibly) differs from the assignment function *g* insofar as it assigns the value *s* to all situation variables bearing the numerical index *n* (which – in the present context – is assumed to match the numerical index of the free situation variable contained within the plural definite).

(36) $\lambda s.\ \text{smart}(\sigma\{x: \text{person}(x, s) \wedge \exists s_1[\text{lecture}(x, s_1) \wedge \text{at}(\text{the c. last s.}, s_1) \wedge \tau(s_1) < t_0]\}, s)$

Let us now turn our attention to a point that we have ignored so far: the matrix predicate *were smart* has to be interpreted distributively if it is applied to a sum individual, while in the case of the relative clause predicate *lectured* this is at least the preferred option. Let us therefore assume that both predicates are shifted accordingly via a distributivity-operator[7] that applies to them, as shown in (37a, b) below (cf. Lasersohn 1998, who builds on Link 1983, 1987):

(37) a. $\text{DIST}(\lambda x \lambda s.\ \text{lecture}(x, s) \wedge \tau(s) < t_0) =$
$\lambda x \lambda s.\ \forall y \in \text{Atom}(x): \exists s_1 \leq s.\ \text{lecture}(y, s_1) \wedge\ \tau(s_1) < t_0$

b. $\text{DIST}(\lambda x \lambda s.\ \text{smart}(x, s) \wedge \tau(s) < t_0) =$
$\lambda x \lambda s.\ \forall y \in \text{Atom}(x): \exists s_1 \leq s.\ \text{smart}(y, s_1) \wedge\ \tau(s_1) < t_0$

This has the consequence that the situation predicate that c-commands the Q-adverb is actually spelled out as given in (38a) below, while the one that is c-commanded by the Q-adverb is spelled out as given in (38b):

[7] For concreteness, let us assume that the distributivity-operator is adjoined to the constituents (i.e. the VPs) that denote the respective objects.

(38) a. $\lambda s.\ in(\sigma\{x: person(x, w_0) \wedge \exists s_1[\forall y \in Atom(x): \exists s_2 \leq s_1.\ lecture(y, s_2) \wedge \tau(s_2) < t_0 \wedge at(the\ c.\ last\ summer, s_1)\ ]\}, s)$

b. $\lambda s.\ \forall y \in Atom(\sigma\{x: person(x, s) \wedge \exists s_1[\forall y \in Atom(x): \exists s_2 \leq s_1.\ lecture(y, s_2) \wedge \tau(s_2) < t_0 \wedge at(the\ c.\ last\ summer, s_1)\ ]\}): \exists s_3 \leq s.\ smart(y, s_3) \wedge\ \tau(s_3) < t_0$

The final step now consists in applying the denotation of *usually* given in (32b) above to those two objects, as shown in (39) below:

(39) $\lambda P \lambda Q.\ \exists s\ [Q(s) \wedge C(s) \wedge \exists s_3 \leq s\ [|s_3| > ½ |s| \wedge P(s)]]$
$(\lambda s.\ in(\sigma\{x: person(x, w_0) \wedge \exists s_1[\forall y \in Atom(x): \exists s_2 \leq s_1.\ lecture(y, s_2) \wedge \tau(s_2) < t_0 \wedge at(the\ conference\ last\ summer, s_1)\ ]\}, s)$
$(\lambda s.\ \forall y \in Atom(\sigma\{x: person(x, s) \wedge ...\}: \exists s_4 \leq s.\ smart(y, s_4) \wedge\ \tau(s_4) < t_0)) \Leftrightarrow$
$\exists s[in(\sigma\{x: person(x, w_0) \wedge \exists s_1[\forall y \in Atom(x): \exists s_2 \leq s_1.\ lecture(y, s_2) \wedge \tau(s_2) < t_0 \wedge at(the\ c.\ last\ s., s_1)\ ]\}, s) \wedge C(s) \wedge \exists s_3 \leq s\ [|s_3| > ½ |s| \wedge \forall y \in Atom(\sigma\{x: person(x, s_3) \wedge ...\}): \exists s_4 \leq s_3.\ smart(y, s_4) \wedge \tau(s_4) < t_0)]]$

Concerning the question how the cardinalities of the respective situations are determined, the answer is rather obvious: as both situations contain sum individuals with atomic parts, they can naturally be divided into parts that stand in 1:1-correspondence to the atomic parts of the respective sum individuals.

Note furthermore that the problem with Nakanishi and Romero's (2004) analysis discussed in the last section is circumvented in our formalization. Remember that Nakanishi and Romero had to assume that the original event predicate (i.e. the denotation of the whole clause minus the Q-adverb) is split up in the following way: the focal part is predicated of the "smaller" event *e´*, while the non-focal part is predicated of the larger eventuality *e*. This was necessary in order to keep the (non-focal) definite DP from being repeated in the event predicate that is applied to *e´*, as this would prevent the respective sentence from

getting a QV-reading. The problem with this assumption, however, is that it is unclear how the required split can be achieved in a compositional manner.

In our formalization this problem does not arise, as the mapping algorithm discussed in this section makes it possible that the situation variable contained within the lower copy of the respective definite DP is turned into a variable that is bound by the existential quantifier introducing the smaller nucleus situation s_3. This has the consequence that only the larger restrictor situation *s* contains the maximal sum of individuals that satisfy the respective NP-predicate in the actual world, while the nucleus situation s_3 only contains the maximal sum of individuals that satisfy this predicate in s_3. Furthermore, the cardinality of s_3 is required to be at least more than half of the cardinality of *s*. As the cardinality of the respective situations is determined in the way described above, it is clear that the cardinality of the maximal sum individual contained in s_3 is at least more than half of the cardinality of the maximal sum individual contained in *s*. And that is exactly what we want, as it accounts for the QV-reading we wanted to account for.

Note furthermore that in this case the presupposition associated with the definite determiner does not give rise to the presupposition problem mentioned in section 3: if *s* contains the maximal sum individual that satisfies the predicate in w_0, then it is automatically guaranteed that there is a sum individual that satisfies the same predicate in a smaller situation s_3 that is a part of *s*. In other words, it is thus guaranteed that the "second" σ-operator does not apply to the empty set.

In the next section we will combine this analysis with the results of section 2 in order to account for the fact that the tense agreement constraint also holds in sentences containing plural definites.

5 The Tense Agreement Constraint in Sentences with Plural Definites

Recall our assumption from section 2 that the C-variable introduced in the restriction of a Q-adverb needs to be resolved to the most salient time interval that is available, as situations need to be located in time.

Now, the analysis in section 4.2 forced us to assume that Q-adverbs come in two, systematically related variants: one that takes the characteristic functions of two sets of atomic situations as arguments, and specifies a relation between the cardinalities of the two sets, and one that takes the characteristic functions of two complex situations as arguments, and specifies a relation between the cardinalities of the two sets containing the atomic parts of these situations. It is therefore natural to assume that the same principles apply to those two variants as far as the resolution of the respective C-variables is concerned. This has the consequence that also in the case of the second variant, the C-variable introduced by the first existential quantifier – i.e. in the "restrictor situation" – needs to be resolved in accordance with the *interval resolution strategy* discussed in section 2.3.

Consider again sentence (21a) (repeated as (40a)) and its interpretation in (39) above, repeated as (40b):

(40) a. The people who lectured at the conference last summer were usually SMART.

b. $\exists s[\text{in}(\sigma\{x\text{: person}(x, w_0) \wedge \exists s_1[\forall y \in \text{Atom}(x)\text{: } \exists s_2 \leq s_1\text{. lecture}(y, s_2) \wedge \tau(s_2) < t_0 \wedge \text{at}(\text{the c. last s.}, s_1)\ ]\}, s) \wedge C(s) \wedge \exists s_3 \leq s\ [|s_3| > \frac{1}{2}|s| \wedge \forall y \in \text{Atom}(\sigma\{x\text{: person}(x, s_3) \wedge ...\}\text{: } \exists s_4 \leq s_3\text{. smart}(y, s_4) \wedge \tau(s_4) < t_0)]]$

Now, the next step consists in resolving C to the predicate $\lambda s.\ \tau(s) \subseteq i_s$, as shown in (41) below (cf. section 2.3):

(41) $\exists s[in(\sigma\{x: person(x, w_0) \wedge \exists s_1[\forall y \in Atom(x): \exists s_2 \leq s_1.\ lecture(y, s_2) \wedge \tau(s_2) < t_0 \wedge at(the\ c.\ last\ s., s_1)\ ]\}, s) \wedge \mathbf{\tau(s) \subseteq i_s} \wedge \exists s_3 \leq s\ [|s_3| > \tfrac{1}{2}|s| \wedge \forall y \in Atom(\sigma\{x: person(x, s_3 \wedge ...\}: \exists s_4 \leq s_3.\ smart(y, s_4) \wedge \tau(s_4) < t_0)]]$

After this has been done, i_s needs to be resolved to a time interval in accordance with the *interval resolution strategy* (cf. (17)), repeated as (42).

(42) 1. Take direct, overt information, where intervals denoted by temporal adverbs modifying the matrix verb count as *direct, overt information*.

2. If not available: take the most specific indirect information originating from the same domain, where the restrictor and the nucleus of a Q-adverb count as domains, respectively.

3. If not available: take either indirect information originating from the other domain, or the default interval t_{world}, which denotes the whole time axis.

As there is no temporal adverbial available within the matrix clause in the case of (40b), step 2. has to be taken, i.e. i_s has to be resolved to the most specific interval that is available within the local context[8]. The most specific temporal information available within the local context is of course the interval where the situation introduced by the relative clause modifying the definite DP is located, i.e. $\tau(s_1)$. Therefore, i_s has to be resolved to $\tau(s_1)$ as shown in (43)[9]:

[8] Note that while formulas like (41) do not contain a restrictor in the usual sense, the predicate that applies to the first existentially quantified situation corresponds to the restrictor.

[9] In order for formulas like (43) to be well-formed, we have to assume that the σ-operator is externally dynamic, i.e. that the existential quantifier binding the situation variable s' in the relative clause is allowed to bind the occurrence of this variable inside the conjunct $\tau(s) \subseteq \tau(s_1)$, which is outside the scope of the σ-operator.

(43) $\exists s[in(\sigma\{x: person(x, w_0) \wedge \exists \mathbf{s_1}[\forall y \in Atom(x): \exists s_2 \leq \mathbf{s_2}.$
$lecture(y, s_2) \wedge \tau(s_2) < t_0 \wedge at(the\ c.\ last\ s., s_1)]\}, s)$
$\wedge \tau(s) \subseteq \mathbf{\tau(s_1)} \wedge \exists s_3 \leq s\ [|s_3| > ½|s| \wedge \forall y \in$
$Atom(\sigma\{x: person(x, s_3) \wedge ...\}: \exists s_4 \leq s_3.\ smart(y, s_4)$
$\wedge \tau(s_4) < t_0)]]$

In (43) there is no conflicting tense information: the restrictor situation *s* is located within the same interval where s_1 is located, which in turn is located in the summer of the year before the time of utterance. The nucleus situation s_3, on the other hand, which is a part of *s*, is located within an interval that ends before the speech time. As those two tense specifications do not contradict each other, the sentence is correctly predicted to be acceptable on a QV-reading.

Let us next turn to sentence (21b), repeated as (44a), which receives the basic semantic representation in (44b):

(44) a. * The people who lectured at the conference last summer are usually SMART.

b. $\exists s[in(\sigma\{x: person(x, w_0) \wedge \exists s_1[\forall y \in Atom(x): \exists s_2 \leq s_1.\ lecture(y, s_2)$
$\wedge \tau(s_2) < t_0 \wedge at(the\ c.\ last\ s., s_1)]\}, s)$
$\wedge \tau(s) \subseteq i_s \wedge \exists s_3 \leq s\ [|s_3| > ½|s|$
$\wedge \forall y \in Atom(\sigma\{x: person(x, s_3) \wedge ...\}): \exists s_4 \leq s_3.\ smart(y, s_4)$
$\wedge t_0 \subseteq \tau(s_4)]]$

Now, according to the *interval resolution strategy*, i_s has to be resolved to the temporal trace of the relative clause situation s_1 in this example as well, as this is the most specific information locally available. This gives us (45) below:

(45) $\exists s[in(\sigma\{x: person(x, w_0) \wedge \exists \mathbf{s_1}[\forall y \in Atom(x): \exists s_2 \leq s'.\ lecture(y, s_2)$
$\wedge \tau(s_2) < t_0 \wedge \mathbf{at(the\ c.\ last\ s., s_1)}]\}, s) \wedge \mathbf{\tau(s) \subseteq \tau(s_1)}$
$\wedge \exists s_3 \leq s\ [|s_3| > ½|s| \wedge \forall y \in Atom(\sigma\{x: person(x, s_3)$
$\wedge ...\}: \mathbf{\exists s_4 \leq s_3}.\ smart(y, s_4) \wedge \mathbf{t_0 \subseteq \tau(s_4)}]]$

In this case, we have contradicting tense information: on the one hand, the restrictor situation *s* has to be located within the temporal trace of a situation that took place in the year before the time of utterance. On the other hand, there has to be a part s_3 of *s* such that s_3 consists of smaller situations the temporal traces of which include the speech time (which has the consequence that the temporal trace of s_3 includes the speech time). But this necessarily leads to a contradiction: (44a) can never be true, as it is logically impossible that there is a situation that took place before the speech time as a whole, but has parts that include the speech time. We therefore correctly predict that (44a) does not receive a QV-reading and is thus odd (at least if *be smart* is not re-interpreted as a stage level predicate) – for essentially the same reason as the structurally similar sentences with singular indefinites discussed in section 2 were odd. This is good evidence that *usually* quantifies over situations in the case of sentences with plural definites as well.

In the next section we turn to the coincidence constraint, which also sets sentences containing frequency adverbs like *usually* apart from sentences with quantificational DPs as well as from ones containing the Q-adverb *for the most part*.

6 The Coincidence Constraint

6.1 Empirical evidence

As already mentioned in section 1, (9a), repeated as (46a), with the Q-adverb *usually* is odd, whereas a corresponding sentence with the Q-adverb *for the most part* or a quantificational DP headed by *most* are both perfectly acceptable:

(46) a. * The people who listened to Peter's talk at the conference last summer were usually SMART.

b. For the most part, the people who listened to Peter's talk at the conference last summer were SMART.

c. Most of the people who listened to Peter's talk at the conference last summer were SMART.

According to the interval resolution strategy, (46a) is interpreted as shown in (47) below (note that in this case the relative clause predicate is interpreted distributively again):

(47) $\exists s[in(\sigma\{x: person(x, w_0) \wedge \exists \mathbf{s_1}[\forall y \in Atom(x): \exists s_2 \leq s_1.$
$listen\_to(P.'s\ talk, y, s_2) \wedge \tau(s_2) < t_0 \wedge \mathbf{at(the\ c.\ last\ s., s_1)}\ ]\}, s)$
$\wedge\ \mathbf{\tau(s) \subseteq \tau(s_1)} \wedge \exists s_3 \leq s\ [|s_3| > ½\,|s|$
$\wedge\ \forall y \in Atom(\sigma\{x: person(x, s_3) \wedge ...\}): \mathbf{\exists s_4 \leq s_3}.\ smart(y, s_4)$
$\wedge\ \mathbf{t_0 \subseteq\ \tau(s_4)}]]$

Nothing we have said so far explains the oddity of (46a): there is no contradiction between the temporal location of the restrictor situation *s*, and the temporal location of the nucleus situation s_3. Nevertheless, (46a) is odd, which means that it has to violate some other constraint, which has not yet been identified.

Intuitively, the crucial factor setting (46a) apart from (40a) is the internal constitution of the respective relative clause situations: in the case of (46a), it is natural to assume that the temporal traces of the smaller situations that make up s_1 all coincide temporally. This is due to the following two facts: first, the definiteness of the DP *Peter's talk* requires that everyone listened to the same talk. Second, if one listens to a talk, one normally listens to it from start to finish. Therefore, the temporal traces of all parts s_2 of s_1 such that s_2 is a situation of an atomic part of the plural individual defined above listening to Peter's talk coincide temporally. In the case of (40a), on the other hand, this is different. There, the temporal traces of the atomic situations that the relative

clause situation consists of do not have to coincide, as the talks given at a conference are normally distributed over the whole duration of this conference. We will see that this difference in the internal constitution of the relative clause situation also has consequences for the internal constitution of the restrictor situation, as – due to the interval resolution strategy – the restrictor situation is temporally located within the temporal trace of the relative clause situation. But before going into the details, let us first check whether our speculation is on the right track that the internal constitution of the respective relative clause situation is the relevant factor.

Consider (48a) below, which does not receive a QV-reading and is therefore very odd (in contrast to the variants in (48b, c)): also in this case it is intuitively clear that the atomic situations the relative clause situations consist of take place at the same time.

(48) a. * The people who were killed in the car accident yesterday afternoon were usually less than 20 years old.

b. For the most part, the people who were killed in the car accident yesterday afternoon were less than 20 years old.

c. Most of the people who were killed in the car accident yesterday afternoon were less than 20 years old.

Note furthermore that (49) below is only acceptable if it is interpreted in a specific way, namely if one is willing to assume that Peter did not meet all of his colleagues at the same time, but during the course of the afternoon:

(49) The people Peter met yesterday afternoon were usually colleagues of his.

Finally, as noted by Nakanishi and Romero (2004) themselves, sentence (50a) below (their example (52a)) is unacceptable, while the minimally varying (50b), where *usually* has been replaced by *for the most part* is fine. Also in this case it is natural to assume that the unacceptability of the variant with *usually* is due to the fact that all atomic parts of the relative clause situation necessarily coincide temporally – due to the progressive aspect on the verb[10].

(50) a. * The students sitting over there now are usually smart.

b. For the most part, the students sitting over there now are smart.

It thus seems that our speculations are on the right track. In the next section, we will therefore offer an analysis that rests on the idea that the internal constitution of the respective relative clause situations in combination with the *interval resolution strategy* is responsible for the unacceptability of the sentences discussed in this section.

6.2 The analysis

Let us assume that Q-adverbs like *usually* are not allowed to operate on complex situations of any kind, but only on complex situations that satisfy a certain condition concerning the temporal distribution of their atomic parts. The first

[10] In their brief discussion, Nakanishi and Romero (2004) speculate that the unacceptability of (50a) is due to the fact that Q-adverbs like *usually* may only quantify over generic situations that satisfy the respective predicate. This is based on the observation that (i) below, where the relative clause verb is marked for generic tense, is fine.

(i) The students who sit over there are usually smart
(Nakanishi and Romero (2004): ex. (51a)).

The problem with this explanation is that it does not cover the acceptable cases discussed in sections 5 and 6, where surely no generic tense is involved. Note furthermore that example (i) is presumably best analyzed in the way discussed in section 3, i.e. as a case where the denotation of the definite DP varies with the situations quantified over.

option that might come to mind would be to only allow a Q-adverb of this class to be applied to a complex situation if this situation consists of atomic parts such that there is no temporal overlap between those parts. This, however, would be too strong: it does not seem to be required that there is no temporal overlap at all between the temporal traces of the respective atoms. Intuitively, a sentence like (40a) above does not become unacceptable if it is uttered in a situation where it is clear that some of the talks mentioned took place at the same time. It seems to be sufficient that at least a substantial portion of them took place at different times. Let us therefore assume that Q-adverbs like *usually* are only allowed to operate on complex situations that consist of atomic parts such that it is not the case that the temporal traces of a substantial proportion among those atoms overlap.

Interestingly, Lasersohn (1995) and Zimmermann (2003) have argued that a similar constraint is operative in the interpretation of pluractional elements such as *occasionally*, *again and again*, etc., where it is also required that the respective atomic events/situations do not overlap.[11]

Note, however, that our above assumption does not automatically account for the oddity of sentences like (46a), (48a) and (50a): after all, it is the respective relative clause situation that would violate the constraint just sketched, not the restrictor situation. But then, as already mentioned, the *interval resolution strategy* forces the respective restrictor situation to be located within the temporal trace of the respective relative clause situation. It is therefore not completely surprising that the internal constitution of the latter has an influence on the internal constitution of the former. But in order to see how this works, it

[11] In fact, the constraint operative in these cases seems to be even stronger: it is not only required that the atomic events/situations do not overlap, but that they are clearly separated in time (cf. Lasersohn 1995 and Zimmermann 2003).

has to be clarified first how the temporal trace of a complex situation that is defined on the basis of its atomic parts is to be determined.

Let us assume that this is done in the most obvious way: the temporal trace of such a complex situation *s* is the smallest discontinuous interval that includes the temporal traces of all atomic parts of *s*. This is given more formally in (51) below:

(51) $\tau(s)$ if *s* is a complex situation that is defined on the basis of its atomic parts :=
$\iota t.\ \forall s_1[s_1 \in \mathrm{Atom}(s) \rightarrow \tau(s_1) \subseteq t] \wedge \forall t_1[\forall s_2[s_2 \in \mathrm{Atom}(s) \rightarrow \tau(s_2) \subseteq t_1] \rightarrow t \subseteq t_1]$

Note that $\tau(s)$ in the formula above is understood to be discontinuous if the atoms that make up *s* are temporally distributed, i.e. $\tau(s)$ does not contain the stretches of time that lie in between the temporal traces of those atoms.

On the basis of (51), the temporal trace of a complex situation *s* is included in the temporal trace of another complex situation s_1 if the smallest (discontinuous) interval that includes the temporal traces of all atomic parts of *s* is included in the smallest (discontinuous) interval that includes the temporal traces of all atomic parts of s_1.

At this point, it becomes relevant that the interval denoting the temporal trace of a complex situation is understood to be discontinuous if the temporal traces of the atoms this complex situation consists of are temporally distributed: this has the consequence that for each atomic part s_2 of a complex situation *s* such that the temporal trace of *s* is included within the temporal trace of a complex situation s_1 there has to be a corresponding atomic part s_3 of s_1 such that the temporal trace of s_2 is included in the temporal trace of s_3. This is given more formally in (52) below:

(52) If s and s_1 are both complex situations (in the above sense), and if $\tau(s) \subseteq \tau(s_1)$, then:
$\forall s_2[s_2 \in \text{Atom}(s) \rightarrow \exists s_3\,[s_3 \in \text{Atom}(s_1) \wedge \tau(s_2) \subseteq \tau(s_3)]]$

Let us now return to the question why the internal constitution of the relative clause situation in a sentence like (46a) has an influence on the acceptability of the clause. In (53), the condition discussed above is added to the denotation of *usually*[12] that not all the atomic parts of the restrictor situation may have overlapping running times.

(53) $[[\text{usually}]]_2 = \lambda P \lambda Q.\ \exists s\,[Q(s) \wedge C(s) \wedge \neg\forall s_2, s_3 \in \text{Atom}(s): \tau(s_2)\ o\ \tau(s_3) \wedge \exists s_1 \leq s\,[|s_1| > ½\,|s| \wedge P(s)]]$

With this assumption in place, the unacceptability of a sentence like (46a) is an automatic consequence of (52) above: due to the *IRS*, the temporal trace of the restrictor situation *s*, which is a situation that includes all the people who listened to Peter's talk at the conference last summer, has to be included in the temporal trace of the relative clause situation s_1, which is the situation of these people listening to Peter's talk. This has the consequence that for each atomic part s_2 of *s* that includes one of these people there has to be a corresponding listening situation s_3, which is an atomic part of s_1, such that the temporal trace of s_2 is included in the temporal trace of s_3. Therefore, if the temporal traces of all atomic parts s_3 of s_1 coincide – as it is the case with people listening to a talk from start to finish – , it will also necessarily be the case that all atomic parts s_2 of *s* coincide.

[12] This is probably too weak. Rather, what seems to be required is the condition that for a substantial proportion of the respective atomic situations it is the case that their temporal traces do not overlap (see the discussion above). We have, however, employed the condition in (53) in order to keep things simpler, as this is sufficient for our present purposes.

This has the consequence that (46a) is necessarily contradictory under a QV-reading: it could only be true under the condition that the temporal traces of all atomic parts of the restrictor situation *s* coincide (as the *IRS* forces them to be resolved to the temporal traces of the atomic listening situations), while at the same time there are some atomic parts of the restrictor situation *s* such that the temporal traces of those atomic parts do not overlap (this follows from the condition added to the meaning of *usually* in (53)). In order to see this, consider the truth conditions of (46a), repeated below as (54a), in (54b). (Note that *o* stands for "overlaps").

(54) a. * The people who listened to Peter's talk at the conference last summer were usually SMART.

b. $\exists s[\text{in}(\sigma\{x\text{: person}(x, w_0) \wedge \exists s_1[\forall y \in \text{Atom}(x)\text{:}$
$\exists s_2 \leq s.\ \text{listen\_to}(\text{P.'s talk}, y, s_2) \wedge \tau(s_2) < t_0$
$\wedge\ \text{at}(\text{the c. last s.}, s_1)\ ]\}, s) \wedge \tau(s) \subseteq \tau(s_1)$
$\wedge \neg\forall s_3, s_4 \in \text{Atom}(s)\text{: } \tau(s_3)\ o\ \tau(s_4) \wedge \exists s_5 \leq s\ [|s_5| > ½\,|s|$
$\wedge\ \forall y \in \text{Atom}(\sigma\{x\text{: person}(x, s_5) \wedge ...\})\text{:}$
$\exists s_6 \leq s_5.\ \text{smart}(y, s_6) \wedge t_0 \subseteq\ \tau(s_6)]]$

The oddity of sentences like (54a) is thus explained under the assumption that the QV-reading is blocked because it results in a necessary contradiction – similarly to the cases where tense agreement was violated.

In this and the preceding section we have argued that the fact that sentences containing Q-adverbs like *usually* have to obey two newly observed constraints in order to get QV-readings is best explained under the following assumptions: Q-adverbs of this kind only quantify over (minimal) situations, and the two constraints apply to situations, but not to individuals. Now, as already mentioned, sentences that contain the Q-adverb *for the most part* pattern with sentences containing quantificational DPs – i.e. unambiguous individual quantifiers –, not with sentences containing Q-adverbs like *usually*, as far as

those constraints are concerned. This makes it unlikely that *for the most part* quantifies over situations. On the other hand, Nakanishi and Romero (2004) have argued that *for the most part* quantifies over events, which are more or less analogous to minimal situations (see Herburger 2000 and Elbourne 2005 for discussion). In the next section, we will thus deal with the arguments put forth by Nakanishi and Romero (2004), and argue for an alternative account of their data, according to which *for the most part* quantifies directly over the atomic parts of plural individuals.

7 *For the most part*: Quantification Over Events or Individuals?

As already discussed in section 4.1, Nakanishi and Romero (2004) assume that QVEs in sentences like (26a) (repeated below as (55a)) arise as indirect effects of event-quantification. According to their account, the sentence is thus interpreted as shown in (55b):

(55) a. For the most part, the students admire $[\text{Mary}]_F$.

b. $\exists e[*\text{admire}(e) \wedge \text{Agent}(e, \text{the students}) \wedge \exists e'[e' \leq e \wedge |e'| \geq \frac{1}{2}|e| \wedge \forall e''[e'' \leq e' \rightarrow \text{Theme}(e'', \text{Mary})]]]$ (op. cit.: (31a,b)).

The assumption that *for the most part* quantifies over events, not over individuals in such cases is mainly based on the following observation: while sentences containing quantificational DPs of the form *most of the NP* allow for collective readings in addition to distributive readings when the matrix verb is an activity verb or an accomplishment verb, sentences containing the Q-adverb *for the most part* only allow distributive readings even in those cases. In order to see this, consider the contrast between (56b, c), on the one hand, and (57a, b), on the other:

(56) a. States: Most of the bottles are too heavy to carry.
*collective, √distributive.

b. Activities: Most of the boys lifted the piano.
√collective, √distributive.

c. Accomplishments: Most of the boys built a raft.
√collective, √distributive.

d. Achievements: Most of the girls found a cat.
?collective, √distributive (op. cit.: (8a-d)).

(57) a. Activities: For the most part, the boys lifted the piano.
*collective, √distributive.

b. Accomplishments: For the most part, the girls built a raft.
*collective, √distributive (op. cit.: ex. (14a, b)).

In the case of *most of the NP* Nakanishi and Romero (2004) argue for a semantics according to which an existential quantifier over a group is introduced such that the cardinality of this group is greater than half the cardinality of the group denoted by *the NP*. Furthermore, they assume (based on Brisson's 1998, 2003 analysis of *all the NP*s) that *most* signals the presence of the distributivity operator *D* (cf. section 4.2), and that "activities and accomplishments, but not states and achievements, are syntactically decomposed into two VPs [...]: a lower VP whose head is a state and a higher VP whose head is the abstract verb DO" (op. cit.: 4). This has the consequence that there are two possible insertion sites for the *D*-operator with activities and accomplishments: either the higher VP, or the verb DO. In the former case, we get a distributive reading, while in the latter case we get a collective reading, according to which for every atomic part of the respective group there is a different DOing event which is a part of the respective collective event. This is shown in (58) below, where the two readings of (56b) above are given:

(58) a. Distributive: $\exists e \exists x$ [x ≤ [[the boys]] ∧ |x| > ½ |[[the boys]]|
∧ ∀z [z≤x → ∃e´ [e´≤e ∧ lift(e´, the piano)
∧ ∃e´´[e´´≤e´ ∧ DO(e´´) ∧ Agent(e´´, z)]]]]

b. Collective: $\exists e \exists x$ [x ≤ [[the boys]] ∧ |x| > ½ |[[the boys]]|
∧ lift(e, the piano) ∧ ∃e´ [e´ ≤ e ∀z [z≤x →
∃e´´ [e´´≤e´ ∧ DO(e´´) ∧ Agent(e´´, z)]]]]
(op. cit.: (11a, b)).

Concerning *for the most part*, on the other hand, Nakanishi and Romero (2004) not only assume that this Q-adverb quantifies over events instead of individuals, but they furthermore build distributivity directly into the meaning of the Q-adverb itself, as is evident from (59) below, where we indicate the truth conditions that Nakanishi and Romero (2004) assume for sentences of the form *For the most part NP VP* (see section 4.1).

(59) $\exists e[\mathbf{p}(e) \wedge \exists e´[e´ \leq e \wedge |e´| \geq ½ |e| \wedge \forall e´´[e´´ \leq e´ \rightarrow \mathbf{q}(e´´)]]]$
(op. cit.: 8),

where **p** corresponds to the denotation of the non-focal part of the clause, while **q** corresponds to the denotation of the focal part.

These truth conditions ensure that QVEs and distributivity always go hand in hand. This is a consequence of the fact that in order for a sentence like (55a) to get a QV-reading (as given in (55b) above), two conditions must be satisfied: (a) the plural definite is interpreted as part of the restrictor because it is non-focal, and (b) there is a 1:1-mapping between the parts of the respective general event and the atomic parts of the sum individual denoted by the plural definite. But as soon as these two conditions are satisfied, it is clear that the sentence gets a distributive reading. Nakanishi and Romero (2004) thus account for the observed difference between sentences of the form *most of the NP VP* and sentences of the form *for the most part NP VP*.

Now, our discussion so far implies that if a sentence does not have to obey the tense agreement constraint and the coincidence constraint, no quantification over (minimal) situations (which are roughly equivalent to events) is involved. But, as already mentioned in section 1, sentences with *for the most part* are perfectly fine even if those constraints are violated – just like sentences containing quantificational DPs:

(60) a. For the most part, the people who lectured at the conference last summer are SMART.

b. For the most part, the people who listened to Peter's talk at the conference last summer are SMART.

We are therefore facing a dilemma, as there seems to be conflicting evidence with respect to the question whether *for the most part* quantifies over situations or over individuals. In principle, two solutions are conceivable: according to the first one, the two constraints discussed in sections 5 and 6 do not signal quantification over situations (or events) per se, but rather signal that Q-adverbs like *usually*, *always* etc. are sensitive to the temporal parameter of situations. According to the second one, *for the most part* quantifies over individuals, but its meaning is defined in such a way that distributivity is guaranteed nonetheless.

In the remaining part of this section, we sketch an analysis of *for the most part* that is in accordance with the second solution, which seems to be more attractive to us: after all, why should there be two kinds of quantifiers which apply to the same domain (namely events), but impose different restrictions on the elements in this domain? Note furthermore that in the case of sentences with question embedding predicates, too, there is evidence that QVEs come about via quantification over situations or events if those sentences contain Q-adverbs like

usually, while there is no such evidence if those sentences contain Q-adverbs like *for the most part*. Rather, the Q-adverbs in these cases seem to quantify over the atomic parts of the answer to the question denoted by the respective wh-CP directly (Lahiri 2002; but see Beck and Sharvit 2002 for a slightly different analysis), i.e. over the individual propositions that constitute the complete answer to the respective question. In order to see the point, consider the sentences in (61) below:

(61) a. John usually knows who comes to Mary's parties.

b. For the most part, John knows who comes to Mary's parties.

c. ?? John usually knows who came to the party yesterday evening.

d. For the most part, John knows who came to the party yesterday evening.

Intuitively, (61a) quantifies over situations where a question of the following form comes up: *who comes to Mary's party?*, where a different party is at stake in each situation, and it is true if more than half of those situations are also situations where John knows the answer to the respective question. (61b), on the other hand, is true if John can enumerate most people who come to Mary's parties, i.e. if he knows more than half of the propositions that together constitute the complete answer to that question.

That we are on the right track is evidenced by the contrast between (61c) and (61d): in the case of (61c), there is only one single question (due to the indexical element *yesterday*), and it is very unlikely that John's ability to answer this question differs on various occasions (at least in the absence of a special context). The sentence is therefore degraded. In the case of (61d), on the other hand, there is no such problem, for obvious reasons.

While a detailed discussion of QVEs in the case of sentences with question-embedding predicates is beyond the scope of this paper, the differences discussed support our assumption that adverbs of frequency like *usually* unambiguously quantify over situations (or events) and that this is different for adverbs of quantity like *for the most part*. Of course, *for the most part* in (61b, d) above does not quantify over individuals, either. The most plausible assumption would thus be to assume that adverbs of quantity apply to objects of any kind, as long as those objects can naturally be decomposed into parts (cf. Lahiri 2002). This is further evidenced by the example below, where *for the most part* intuitively quantifies over the parts into which Mahler's fifth symphony can be decomposed – for example, the single movements.

(62) For the most part, Adorno liked Mahler's fifth symphony.

We therefore assume that *for the most part* takes individuals of all kinds – abstract ones as well as concrete ones, and atomic individuals as well as sum individuals – that have parts as one of its argument, and a relation between individuals and situations as its other argument. Furthermore, we assume that it yields the value *true* if there is a part *y* of the respective individual *x* whose cardinality is more than half the cardinality of *x* such that for all parts *z* of *y* there is a situation *s´* such that *z* and *s´* stand in the respective relation to each other:

(63) $[[\text{for the most part}]] = \lambda P_{<e, <s, t>>} \lambda x.\ \exists s \exists y\ [y \leq x \wedge |y| > ½ |x| \wedge \forall z\ [z \leq y \rightarrow \exists s´\ [s´ \leq s \wedge P(y, s´)]]]$

As *for the most part* may either be adjoined to the vP or to the clause as a whole, it needs to be ensured that it combines with its two arguments in the right order. Remember furthermore that *for the most part* is sensitive to information

structure in the same way as adverbs of frequency like *usually*: QV-readings only come about if the respective DP is de-accented.

We therefore assume that the mapping algorithm discussed in section 4.2 also applies in the case of *for the most part*: topical DPs are not allowed to be interpreted in the nuclear scope of a Q-adverb and therefore need to be moved out of the c-command domain of this Q-adverb at LF. Furthermore, we assume that such DPs adjoin directly above the Q-adverb, leaving behind a full copy. Concerning this lower copy, however, one of the other options mentioned in section 4.2 is chosen: it is interpreted as a variable that is bound by a lambda-operator inserted beneath the higher copy, which gets its standard interpretation. Note, however, that we need to assume that this lambda-operator is not inserted *directly* beneath the higher copy (as in Heim and Kratzer 1998), but rather beneath the Q-adverb that the higher copy has been adjoined to – otherwise, we would not create the relation between situations and individuals that the Q-adverb takes as one of its arguments. We thus need to assume some flexibility with respect to the insertion site of the lambda-operator, as far as the interpretation of chains is concerned[13].

Applying this to our example (55a) above (which is repeated below as (64a)), we get the (simplified) LF-representation in (64b) below:

(64) a. For the most part, the students admire $[\text{Mary}]_F$.

[13] Cf. Chierchia (1995b: chapter 3), who adopts an unselective binding approach to adverbial quantification. According to this approach, topical indefinites have to be adjoined to the respective Q-adverb (just like in our approach), leaving behind traces that are interpreted as variables. Furthermore, those variables are bound by a lambda-operator that is inserted beneath the respective Q-adverb. Concerning the moved indefinites (or, in our terminology: the higher copies), they are turned into predicates that the respective Q-adverb can apply to via a mechanism called existential disclosure (Dekker 1993) (note that Chierchia 1995b works within the framework of *dynamic semantics*; see Groenendijk and Stokhof 1990).

b. [$_{TP}$The students[$_{TP}$for the most part λ_x [$_{TP}$ x admires Mary]]].

(64b) is then interpreted as follows: the denotation of *for the most part* in (63) is first applied to the denotation of the TP-segment it c-commands, and then to the sum individual denoted by *the boys*, as shown in (65) below.

(65) $\lambda P_{<e, <s, t>>} \lambda x.\ \exists s \exists y\ [y \leq x \wedge |y| > ½ |x| \wedge \forall z\ [z \leq y \rightarrow \exists s'\ [s' \leq s \wedge P(z, s')]]]$
$(\lambda y \lambda s.\ \text{admires}(\text{Mary}, y, s))\ (\sigma\{z: \text{student}(z, s^*)\}) =$
$\exists s \exists y [y \leq \sigma\{z: \text{student}(z, s^*)\} \wedge |y| > ½ |\sigma\{z: \text{student}(z, s^*)\}|$
$\wedge \forall z\ [z \leq y \rightarrow \exists s'\ [s' \leq s \wedge \text{admires}(\text{Mary}, z, s')]]]$

Given these assumptions, it is expected that neither the tense agreement constraint nor the coincidence constraint apply in the case of sentences like (60a) and (60b), as no quantification over situations (or events) is involved. Furthermore, our analysis accounts for the fact that QVEs go hand in with distributivity as well as for the fact that *for the most* part is sensitive to information structure.

Note that our analysis is able to account for the following observation of Nakanishi and Romero (2004) as well: in addition to the QV-readings discussed above, sentences containing this Q-adverb also get what Nakanishi and Romero call *quantification over times readings* and *temporal span readings*. They give examples like the ones below:

(66) a. Quantification over times reading

Q: What tasks did John perform last month?
A: For the most part, he cooked.
≈ Most of the times he performed a task, the task consisted of cooking. (op. cit.: (15)).

b. Temporal span reading

Q: What did Amy do yesterday?
A: For the most part, she was building a sand castle.
≈ Most of yesterday was spent by Amy in building a sand castle.
(op. cit.: (16)).

Nakanishi and Romero (2004) explain the existence of such readings as follows: in the cases under consideration, there is no 1:1 mapping between the parts of the respective restrictor events and the parts of a sum individual that stands in some thematic relation to this restrictor event (as in "QV-cases"). Rather, the parts of the respective event are determined on the basis of their temporal location. If those parts are discontinuous, we get the *quantification over times reading*, while if they are continuous, we get the *temporal span reading*.
Now, note that in contrast to the "QV-examples" discussed above, the *quantification over times reading* as well as the *temporal span reading* is unavailable (or at least very hard to get) if no temporal adverbial denoting a definite time interval has been introduced in the immediate context (as in the examples above):

(67) a. ?? For the most part, John cooked.

b. ?? For the most part, Amy was building a sand castle.

This is unexpected under Nakanishi and Romero's analysis: it should be unproblematic to divide a given event into several (either continuous or discontinuous) units on the basis of its running time. Our analysis, on the other hand, predicts it: recall that *for the most part* needs an expression of type *e* as one of its arguments that can be divided into parts. Therefore, we only need to make the following assumptions in order to explain the pattern above:

- Adverbials like *yesterday*, *last month* etc. denote abstract individuals (namely time intervals), which can naturally be divided into either continuous or discontinuous units.
- These expressions function as elliptical topics in the examples above, which has the consequence that *for the most part* can take them as one of its arguments.
- Furthermore, the respective clauses are interpreted as predicates that hold of the parts of the respective time interval.

The *quantification over times reading* of the answer in (66a) can thus be represented as shown in (68a), and the *temporal span reading* of the answer in (66b) can be represented as shown in (68b) below (abstracting away from the semantics of the progressive aspect):

(68) a. $\exists s \exists y\, [y \leq [[\text{last month}]] \wedge |y| > ½\, |[[\text{last month}]]| \wedge \forall z\, [z \leq y \rightarrow \exists s'\, [s' \leq s \wedge \text{cooked}(\text{John}, s', z)]]]$

b. $\exists s \exists y\, [y \leq [[\text{yesterday}]] \wedge |y| > ½\, |[[\text{yesterday}]]| \wedge \forall z\, [z \leq y \rightarrow \exists s'\, [s' \leq s \wedge \text{was\_building\_a\_sand\_castle}(\text{Amy}, s', z)]]]$

This concludes our discussion of the semantics of *for the most part*.

8 Conclusion

In this paper we have discussed QVEs in sentences containing plural definites. We have argued that frequency adverbs like *usually* unambiguously quantify over situations – either over the elements of a set of situations, or over the atomic parts of a complex situation – while adverbs of quantity like *for the most part* unambiguously quantify over the atomic parts of (either abstract or concrete) individuals. This conclusion was based on the fact that sentences containing frequency adverbs behave differently from sentences containing

adverbs of quantity with respect to two newly observed constraints: the tense agreement constraint, and the coincidence constraint. While sentences of the former type have to obey these constraints in order to be grammatical, this is not the case for sentences of the latter type. Furthermore, sentences containing adverbs of quantity pattern with sentences containing quantificational DPs in this respect. We have argued that both constraints concern the temporal location of situations, and that the contrast between sentences containing frequency adverbs and sentences containing adverbs of quantity thus shows that only in the former quantification over situations is involved.

An interesting remaining question is what the deeper motivation behind these two constraints is. Concerning the tense agreement constraint, a plausible answer would run as follows: being spatiotemporal creatures, situations need to be located in time, and this is preferably done on the basis of locally available information. Concerning the coincidence constraint, we would like to suggest the following answer: quantification involves establishing a relation between the cardinalities of two sets of elements. This, however, is only possible if the respective elements can be clearly individuated. Otherwise the ban against vacuous quantification (Kratzer 1995) would be violated. Now, it is notoriously difficult to individuate situations or events (in contrast to ordinary individuals). The requirement that the situations quantified over by a Q-adverb need to have non-overlapping temporal traces can thus be seen as a means to facilitate the individuation of these situations.

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Morphological Focus Marking in Gùrùntùm (West Chadic)*

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The paper presents an in-depth study of focus marking in Gùrùntùm, a West Chadic language spoken in Bauchi Province of Northern Nigeria. Focus in Gùrùntùm is marked morphologically by means of a focus marker *a*, which typically precedes the focus constituent. Even though the morphological focus-marking system of Gùrùntùm allows for a lot of fine-grained distinctions in information structure (IS) in principle, the language is not entirely free of focus ambiguities that arise as the result of conflicting IS- and syntactic requirements that govern the placement of focus markers. We show that morphological focus marking with *a* applies across different types of focus, such as new-information, contrastive, selective and corrective focus, and that *a* does not have a second function as a perfectivity marker, as is assumed in the literature. In contrast, we show at the end of the paper that *a* can also function as a foregrounding device at the level of discourse structure.

Keywords: morphological focus marking, focus ambiguity, focus types, foregrounding

1 Introduction

In this paper, we present an in-depth study of focus marking in Gùrùntùm, a West Chadic language spoken in Bauchi province of Northern Nigeria. In the remainder of this section, we lay out our ideas on the notion of focus as an

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information-structural (IS) category, and present some background information on Gùrùntùm. In section 2, we present the basic pattern of focus marking in Gùrùntùm: Focus is marked by means of a morphological focus marker *a*, which usually precedes the focus constituent. Section 3 discusses predicate focus on V/VP and focus on parts of complex NPs. We show that focus marking is subject to at least two syntactic restrictions that sometimes give rise to focus ambiguity. Section 4 shows that all types of focus (new-information, contrastive, selective, corrective) are marked alike by means of the focus marker *a*. Section 5 shows that *a* does not have a secondary function as a perfectivity marker despite claims to the contrary in the literature. In contrast, section 6 shows that *a* also functions as a foregrounding device at the level of discourse: It serves to highlight bounded events that contribute to the main story line of a narrative sequence. In this function, the *a*-marker often combines individual sentences into larger informational units. Section 7 concludes.

1.1 Focus as an information-structural category

We adopt the following definition of *focus*: *Focus* stands for that information component that is new or important in the sense that the speaker assumes it not to be shared by him and the hearer (Jackendoff 1972). We further assume, following Rooth (1985, 1992), that a focused constituent α ($[\alpha]_F$) invokes a set A of alternatives to α from which α is chosen. Depending on the interaction of α with its alternatives, a focus can be used in different ways, giving rise to several focus types: (i.) a focus expresses *new-information* if α introduces an element of A into the common ground and A is implicit (1a); (ii.) a focus is *corrective* if α replaces an element of A introduced into the common ground in the preceding context (cf.1b); (iii.) a focus is *selective* if α introduces an element of A into the

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common ground, and α is chosen from a subset of A whose members have been explicitly mentioned in the preceding context (cf.1c). Focus is called *contrastive* if α juxtaposes an element of A to one or more explicitly mentioned elements of A that belong to the same syntactic category and the same semantic word field (cf.1d).

(1) a. (Which color did Peter paint his bicycle?) He painted it $[blue]_F$.
α = blue, A = {blue, red, green, pink,…}
b. (Peter painted his bicycle red.) No, he painted it $[blue]_F$.
α = blue, A = {blue, red, green, pink,…}
c. (Did Peter paint his bicycle red or blue?) He painted it $[blue]_F$.
α = blue, A = {blue, red, green, pink,…}
d. Paul painted his bicycle $[red]_F$, and Peter painted it $[blue]_F$.
α = blue, A = {blue, red, green, pink,…}

1.2 Background information on Gùrùntùm

Gùrùntùm is a highly endangered language spoken by less than 10.000 people (in 1988) in the South West corner of Bauchi Province/Northern Nigeria. It belongs to the South Bauchi group of the West Chadic B-subbranch of the Chadic family (Afro-Asiatic phylum) (see Newman 1977). Linguistic information on Gùrùntùm is scarce. The two main sources are a grammatical sketch plus word list by Jaggar (1988), and a grammar by Haruna (2003). Our data were elicited from Al Haji Umaru Muhamed Gùrùntùm, an approximately 50-year old native speaker of the Gùrdùŋ-Kùukù dialect.

The neutral word order in Gùrùntùm is SVO, as shown in (2) (Haruna 2003:121). Aspectual information is generally marked by independent morphemes, such as the progressive marker *bà* in (2) (Haruna 2003:83).

Daniel Hole for comments and discussion.

(2) Tí bà wúm kwálíngálá.
3SG PROG chew colanut
'He is chewing colanut.'

At the phonological level, Gùrùntùm is a tone language with two level tones H (´) and L (`), plus a falling (^) and (very rarely) a rising tone combination (Haruna 2003:26).

2 The Basic Pattern of Focus Marking in Gùrùntùm

This section presents the basic pattern of focus marking in Gùrùntùm. The central observation is that focus in Gùrùntùm is morphologically marked by a focus marker *a*: With focused terms, such as arguments and adjuncts, *a* precedes the focus constituent. A second observation concerns the phonological behaviour of the focus marker *a*: If *a* follows directly on the main verb, e.g. if it marks the following object for focus, it cliticizes onto the verb prosodically.

In 2.1, we show that focus marking consistently occurs with all major constituents. In 2.2, it is shown that focus marking is consistent across tenses or aspects. In 2.3, we show that the focus constituent can occur *in situ* or *ex situ*, as long as it is preceded by the focus marker *a*.

2.1 Consistent focus marking on all major constituents

The following data show that morphological focus marking by means of *a* is consistent across categories in Gùrùntùm. Compare the neutral (all-new) sentence in (2), with instances of narrow constituent focus in (3) and (4). (3a) and (4a) illustrate subject focus, (3b) and (4b) illustrate focus on the direct object. Throughout, we mark the focus constituent in the Gùrùntùm examples by italics, and narrow constituent focus in the English paraphrases by capitals.

(3) a. **Á** *kwá* bà wúm kwálíngálá-ì?
FOC who PROG chew colanut-DEF
'WHO is chewing the colanut?'

Á *fúrmáyò* bà wúm kwálíngálá.
FOC fulani PROG chew colanut
'THE FULANI is chewing colanut.'

b. **Á** *kãã̀* mài tí bà wúmì? Tí bà wúm-**á** *kwálíngálá*.
FOC what REL 3SG PROG chew 3SG PROG chew-FOC colanut
'WHAT is he chewing?' 'He is chewing COLANUT.'

(4) a. **Á** *kwá* bà nyòolí g^{y}òo-i?
FOC who PROG write message-DEF
'WHO is writing the message?'

Á *Hàfsá* bà nyòolí g^{y}òo-i.
FOC Hàfsá PROG write message-DEF
'HAFSA is writing the message.'

b. **Á** *kãã̀* mài tí bà nyòolí? Tí bà nyòol-**á** *g^{y}òo*.
FOC what REL 3SG PROG write 3SG PROG write-FOC message
'WHAT is he writing?' 'He is writing A MESSAGE.'

Notice that the focus marker prosodically cliticizes onto the immediately preceding verb in (3b) and (4b). There are two kinds of evidence for cliticization of the focus marker on the preceding verb: First, verb and focus marker are prosodically phrased as one unit, and the following constituent as another. This means that if there is a pause in the clause, it will be located between focus marker and object, and not between verb and focus marker. Second, the final vowel of the verb is elided, as is normally the case before direct objects, and the focus marker is assigned the tone of the elided vowel, thus preserving the underlying tonal structure of the verb. In section 5.3, we will turn to the tonal behaviour of the focus marker *a* in more detail. It will be argued that the focus marker *a* is lexically unspecified for tone, and that its surface tone

systematically follows from its syntactic and phonological context. For the moment, suffice it to say that the surface tonal shape of *a* is not fixed in Gùrùntùm. In some cases, *a* carries a low tone, in others it carries a high tone.

The examples in (5) and (6) illustrate constituent focus on indirect objects and on locative adjuncts, respectively. Compare, once again, (6a) with focus on the locative *gǎ̃ã shìndí* 'on the stone' with its neutral (all-new) counterpart without focus marker in (6b).

(5) Tí bà wúr má-ì **à** *kwá*?
3SG PROG bring water-DEF FOC who
'TO WHOM is he bringing the water?'

Tí bà wúr má-ì **à** *báa-sì*.
3SG PROG bring water-DEF FOC father-his
'He is bringing the water TO HIS FATHER.'

(6) a. Tí bà dáan-**à** *yâu*?
3SG PROG sit-FOC where
'WHERE is he sitting?'

Tí bà dáan-**à** *gǎ̃ã shìndí*.
3SG PROG sit-FOC head stone
'He is sitting ON THE STONE.'

b. Tí bà dàa gǎ̃ã shìndí.
3SG PROG sit head stone
'He is sitting on the stone.'

So far, we have restricted our attention to focus marking on nominal categories such as arguments and adjuncts. In section 3, we will see that focus marking is also possible on predicative expressions, such as VP and V, with one additional complication.

2.2 Consistent focus marking across aspects/tenses

Focus in Gùrùntùm is consistently marked across aspects and tenses by means of the focus marker *a*. Focus marking in the progressive aspect has already been illustrated in (3) to (6). (7a-c) illustrate morphological focus marking in the

perfective aspect. In (7ab), focus is on the direct object. In (7c), focus is on the temporal adjunct.[1] Again, *a* cliticizes onto the immediately preceding verb.

(7) a. **Á** *kãã̀* mài tí wúmì? Tí wúm-**à** *kwálíngálá*.
FOC what REL 3SG chew 3SG chew-FOC colanut
'WHAT did he chew?' 'He chewed COLANUT.'

b. **Á** *kãã̀* mài tí vúní nvúrí? Tí vún-**á** *lúurìn*.
FOC what REL 3SG wash yesterday 3SG wash-FOC clothes
'WHAT did she wash yesterday?' 'She washed CLOTHES.'

c. Tí vún lúurìn-ì *vùr múkãã̀*? Tí vún-**à** *nvúrí*.
3SG wash clothes-DEF when 3SG wash-FOC yesterday
'WHEN did she wash the clothes?' 'She washed them YESTERDAY.'

Finally, (8ab) show focus marking in the future tense. In (8a), focus is on the direct object. In (8b), focus is on the subject.[2]

(8) a. **Á** *kãã̀* mài Àdàmú à pánì? **Á** *máa* mài Àdàmú à pánì.
FOC what REL Adamu FUT carry FOC water REL Adamu FUT carry
'WHAT will Adamu carry?' 'Adamu will carry WATER.'

---

[1] The temporal *wh*-pronoun *vùr múkãã̀* 'when' represents an exception to the rule in that it is preceded by the *a*-marker.

[2] We have found no evidence for focus marking in subjunctive clauses, e.g. in complements to intensional predicates, cf. (i):

(i) Q: **A** *kãã̀* mai ti ba ɓaa Hawwa ti pani?
FOC what REL 3SG PROG want Hawwa 3SG carry
'WHAT does he want Hawwa to carry?'

A: Ti ɓaa Hawwa si ti pan *maa*.
3SG want Hawwa COMP 3SG carry water
'He wants Hawwa to carry WATER.'

Possibly, the absence of the *a*-marker has to do with a general impossibility of focus marking in intensional contexts. A similar situation obtains in Hausa, where (syntactic) focus marking is also blocked in subjunctive contexts (Tuller 1986).

b. **Á** *kwá* à pân má-ì ? **Á** *Àdàmú* à pân má-ì.
FOC who FUT carry water-DEF FOC Adamu FUT carry water-DEF
'WHO will carry the water?' 'ADAMU will carry the water.'

2.3 Realising focus in situ or ex situ

In addition to the focus marker *a*, a non-subject constituent can be marked by realizing it *ex situ* in a left-peripheral position. More frequently, though, the focus constituent remains in its base position (*in situ*). Both options are also attested for inherently focused *wh*-expressions in *wh*-questions (see also Haruna 2003:126ff.).[3]

In (9a), the focused object is realised *ex situ* in the *wh*-question and *in situ* in the corresponding answer. In (9b), we have the same *wh*-question, but this time with the focused *wh*-expression *in situ*.[4] The focus constituent in the corresponding answer is likewise *in situ*.

(9) a. **Á** *kãã̀* mài tí yáb ng^{w}ái? Tí yáb-**à** *dòoróo* ng^{w}ái.
FOC what$_{REL}$ 3SG sell out 3SG sell-FOC goat out
'WHAT did he sell?' 'He sold A GOAT.'

b. Tí yáb-**à** *kãã̀* ng^{w}ái? Tí yáb-**à** *g^{y}ùurí* ng^{w}ái.
3SG sell-FOC what out 3SG sell-FOC millet out
'WHAT did he sell?' 'He sold (THE) MILLET.'

In (10), the focus constituent is realised *ex situ* both in the *wh*-question and in the corresponding answer:

[3] Exceptions are the *wh*-expressions *yàu* 'where' and *kə́mãã̀* 'how', which can only occur in their base position at the end of the clause (cf. Haruna 2003:130f.).

[4] Other examples with in situ *wh*-expressions are found in (5), (6a), and (7c).

(10) **Á** *kā̃ã̃* **mài** tí náa wálì?
FOC what REL 3SG catch farm
'WHAT did he catch on the farm?'

Á *fúl* **mài** tí náa wálì.
FOC cow REL 3SG catch farm
'It is a COW that he caught on the farm.'

The *ex situ* realization of non-subject foci employs a relative structure containing the relative marker *mài* (Jaggar 1988:181, Haruna 2003:121).

(11) Tí tùu már **mài** wúr móláŋ-y-à.
3PL pay man REL bring fish-DEF-FOC
'They paid the man that brought the fish.'

The presence of relative syntax argues for a cleft-structure for the *ex situ* focus-construction. Interestingly, the relative marker cannot occur with focused subjects, indicating that clefts are impossible with (focused) subjects in Gùrùntùm.[5] In (12) (tones not marked) the relative marker *mai* is absent both in the *wh*-question and in the corresponding answer.

(12) **A** *kwa* basi gobilish-i?
FOC who read book-DEF
'WHO read the book?'

A *Hafsa* (*mai) basi gobilish-i.
FOC Hafsa REL read book-DEF
'HAFSA read the book.'

It is worth pointing out that the absence of *mai* in (12) does not follow from a general impossibility of subject relativization, as witnessed by the subject relative clause in (13):

[5] Parallel facts are reported for Margi (Hoffmann 1963). The reverse pattern is found in Hdi, where focused preverbal subjects are followed by a comment marker *ta*, whereas this marker is absent with all other fronted constituents (Frajzyngier 2002).

(13) Gumar **mai** pan daabii ti ba maa bavuli.
boy REL carry basket 3SG PROG go market
'The boy that carried the basket is going to the market.'

Notice that the clefted constituent in *ex situ* constructions always has to be accompanied by the morphological focus marker *a*. In this respect, Gùrùntùm resembles intonation languages such as German or English, in which focus marking by means of accent can also, but need not be accompanied by clefting:

(14) *Context: What did Peter sell?*
a. He sold A CAT.
b. It was A CAT that he sold.

We conclude that the primary means of focus marking in Gùrùntùm is the morphological focus marker *a*. Concerning the motivation for clefting, this may have to do with pragmatic notions such as surprise, or the degree of (un)expectedness of a focus constituent in a particular discourse context: The more unexpected or surprising a focus constituent is in a particular context, the more likely is it to be realised *ex situ*. This explanation follows Hartmann and Zimmermann (t.a.), who argue that the *ex situ* realisation of focus constituents (or parts thereof) in Hausa, another West Chadic language, is best accounted for using the pragmatic notions of surprise or unexpectedness.[6] The data in (15) suggest that this pragmatic explanation may be correct for Gùrùntùm, too. In an elicitation study, our informant was asked to provide spontaneous answers to *wh*-questions of the form *What did Audu catch?* Interestingly, he chose the *in situ* variant with domestic animals, such as dog and horse (cf. 15a). With rare wild animals such

[6] That material which is more surprising, more important, or more relevant is marked in a special way is already coded in Gundel's (1988) *First Things First Principle*, Givón's (1988) principle *Attend to the most urgent task first*, or in Legendre's (2001) constraint *Align Noteworthy*.

as crocodile and leopard, on the other hand, he chose the *ex situ* variant (cf. 15b).

(15) a. **Á** *kā̃ā̃* mài Audu náa?
FOC what REL Audu catch
'WHAT did Audu catch?'

Tí ná-**a** *dùu* / *dàa*. *in situ*
3SG catch-FOC horse / dog
'Audu caught A HORSE / DOG.'

b. **Á** *kā̃ā̃* mài Áudù náa?
FOC what REL Audu catch
'WHAT did Audu catch?'

Á *gàmshí* / *gúù* mài Áudù náa. *ex situ*
FOC crocodile / leopard REL Audu catch
'Audu caught A CROCODILE / LEOPARD.'

Summing up, in addition to being marked by the focus marker *a*, non-subject foci can also be realised in a clefted structure. The obligatory presence of the morphological focus marker indicates the focus status of the constituent, whereas the trigger for clefting seems to be more pragmatic in nature and may have to do with the status of a non-subject focus constituent as surprising, noteworthy, or unexpected in a particular discourse situation.

2.4 Summary

The main observations of section 2 can be summarised as follows: First, constituent focus on arguments or adjuncts in Gùrùntùm is marked morphologically by a focus marker *a*, which precedes the focus constituent. Second, the focus marker *a* occurs in all aspects. Third, focus constituents can occur *in situ* or *ex situ* (in a cleft-like structure).

3 Focus Ambiguity and Syntactic Restrictions on Focus Marking

In this section, we consider how focus is marked on VP- or V-predicates and on parts of associative NPs. The central observation is that even though the morphological focus-marking system of Gùrùntùm allows for a lot of fine-grained distinctions in the focus structure, the language is not free of focus ambiguities. In particular, predicate focus on VP or V and object (OBJ-) focus are marked alike by placing the focus marker before the object. Likewise, focus on subparts of an associative NP and focus on the entire NPs are marked alike by putting the focus marker before the associative NP. We argue that the two instances of focus-ambiguity in Gùrùntùm follow from syntactic restrictions on the placement of the focus marker *a*.

3.1 Predicate Focus on V and VP

Turning to predicate focus first, (16a-c) show that OBJ-, V-, and VP-focus are marked in identical fashion, resulting in focus ambiguity. Even though the focus constituent is the VP in (16a) and the main verb in (16b), the focus marker does not precede the verb (phrase) as we would expect given the generalization from section 2.1. Instead, the focus marker follows the verb and precedes the direct object. The resulting structures are ambiguous to sentences with constituent focus on the direct object, as in (16c).

(16) a. **Á** *kãã̃* mài tí bà pí?
FOC what REL 3SG PROG do
'WHAT is he doing?'

Tí bà *ròmb*-**á** *g*^{w}*éì*. *VP*
3SG PROG gather-FOC seeds
'He is GATHERING THE SEEDS.'

b. **Á** *kấã* mài tí bà pí náa g^{w}éì?
FOC what REL 3SG PROG do with seeds
'WHAT is he doing with the seeds?'

Tí bà *ròmb*-**á** g^{w}éì. *V*
3SG PROG gather-FOC seeds
'He is GATHERING the seeds.'

c. **Á** *kấã* mài tí bà rómbì?
FOC what REL 3SG PROG gather
'WHAT is he gathering?'

Tí bà ròmb-**á** *g^{w}éì*. *OBJ*
3SG PROG gather-FOC seeds
'He is gathering THE SEEDS.'

(17a-c) illustrate the same focus ambiguity with another example:

(17) a. **Á** *kấã* mài tí bà pí?
FOC what REL 3SG PROG do
'WHAT is he doing?'

Tí bà *wúm*-***á*** *kwálíngálá*. *VP*
3SG PROG chew-FOC colanut
'He is CHEWING (A) COLANUT.'

b. **Á** *kấã* mài tí bà pí náa kwálíngálá-ì?
FOC what REL 3SG PROG do to colanut-DEF
'WHAT is he doing with the colanut?'

Tí bà *wúm*-**á** kwálíngálá-ì. *V*
3SG PROG chew-FOC colanut-DEF
'He is CHEWING the colanut.'

c. **Á** *kấã* mài tí bà wúmì?
FOC what REL 3SG PROG chew
'WHAT is he chewing?'

Tí bà wúm-**á** *kwálíngálá*. *OBJ*
3SG PROG chew-FOC colanut
'He is chewing COLANUT.'

Interestingly, a parallel focus ambiguity between VP-, V-, and OBJ-focus is found in Tangale, a relatively close relative of Gùrùntùm from the West Chadic group, see Hartmann & Zimmermann (2004).

The ambiguity between VP-focus and OBJ-focus is found in a wide variety of languages[7] and can be accounted for in terms of focus projection from the focus-marked constituent, the object, to a focus constituent containing the focus exponent, the VP (see Selkirk 1984, 1995). The ambiguity between narrow focus on the verb and OBJ-focus, however, is a case that has – to the best of our knowledge – never been discussed in the literature. Nor is it accounted for by standard theories of focus (projection), such as Selkirk's (1984, 1995). The main question is why narrow focus on the verb should be marked on the following object, or alternatively why the focus marker cannot precede the verb in (16b) and (17b), as well as in the VP-focus cases in (16a) and (17a).

A potential solution, suggested by Büring (2006), is that the focus marker does indeed precede the verb or the VP at an earlier stage of the derivation. In the course of the derivation, the verb moves to a higher functional head F, leaving the focus marker behind in a position preceding the object. This potential derivation is sketched schematically in (18ab):

(18) a. underlying structure:
$[_{FP}$ SUBJ F a $[_{VP}$ V OBJ]]

b. surface structure:
$[_{FP}$ SUBJ V+F a $[_{VP}$ t_V OBJ]]

[7] See e.g. Selkirk (1984, 1995) for English, Uhmann (1991) for German, Schwarz (2005) for Kikuyu, and Eaton (2005) for the Khoisan language Sandawe.

The structure in (18ab) is supported by the fact that such a process of verb movement to *Infl* has been proposed by Tuller (1992) for Tangale.

Tempting as the analysis in (18ab) may be, there are good arguments against it. First, verb movement to *Infl* in Tangale is argued to take place only in the perfective aspect because this is the only aspect without a preverbal aspectual marker. As a result, the verb has to move to *Infl* in order to enter into a checking relation with this functional head and pick up the required aspectual specification (Tuller 1992:311). In contrast, the *Infl*-position in (16) and (17) is lexically filled by the progressive auxiliary *bà*. Thus, if there was head movement of the verb in (16) and (17), leaving behind the focus marker as in (18), this movement would have to target a functional projection lower than *Infl*. We would need to stipulate this functional projection only for the sake of the movement account, somewhat reducing its appeal.

There is also a strong empirical argument against the movement account, which comes from the behaviour of sentences with narrow verb focus and a 3sg object pronoun. In Gùrùntùm, object pronouns are cliticized on the verb. Furthermore, 3sg object pronouns are covert, at least in the variant of Gùrùntùm that we investigated (see Haruna 2003 for variants in which 3sg object pronouns are overtly expressed). Interestingly, focus marking on the verb is absent with zero 3sg object pronouns, as shown in (19) and (20). Compare (19b) and (20b) with a full lexical object NP and the focus marker preceding the object NP, with (19a) and (20a), which contain a zero object pronoun and *no* focus marker:

(19) *Context: What is he doing with the car?*

a. Tí bà krí.
   3SG PROG repair
   'He is REPAIRING (it).'

b. Tí bà kr-**á** dùsó-ì.
3SG PROG repair-FOC car-DEF
'He is REPAIRING the car.'

(20) a. Ti da wasar laam-i-**a** da, ti kur**i**.[8]
3SG NEG fry meat- DEF-FOC NEG 3SG cook
'She did not fry the meat, she COOKED it.'

b. Ti da wasar laam-i-**a** da, ti kur-**a** laam-i.
3SG NEG fry meat-DEF-FOC NEG 3SG cook-FOC meat-DEF
'She did not fry the meat, she COOKED the meat.'

The empirical generalization seems to be that focused verbs without a following overt nominal object cannot be focus-marked by *a*. The movement account does not capture this generalization because it would predict the focus marker to follow the verb in (19a) and (20a), as it does in (19b) and (20b).[9] Instead, we propose the following categorial restriction on focus marking in Gùrùntùm:

(21) FOCNOM:
Focus Marking is licit only on nominal categories.

---

[8] The preverbal negation marker in (20ab) appears to be not genuine to Gùrùntùm, but probably a structural borrowing from Hausa, in which negation is marked by the negative parenthesis *ba ... bá*. As for the VP-final focus marker in the negated first clause in (20ab), as well as in (31ab) below, it does not mark narrow focus on the verb. In sections 5 and 6, it will emerge that the *a*-marker can also serve to focus on, or highlight bounded events as a whole when in sentence-final position. The *a*-marker appears to fulfill the same function in (20ab).

[9] The absence of the focus marker in (19a) and (20a) does not follow from independent phonological reasons, as will emerge in sections 5.2.1 and 6. In principle, the *a*-marker can occur in sentence-final position, following the transitive verb and a zero object pronoun (see also fn. 8). Indeed, sentences such as (i) (example taken from Haruna 2003:78) are grammatical on a neutral interpretation (wide focus). Section 6 looks at sentence-final occurrences of *a* in more detail.

(i) Tí yíl-**à**.
'He took (it) there.'

(21) requires that the focus marker *a* must precede an NP. Notice that a comparable bias for focus marking on non-verbal constituents is found in several other Chadic languages, see Hartmann & Zimmermann (2004) for details.[10] The restriction in (21) accounts for the absence of the focus marker in (19a) and (20a). Furthermore, it also accounts for the focus ambiguity between VP-, V-, and OBJ-focus with lexical object NPs, illustrated in (16) and (17). Because of (21), the focus marker *a* must precede the object in transitive VPs no matter whether object, verb, or VP is in focus.[11]

3.2 Associative NPs

A second instance of focus ambiguity is found with complex associative NPs of the form N_1 *of* N_2. It shows that narrow focus on the N_2-part and wider focus on the entire associative NP are marked in identical fashion: The focus-marker must precede the complex NP, no matter whether the complex expression N_1 *of* N_2 is focused (22-Q1), or just N_2 (22-Q2). Again, an analogous ambiguity is found in Tangale (Kenstowicz 1985).

(22) Q1: **Á** *kā̃ā̃* mài tí bà pí méerè?
FOC what REL 3SG PROG do theft
'WHAT is he stealing?'

Q2: **Á** [dòoré-i *kwá*] mài tí bà pí méerè?
FOC goat-DEF who REL 3SG PROG do theft
'WHOSE goat is he stealing?'

---

[10] Observe that (21) is not violated by instances of focus marking on locative adverbials, such as *gā̃ā̃ shìndí* 'on the stone' in (6a). As in other Chadic languages, Gùrùntùm has few prepositions proper: Locative and temporal relations are typically expressed by means of nominal expressions such as *gā̃ā̃*, which literally translates as 'head'. Consequently, the occurrence of the *a*-marker before the relational noun in locative adverbials is expected.

[11] All by itself, (21) does not explain why the focus marker *a* cannot occur before the subject NP with V- or VP-focus. Its obligatory occurrence before the object NP with V- and VP-focus follows from an additional locality principle, which requires a focus to be marked on, or as close as possible to the focus constituent, see Zimmermann (2006).

A: Á [dòoré-i *rèená*] (mài tí bà pí méerè).
FOC goat-DEF king (REL 3SG PROG do theft)
'He is stealing THE KING'S GOAT. / He is stealing THE KING'S goat.'

In view of the data in (22), we propose a second descriptive restriction on focus marking in Gùrùntùm in (23):

(23) FOCNP$_{MAX}$:
If the focus constituent is part of a complex NP, focus must be marked on the complex NP.

We can see at least two possible reasons for why (23) should hold, remaining neutral on which one is more adequate in the absence of further empirical evidence. First, it could be that the nominal parts of the associative NP are not NPs, but nominal heads. An N-N structure for structurally analogous associative NPs has been proposed for Bole by Schuh and Gimba (2004). If this is the right analysis for associative NPs, FOCNP$_{MAX}$ in (23) would generalize to FOCXP, which says that focus can only be marked on maximal projections. The assumption of FOCXP is motivated by the fact that there is no evidence for focus marking on sub-phrasal constituents, for instance on aspectual markers, in our corpus, nor is focus on subconstituents attested in other Chadic languages (see Hartmann & Zimmermann t.a.).

Second, (23) could follow from prosodic requirements on focus marking. In particular, it could be a consequence of Truckenbrodt's prosodic constraint WRAP (Truckenbrodt 1999), which requires that lexical XPs not be 'split up' into several prosodic phrases. Assume for instance that the focus marker *a* is placed at the prosodic boundary preceding the focus constituent in the normal case. Now, WRAP says that if a maximal projection XP contains another maximal projection YP, both are mapped onto a single prosodic domain. In the case of associative NPs, this would mean that the smaller NP$_2$ and the containing

NP_{max} are mapped onto a single prosodic phrase, which is then preceded by the focus marker. An immediate problem with this account arises in connection with VP-focus, as discussed in section 3.1. There, it was shown that the focus marker does not precede the VP, but the object NP, which is contained inside the VP. In other words, WRAP would be violated because the NP is not mapped onto a single prosodic phrase together with the containing VP. One way out of this dilemma is to assume that WRAP is a violable constraint that is outranked by FOCNOM in (21) in the case of VP-focus. We will take up the issue of violable constraints on focus marking in the next sub-section.

3.3 On the interaction of IS-constraints and structural constraints in focus marking

In the preceding two sub-sections, we have encountered two facts about the distribution of the Gùrùntùm focus marker *a*, which are surprising when seen from the perspective of European intonation languages. First, the focus marker *a* does sometimes not precede the focus constituent. This happens with instances of V- and VP-focus. Second, the focus marker is sometimes completely absent. This happens with instances of narrow verb focus in the presence of a pronominalized (zero) object.

As a solution to these puzzles, we suggested that the distribution of the focus marker *a* is subject to *information-structural* as well as *syntactic* constraints with sometimes conflicting requirements. A likely candidate for an information-structural constraint is Focus Prominence (*FP*, see e.g. Schwarzschild 1999, Büring 2001, Selkirk 2004), which is satisfied by the focus marker *a* on the focus constituent in Gùrùntùm.

(24) FP:
The focus constituent must be made prominent.

In addition, there are the two syntactic constraints FOCNOM and $\text{FOCNP}_{\text{MAX}}$ (where $\text{FOCNP}_{\text{MAX}}$ is possibly a special instance of FocXP, or a derived effect of the more general prosodic constraint WRAP), which interact with FP in determining the position of the focus marker.

This is reminiscent of intonation languages where the placement of the focus-marking pitch accent is also subject to interacting, and sometimes conflicting information-structural, phonological, and syntactic constraints (cf. Büring 2001, Büring & Gutiérrez-Bravo 2001). The main difference between Gùrùntùm on the one hand, and intonation languages like German (as explicated by Büring) on the other, is that the focus marker need not be located directly on the focused constituent in Gùrùntùm, but that it can shift to the following nominal constituent, e.g. with predicate focus. In extreme cases, focus marking may even be completely absent. This happens with narrow verb focus when there is no overt object NP to serve as the carrier of the focus marker *a* in accordance with FOCNOM in (21). The cross-linguistic differences follow directly if we assume a different ranking of the IS-constraint FP and the structural constraints in the two languages. In intonation languages, the IS-constraint FP in (24) is undominated, hence never violated (Schwarzschild 1999, Büring 2001), and outranks all structural constraints governing the placement of the pitch accent. As a result, a focus constituent is always marked prosodically by means of a pitch accent somewhere on the constituent. In Gùrùntùm, on the other hand, it is the structural constraint FOCNOM in (21), which is undominated, hence outranking the IS-constraint FP (and possibly other structural constraints, such as WRAP, see the end of the preceding sub-section). The cross-linguistic differences in ranking are illustrated schematically in (25):

(25) a. Ranking in Gùrùntùm: FOCNOM >> (WRAP) >> FP
b. Ranking in intonation languages: FP >> … structural constraints

Summing up, the dislocation or absence of the focus marker *a* in Gùrùntùm follows from the fact that structural constraints outrank the IS-constraint FP, which requires that focus must be marked on the focus constituent.[12]

4 Focus Marking and Focus Types

This section discusses the grammatical realisation of various focus types, as introduced in section 1. It is shown that the focus marker *a* marks all types of constituent focus, such as new information focus, selective focus, corrective focus, and contrastive focus. Furthermore, *a* occurs in predicative constructions. In sum, Gùrùntùm provides evidence for a uniform category of constituent focus that is unanimously marked by the focus marker *a*. Moreover, the discussion shows that there is no 1:1-correlation between a specific focus type and its syntactic realisation as *ex situ* or *in situ*. Instead, most focus types can be realised either *ex situ* or *in situ*, depending on the pragmatic objectives of the speaker (see section 2.3 above). Finally, we will turn to instances of presentational focus, showing that these also involve an *a*-marker, but that they differ from the other focus types in another respect.

4.1 New information focus

As shown in section 2.3, new-information foci can be realised either *in situ* or *ex situ*, as long as they are preceded by the focus marker *a*. (26ab) are repeated from (15ab) for convenience:

(26) a.	**Á** *kấã* mài Áudù náa?	Tí ná-**a** *dùu*.	*in situ*
	FOC whatREL Audu catch	3SG catch-FOC horse	
	‘WHAT did Audu catch?’	‘Audu caught A HORSE.’	

[12] In practice, the matter is of course more complicated than sketched here. See Zimmermann (2006) for a more articulate OT-style analysis of focus marking in West Chadic.

b. **Á** *kā̃ã̃* mài Áudù náa? **Á** *gàmshí* mài Áudù náa. *ex situ*
FOC whatREL Audu catch FOC crocodile REL Audu catch
'WHAT did Audu catch?' 'Audu caught A CROCODILE.'

4.2 Selective focus

Instances of selective focus, which are used to choose from an explicitly given list of alternatives, are likewise preceded by the focus marker *a*. Again, the focus constituent is realised either *in situ* (cf. 27) or *ex situ* (cf. 28):

(27) Nvúrí **á** *kā̃ã̃* mài Mài Dáwà shí? *Yáà* kóo **á** *móláŋ?*
yesterday FOC what REL Mai Dawa eat chicken or FOC fish
'Yesterday, WHAT did Mai Dawa eat? CHICKEN or FISH?'

Nvúrí Mài Dáwà sh-**á** *yáà*, bà **á** *móláŋ* dà. *in situ*
yesterday Mai Dawa eat-FOC chicken, NEG FOC fish NEG
'Yesterday Mai Dawa ate CHICKEN, not FISH.'

(28) Mài Dáwà bà sh-**á** *yáà* kóo **á** *móláŋ*?
Mai Dawa PROG eat-FOC chicken or FOC fish
'Is Mai Dawa eating CHICKEN or FISH?'

Á *yáà* mài Mài Dáwà bà shí. *ex situ*
FOC chicken REL Mai Dawa PROG eat
'Mai Dawa is eating CHICKEN.'

4.3 Corrective focus

Instances of corrective focus, which are used to correct a previous speaker's statement, are also preceded by the focus marker *a*. Again, the focus constituent is realised either *in situ* (cf. 29) or *ex situ* (cf. 30):[13]

[13] As already mentioned in fn. 8, the VP- or sentence-final occurrence of the focus marker in (29A) and (30A) does not indicate narrow focus, but rather seems to focus on the perfective event as a whole. See sections 5.2.1 and 6 for more discussion.

(29) A: Músá yâb fúl-**à** nvùrì.
Musa buy cow-FOC yesterday
'Yesterday, Musa bought a cow.'

B: Á'à, tí yáb-**à** *mbóorò*, bà **á** *fúl* dá. *in situ*
no 3SG buy-FOC sheep NEG(Ha.) FOC cow NEG
'No, he bought A SHEEP, not A COW.'

(30) A: Hàwwá pân yáŋsí ìsh-**à**.
Hawwa carry wood fire-FOC
'Hawwa carried fire wood.'

B: Á'à, bà **á** *yáŋsí ìshí* mài tí pân dà, ...
no NEG(Ha.) FOC wood fire REL 3SG carry NEG, ...
'No, it is not FIREWOOD that she carried, ...

... **á** *máa* mài tí pánì. *ex situ*
... FOC water REL 3SG carry.
... it is WATER that she carried.'

4.4 Contrastive focus

Instances of contrastive focus, in which two elements of the same syntactic category and semantic word field are juxtaposed, are likewise preceded by the focus marker *a*:

(31) Ti da yab *ful*-**a** da, ti yab-**a** *duu*.
3SG NEG buy cow-FOC NEG 3SG buy-FOC horse
'He did not buy a cow, he bought A HORSE.'

4.5 Predicative constructions

The focus marker *a* also shows up in verbless predicative constructions, in which it precedes the predicate:[14]

(32) a. Bíin-ì **á** *gàarì.*
house-DEF FOC old
'The house is OLD.'

b. Mbáldà-í **á** *gí mbàlí*.
lion-DEF FOC of red
'The lion is RED.'

The occurrence of *a* in these contexts is not unexpected given that – in the unmarked case – the predicate in predicative constructions constitutes a new-information focus. After all, the predicate specifies a hitherto unknown property of a known entity, the topic. In Gùrùntùm, then, the focus status of the predicate is consistently marked by *a*. See also Green (2004) for a parallel claim that the particle *nee/cee* in Hausa predicative constructions indicates focus on the predicate.

Summing up so far, Gùrùntùm provides ample evidence for a uniform category of constituent focus: All types of constituent focus are marked alike by means of the focus marker *a*. The next subsection deals with a slightly different type of focus, namely with presentational focus in all-new sentences, which is marked in a slightly different way.

4.6 Presentational focus

Presentational focus is found with all-new utterances that depict a temporally or spacially bounded scene or situation. In Gùrùntùm, presentational constructions also feature an *a*-marker:

[14] Predicates in Gùrùntùm cannot only be nominal, but also adjectival, such as *gàarì* 'old' in (32a). The occurrence of the focus marker *a* before adjectives is captured by the categorical constraints FOCNP in (21) on the common assumption that adjectives have the feature specification [+N, +V].

(33) Zí gí mài tí wáani dà tí vùl bà wùun-**à**.
PL of REL 3PL healthy NEG 3PL many place medicine-FOC
'There are many patients in the hospital.'
(lit.: Those that are not healthy, they are many in the hospital.)
(*wùunu* 'medicine')

These instances of presentational focus differ in two respects from the other kinds of focus that we have seen so far. First, the *a*-marker does not precede the focus constituent, but it occurs in sentence-final position. Second, presentational constructions do not involve narrow focus on a single constituent, but rather wide focus over the entire clause. Below in section 6, we will argue that the two properties are related. We will further argue that the *a*-marker has a double function as a foregrounding device: At the sentential level, it serves to mark the focus constituent, which it precedes. At the supra-sentential level of discourse structure, on the other hand, it follows on all-new clauses and marks these as foregrounded, more prominent, or more relevant relative to other parts of the discourse, in the sense of Hopper (1979).

5 On *a's* Double Role as a Marker of Focus and Perfectivity

Before turning to the *a*-marker's double role as a foregrounding device in section 6, it is necessary to look at another purported function of the *a*-marker. Jaggar (1988) and Haruna (2003) treat *a* in perfective clauses as a perfectivity marker. Opposing this view, we argue that *a* never functions as a perfectivity marker, but always as a foregrounding or focusing device. The observed affinity between (sentence-final) *a*-marking and perfectivity will then follow from a general affinity between foregrounding and perfectivity, as discussed in Hopper (1979). Section 5.1 sketches Jaggar's and Haruna's analysis of *a* as a perfectivity marker. In section 5.2, we present syntactic and semantic evidence in favour of our analysis of *a* as a focus marker in perfective contexts as well. The section

concludes with an aside on the tonal shape of the focus marker *a*, which depends on the phonological context. In particular, *a* is not always low-toned when it occurs in perfective clauses, contradicting claims in Jaggar (1988) and Haruna (2003).

5.1 *A* as a perfectivity marker

Jaggar (1988) and Haruna (2003) argue that perfective aspect is marked by a low-toned suffix *–à* in Gùrùntùm. Consequently, they would analyse the *a*-suffix in the perfective examples in (7) and (9) above as a perfectivity marker, rather than as a focus marker. The paradigm in (34) shows that *a* would be peculiar as an aspectual marker in that it would be the only one that is suffixed to the verb (Haruna 2003:86), see (34d). In contrast, the markers of progressive (*bà*), future (*á*) and habitual (*á ɗí*) aspect, respectively, all precede the verb (cf. (34a-c)):

(34) a. Tí **bà** wùmì. 'He is chewing.'
b. Tá **á** wùmì. 'He will chew.'
(*tá* < *tí* before *á*, see Haruna 2003:84)
c. Tá **á dĩ** wùmì. 'He usually chews.'
d. Tí wúm-**à**. 'He chewed.'

A second peculiar property of the purported perfectivity marker *a* is that it can be suffixed 'either to the verb stem or to a VP-final constituent' (Haruna 2003:86, see also Jaggar 1988). The different possibilities for the distribution of *a* in perfective contexts according to Haruna and Jaggar are schematized in (35):

(35) a. SUBJ [VP V-a (OBJ)]
b. SUBJ [VP V OBJ-a]
c. SUBJ [VP V ADJ-a]

In the following, we provide evidence against this analysis of the *a*-marker in perfective clauses. Rather, we argue that *a* is a focus marker in perfective contexts, too.

5.2 *A* as a focus marker in perfective contexts

There are two kinds of evidence, syntactic and semantic, against the analysis of *a* as a perfectivity marker, and for the analysis of *a* as a focus marker in perfective contexts.

5.2.1 Syntactic evidence

A closer look at *a* in perfective clauses shows that its syntactic distribution depends directly on information-structure, namely on focus. The *a*-marker must precede the focus constituent in the perfective, as it does in all other aspects. In (36a) and (37a), *a* precedes the focused direct object, cliticizing onto the preceding verb. This corresponds to the configuration in (35a). In (36b) and (37b), in contrast, *a* precedes a focused locative phrase and (optionally) cliticizes onto the preceding direct object.

(36) a. **Á** *kấã* mài tí vúní nvùrì?
FOC what REL 3SG wash yesterday
'WHAT did she wash yesterday?'

Tí vún-**á** *lúurìn*.
3SG wash-FOC clothes
'She washed CLOTHES.'

b. Tí vún lúurìn-í-**à** *yáù*?
3SG wash clothes-DEF-FOC where
'WHERE did she wash the clothes?'

Tí vún lúurìn-í-**à** *bíiŋ*.
3SG wash clothes-DEF-FOC home
'She washed the clothes AT HOME.'

(37) a. **Á** *kấã* mài tí pánì â díngà-i?
FOC what REL 3SG take from shelf-DEF
'WHAT did he take from the shelf?'

Tí pán-**à** *súurí* â díngà-i.
3SG take-FOC knife from shelf-DEF
'He took A KNIFE from the shelf.'

b. Tí pân súurí **à** *yâu*?
3SG take knife FOC where
'WHERE did he take the knife from?'

Tí pân súurí-**à** *gãã díngà*.
3SG take knife-FOC on shelf
'He took the knife FROM THE SHELF.'

The analysis of *a* as an aspectual marker of perfectivity has nothing to say about the different placement of *a* in the a- and b-sentences. The analysis of *a* as a focus marker, on the other hand, directly accounts for these distributional differences.

An even stronger argument for the analysis as a focus marker comes from the behaviour of perfective clauses with subject focus in (38). It shows that, whenever the subject is focused, *a* appears sentence-initially *and not as a suffix on V or VP*. That is, in perfective sentences with subject focus there is no *a*-suffix on verb or VP at all.

(38) a. **Á** *kwá* wûm kwálíngálá-ì?
FOC who chew colanut-DEF
'WHO chewed the colanut?'

Á *rèená* wûm kwálíngálá-ì.
FOC king chew colanut-DEF
'THE KING chewed the colanut.'

b. **Á** *kwá* ròmbí g^{w}éì?
FOC who gather seeds
'WHO gathered the seeds?'

Á *zí bóŋ* ròmbí g^{w}éì.
FOC PL child gather seed
'THE CHILDREN gathered the seeds.'

Again, the analysis of *a* as an aspectual marker cannot account for the absence of an *a*-suffix in perfective clauses with subject focus, whereas it follows directly on the analysis of *a* as a focus marker.[15]

A final observation concerning the distribution of *a* in perfective clauses is that sentence-final occurrences of *a* are restricted to instances of all-new or sentential focus.

(39) a. Tí vún lúurìn nvùrì-**à**. all-new
3SG wash clothes yesterday-FOC
'She washed clothes yesterday.'

b. Tí pân súurí gə̃ə̃ã díngà-**à**. all-new
3SG took knife on dinga-FOC
'He took the knife from the shelf.'

c. Tí náa fúul à wál-**à** / à gə̃ə̃ã nvúrí-**à**. all-new
3SG catch cow at farm-FOC / at head day-FOC
'He caught a cow at the farm / in the morning.'

d. Tí yâb g^{y}ùurí ng^{w}ái-**à**. all-new
3SG sell millet out-FOC
'He sold the millet.'

The situation is entirely parallel to that found with the all-new presentational focus constructions in (33) in section 4.6. In section 6, we will therefore argue that the sentence-final *a*s in (39) are likewise focus markers attached to the

[15] Interestingly, Jaggar (1988:181) cites an example of the same form as (38ab). In (i), there is no *a*-suffix in the presence of subject focus. Instead, the *a*-marker precedes the focused subject:

(i) Q: A k^{w}aa pan ndanshi bàn gìdi? A: A bà-sì pan-di.
FOC who carry hoe into room FOC father-his carried-it
'WHO (sg.) carried the hoe in the room?' 'HIS FATHER carried it (in).'

predicate or the clause, which serve to *foreground* a bounded event denoted by the perfective clause in the sense of Hopper (1979).[16]

5.2.2 Semantic evidence

The semantic evidence for analysing *a* as a focus marker also in the perfective aspect comes from the interpretation of perfective sentences containing adverbial quantifiers, such as *always* or *usually*, the interpretation of which is known to be sensitive to the focus/background structure of a clause (see Lewis 1975, Rooth 1985, 1992, Partee 1991, von Fintel 1994, Herburger 2000 among many others). We show that the position of the *a*-marker affects the truth-conditions of clauses with adverbial quantifiers in Gùrùntùm in line with what semantic theories would predict if *a* were indeed a focus marker.

The sentences in (40) illustrate the focus sensitivity of adverbial quantifiers for English:

(40) a. John always ate RICE_{FOC}.
'Always, if John ate something, he ate RICE.'

b. JOHN_{FOC} always ate rice.
'Always, if somebody ate rice, it was JOHN.'

c. $[\text{John always ate RICE}]_{\text{FOC}}$.
'Always, in a given (contextually-specified) situation, John ate rice.'

The empirical generalization is that the focused material, which is marked by a nuclear accent, must not occur in the restrictor, but in the nuclear scope of the adverbial quantifier.

The sentences in (41) show that a different position of *a* in perfective clauses has an analogous effect on the interpretation of adverbial quantifiers in

[16] See also the notions of *predication focus / event focus* in Wolff (2003).

Gùrùntùm.[17] In (41a), *a* precedes the direct object and the latter is interpreted in the nuclear scope of the adverbial quantifier, as witnessed by the consultant's comment in brackets. In (41b), *a* precedes the subject, and the subject is interpreted in the nuclear scope of the quantifier. Finally, in (41c), *a* attaches to a full (core) sentence, *tí shí gànyáhúà*, which is consequently mapped onto the nuclear scope in its entirety.

(41) a. Kóo vùr mɔ́kɑ́ã Mài Dáwà sh-**á** *gànyáhú*. *OBJ*
every when Mai Dawa eat-FOC rice
'Always Mai Dawa used to eat RICE. ("this is about what Mai Dawa ate")' = Always, if Mai Dawa ate something, it was rice.

b. Kóo vùr mɔ́kɑ́ã **á** *Mài Dáwà* shí gànyáhú. *SUBJ*
every when FOC Mai Dawa eat rice
'It is only MAI DAWA that always used to eat rice.'
= Always, if somebody ate rice, it was Mai Dawa.

c. Kóo vùr-mɔ́kɑ́ã *Mài Dáwà sái tí shí gànyáhú*-**à**. *Clause*
every when Mai Dawa then 3SG eat rice-FOC
'Always, Mai Dawa used to eat RICE.' = Always, in a given (contextually-specified) situation, Mai Dawa ate rice.'

The perfective clauses in (41) show that all instances of *a*, including sentence-final *a*, behave alike: The syntactic position of *a* has an effect on the semantic interpretation. The a-marked constituent is interpreted in the nuclear scope of the adverbial quantifier. Given the parallel facts observed for English, the differences in interpretation between (41a-c) will follow directly if *a* is treated as a focus marker.

Summing up, the preceding two sub-sections have shown that the distribution of *a* in perfective clauses and its interpretive effects follow from

[17] The first line of the paraphrases cites the paraphrase/translation provided by our native speaker.

focus structure. Based on this, we therefore conclude that *a* is a focus marker in perfective clauses, too. A further consequence of our reanalysis is that perfectivity in Gùrùntùm is not marked by a perfective suffix. Rather, it is marked by zero marking, i.e. by the absence of an overt aspectual marker, which is accompanied by a tonal change in the stem vowel of the verb from L to H with certain verb classes (Haruna 2003: 77). From a cross-linguistic perspective, the marking of perfectivity by the *absence* of any overt morphological marking is not restricted to Gùrùntùm. See e.g. Hyman et al. (2002) on zero perfective marking in Leggbó. Finally, we would like to contend that the affinity of focus marking on sentences to perfectivity or completeness observed in Gùrùntùm (cf. 39a-d), is not uncommon in the languages of the world, and may well reflect a universal tendency, see Hopper (1979). We will return to this point in section 6.

5.3 Tonal properties of *a*

Before going on, we turn to the tonal properties of *a* in perfective clauses. Even though a comprehensive study of the prosodic system of Gùrùntùm is still lacking, the evidence concerning the tonal shape of *a* is sufficiently robust to warrant a few conclusions. In particular, we show that *a* does not always carry low tone when it appears on V or VP in perfective clauses, contrary to claims in Jaggar (1988) and Haruna (2003). This shows at least that there is no low-toned perfective suffix *–à*. The varying tones on *a* do not argue against an analysis as an aspectual marker *per se*. However, the *a*-marker in perfective clauses resembles the focus marker *a* in other contexts in that both have no fixed tonal appearance. Given this similarity in tonal behaviour, the varying tonal shape of *a* constitutes indirect phonological evidence for the analysis of *a* as a focus marker in perfective contexts, too.

The relevant generalisations concerning the tonal appearance of *à* in perfective clauses can be summarised as follows. First, with HH verbs such as

vúní ‘wash’, and LH verbs such as *ròmbí* ‘gather’, *a* carries H tone if a complement follows the verb.

(42) a. Tí vún-**á** lúurìn.
3SG wash-FOC clothes
‘He washed CLOTHES.’

b. Tí ròmb-**á** g^{w}éì.
3SG gather-FOC seeds
‘He gathered SEEDS.’

Second, with monosyllabic H verbs, such as *shí* ‘eat’, *a* also carries H tone.

(43) Nvúrí Mài Dáwà sh-**á** yáà, bà á móláŋ dà.
yesterday Mai Dawa eat-FOC chicken, NEG(Ha.) FOC fish NEG
‘Yesterday Mai Dawa ate CHICKEN, not FISH.’

Third, *a* carries L tone with HL verbs, such as *wúmì* ‘chew’ or yábì ‘sell’.

(44) Tí wúm-**à** kwálíngálá.
3SG chew-FOC colanut
‘He chewed COLANUT.’

Fourth, *a* always carries L tone when it occurs at the right edge of VP, i.e. when it occurs on verbs without overt complements, or when it occurs on the last constituent within the VP:

(45) a. Tí vún lúurìn-í-**à**]$_{VP}$ *bíiŋ*. (= (36b))
3SG wash clothes-DEF-FOC house
‘She washed the clothes AT HOME.’

b. Tí yâb g^{y}ùurí ng^{w}ái-**à**]$_{VP}$. (= (39d))
3SG sell millet out-FOC
‘He sold the millet.’

Based on evidence from other West Chadic languages[18], we tentatively assume that the right edge of VP constitutes a prosodic phrase boundary in Gùrùntùm, thus separating the VP from any optional locative or temporal adjuncts.

Finally, in phrase-initial position, *a* carries H tone before focused non-*wh* NPs (46a). In contrast, *a*'s tonal realization (although still quite high) is not as high as that of following *wh*-expressions, which are always realized at a very high pitch level. There are at least two possible phonological explanations for this. Either *a* carries an initial boundary tone H%, which is phonetically realized lower than the ideophonic extra high tone of the *wh*-expression. Or *a* carries no phonological tone whatsoever, and its medium to high phonetic realization follows from its integration into the general intonational contour on the way to the extra high tone. In the absence of the required data for an evaluation of these possibilities, we mark all phrase-initial occurrences of *a* with H tone (46b).

(46) a. $_{\Phi}$[á NP_{FOC}] b. $_{\Phi}$[á wh_{FOC}]

Setting aside phrase-initial occurrences of *a*, the different tonal realization of the *a*-marker in non-initial position seems to follow from a number of general prosodic processes that are operative in the language. First, the focus marker *a* does not carry inherent lexical tone. Second, in VP-final or sentence-final position (cf. (45)), an L%-boundary tone (Pierrehumbert 1980, Beckman & Pierrehumbert 1986) associates with the toneless focus marker *a*, as illustrated in (47):

(47) [… - à]$_{\Phi}$
L%

Third, if *a* cliticizes onto the verb and is not located in phrase-final position, it associates with the tone of the final vowel of the verb, which it replaces after

[18] See e.g. Tuller (1992:312) for Tangale and Maina Gimba (2000:19) for Bole.

vowel elision. This is illustrated schematically in (48) for four different tonal patterns. Recall from section 2.1 that the final vowel of the verb is elided before a following object, while the tone of the vowel is preserved.

(48) a. shí + a → sh**á** 'eat'
H H

b. ròmbí + a → ròmb**á** 'gather'
L H L H

c. vúní + a → vún**á** 'wash'
H H H H

d. wúmì + a → wúm**à** 'chew'
H L H L

That tone is indeed preserved under vowel elision can be seen from forms such as *wûm* in (38a) and *pân* and *yâb* in (39bd), respectively, where the H tone on the remaining vowel combines with the L-tone of the elided vowel to form a falling HL-sequence.

Summing up, although many questions remain, we have shown that the tone of the *a*-marker in perfective contexts is not constant, but varies depending on its tonal context. Since the focus marker *a* also varies in tone, we take this as additional evidence in favour of our analysis of *a* as a focus marker in all aspects, including the perfective.

6 Sentence Final *a* as a Foregrounding Device

Let us finally turn to the remaining puzzle concerning the nature of sentence-final *a* in presentational constructions (see section 4.6) and in perfective clauses (see section 5.2.1). The puzzle is presented in section 6.1. After a brief look at a number of parallel facts in Malay in section 6.2, we will propose an analysis of

the sentence-final *a* in section 6.3. In particular, we argue that sentence-final *a* functions as a foregrounding device at the discourse level, in the sense of Hopper (1979).

6.1 The puzzle

At the end of section 5.2.1, it was shown in connection with (39ab), repeated as (49), that all-new sentences in the perfective aspect are explicitly marked by the focus marker *a* in sentence-final position.

(49) a. Tí vún lúurìn nvùrì-**à**.
3SG wash clothes yesterday-FOC
'She washed clothes yesterday.'

b. Tí pân súurí gə̃ə̃ã díngà-**à**.
3SG took knife on dinga-FOC
'He took the knife from the shelf.'

Notwithstanding the unusual position of the *a*-marker, which precedes the focus constituent in all other contexts, its presence in (49) seems to owe to the fact that the entire sentence is in focus. Somewhat surprisingly, though, all-new sentences are unmarked in all other aspects, for instance in the progressive (50a), the future (50b) and the habitual (50c).

(50) a. Tí bà nyóolì góobílìshí.
3SG PROG write letter
'He is writing a letter.'

b. Tá-a má íyà tə̀u-gàná gáb. (Haruna 2003:91)
3SG-FUT go after moment small
'She will go after a short while.'

c. Tá-a ɗì wárí. (Haruna 2003:89)
3SG HAB come
'She usually comes.'

The picture becomes even more complicated if we look at presentational sentences again, which also occur with a sentence-final *a*, see (51ab) (and section 4.6). If the *a*-marker appears in a non-final position (cf. (51c)), or if it is absent altogether (cf. (51d)), presentational sentences are ungrammatical.

(51) a. Zí dùusó vùl gə̃ə̃ã n^{y}úngsù kwàr-**à**.
PL car many on street today-FOC
'There are many cars on the road today.'

b. Kwàrì zí dùusó vùl gə̃ə̃ã n^{y}úngsù-**à**.
today PL car many on street-FOC
'There are many cars on the road today.'

c. * Kwar-**a** zi duuso vul gã n^{y}ungsu.

d. * Kwari zi duuso vul gã n^{y}ungsu.

The puzzle can be summarized as follows: Why would the marking of sentence focus be restricted to perfective and presentational sentences? Before we will propose a tentative solution to this question, we present some facts from Malay, which features a morphological focus marker that resembles the *a*-marker in Gùrùntùm in an intriguing way.

6.2 Focus and foregrounding in Malay

Malay has a morpheme *lah*, which is traditionally described as a marker for focus and perfectivity. In his extremely insightful article, Hopper (1979) derives the at first sight mysterious connection between focus and perfectivity from a unified analysis of *lah* as a foreground marking device. In this section, we present Hopper's analysis in some detail, as it will lay the ground for our analysis of the *a*-marker in Gùrùntùm.

First, the particle *lah* is used for marking *ex situ* focus constituents, see (52) (Hopper's example (1)) where fronting of the focused direct object gives rise to a relative construction.

(52) Anjing-lah yang hilang, bukan kuching.
dog-PRT which lost NEG cat
'It was a dog I lost, not a cat.'

Secondly, the particle *lah* appears suffixed to the verb in perfective sentences, which has led grammarians to the assumption that *lah* is an aspectual marker of perfectivity.

(53) Pergi-lah ia.
go 3SG
'He went.'

The basic insight of Hopper (1979) is that these two apparently unrelated functions of *lah* are different reflexes of one and the same phenomenon, that is foregrounding. A foregrounded constituent is informationally more prominent in relation to other ones in the background. A major instantiation of foregrounding is, of course, focus. Given this, it is not surprising that *lah* appears after fronted focus constituents, such as in (52).

The presence of *lah* on the verb in the perfective sentence (53) is due to the fact that the whole event is foregrounded. The central relation between foregrounding and perfectivity follows from a universal implicational relation: In order for an event to be foregrounded, it must be bounded or completed. Second, a typical (though not the only) way of presenting an event as bounded or completed is to present it as anterior to subsequent events. Finally, anteriority is typically expressed through perfectivity. Ongoing or overlapping events are unsuitable for foregrounding (Hopper 1979:39,47). Thus, since *lah* functions as

a focus or foregrounding marker, it only appears in sentences which denote completed events. This is illustrated in the following example from Hopper (1979:48).

(54) a. Maka apabila *masok-lah* kedalam hutan,
maka *bertemu* dengan a Jakun.
'And when they *entered* the forest, they *met* a Jakun.'

b. Maka apabila ia *melihat* orang datang, maka *lari-lah* ia masok hutan.
'And when he *saw* the men coming, he *ran* into the forest.

In (54a), it is evident that entering the forest is completed before the meeting of the Jakun takes place. The two events do not overlap. Consequently, the first verb can be followed by *lah.* No such connotation of anteriority is present in the temporal *when*-clause in (54b) where the events denoted by main and subordinate clause are construed as simultaneous or overlapping, see Hopper (1979:48), and where *lah* is absent.

It should be clear by now why *lah* is traditionally assigned the function of a perfectivity marker: Being foregrounded, the events it marks must be bounded or completed, and completion is usually associated with the perfective aspect. To sum up, the morpheme *lah* operates at the discourse level where it marks focused or foregrounded constituents. As Hopper says: "These two functions – foregrounding and focusing – are not separable, but are aspects of one and the same principle" (p. 47).

6.3 Foregrounding in Gùrùntùm

We propose that the final *a* marker in Gùrùntùm works the same way as Malay *lah*: The function of sentence-final *a* is to foreground the sentence as a whole, just like sentence-internal *a* serves to foreground narrowly focused constituents. For this reason, event or sentence focus marking in Gùrùntùm is restricted to the

two proto-typical constructions that present situations or events as completed and whole entities: presentational constructions and constructions in the perfective or completive aspect (see also Comrie 1976:18). Hopper's universal implicational relation between foregrounding and perfectivity therefore also holds in Gùrùntùm: The foregrounding marker *a* is *in*compatible with progressive, future and habitual sentences, which do not denote completed events, explaining its absence in (50a-c).

The analysis of sentences with final *a* as foregrounded structures is supported by the following observations. First, the analysis implies that sentence focus will not be automatically marked in Gùrùntùm, not even in the perfective aspect (see below), but only if the sentence denotes a foregrounded event. Because of this, sentence-final *a* is not obligatory in sentences with perfective interpretation, cf. in narrative sequences such as (55) from Haruna (2003:139) (our glosses):

(55) Zi mùuzìi kàram ba pàn yaŋsi, ti *yu* wùshù bàn yaahu,
PL woman go PROG carry wood 3PL see snake in grass
tì *pàn* yaŋsi tì g^{y}ù da.
3PL carry wood 3PL kill ??[19]
'The women *went* to carry firewood and they *saw* a snake in the grass and they *took* a firewood and *killed* it.'

According to Haruna (op. cit., our italics), the sequential construction "imparts unity to the actions depicted, and conversely, it enables these actions *to be described without giving them unwanted prominence*." In other words, the events denoted in (55) are presented as parts of a complex event. As such, the

[19] Unfortunately, Haruna provides no interlinear glosses, but only the paraphrase given. As far as we know, and as shown in (20), the sentence-final marker *da* is the negative marker. So, perhaps the final clause in (55) should better translate as '…*but* they *didn't* kill it.'

individual events are not foregrounded and, although interpreted as perfective, are not marked by final *a*.

Secondly, final *a* can occur on the last of a series of sentences that combine to form a bigger event. In (56), final *a* occurs on the final clause, which denotes the main event in the sequence.

(56) Kadə ma sai ti karmi bavuli. Ti kadi *ti mai gãa yuŋs*-**a**.
3SG too then 3SG go market 3SG return 3SG err on way-FOC
'She too, she went to(wards) the market, she returned, she got lost on her way.'

This is again quite similar to the facts reported from Malay. The foregrounding function of *lah* is also used to structure narrative texts (Hopper 1979:46). *Lah* appears on verbs describing events that constitute the main story line. These are events which are new and highly relevant to the story. Events that are not marked with *lah* are used to set the scene, they describe side-episodes of minor narrative relevance or parts of the event that are considered not so important. In the Gùrùntùm example (56), the episode ends with the girl (*kadə* 'she') getting lost. This narrative turning point is indicated by the focus/foregrounding *a*-marker.

To conclude, in this section we argued that the focusing effect of the *a*-marker is also observed with events. The puzzling fact that non-presentational clausal focus marking is excluded from non-perfective sentences was analysed as a consequence of event foregrounding. Since an event or situation must be completed in order to be foregrounded, ongoing, overlapping or habitual events are unsuitable for foregrounding and therefore not suffixed with *a*. In this respect, Gùrùntùm constitutes another nice example for Hopper's universal implicational relation between foregrounding and perfectivity.

7 Conclusion

In this article, we presented an in-depth analysis of focus marking in the West Chadic language Gùrùntùm. Focus in Gùrùntùm is marked morphologically by means of the pre-focal marker *a*. It is marked consistently across all syntactic constituents and across all aspects and tenses. It marks new information focus as well as other kinds of focus, such as selective, corrective or contrastive focus. It also appears in predicative and presentational constructions. The focus constituent can be either realised in its base-position, or it can be fronted. We speculated that the choice of position is dependent on the notion of noteworthiness, but this assumption has to be corroborated by future research. We also showed that Gùrùntùm exhibits focus ambiguity when it comes to predicate focus: focus is realised on the object even if the verb or the VP is focused. We proposed that focus ambiguity can be traced back to a syntactic restriction: Gùrùntùm has a bias for nominal focus marking, just as many other Chadic languages. We defended our analysis against a claim from the literature that *a* is an aspectual marker of perfectivity. Evidence in favour of our proposal came from syntactic and semantic considerations. Finally, we showed that the affinity of sentence-final *a* to perfective interpretations follows from *a*'s nature as a foregrounding marker, both intra- and intersententially.

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On 'nicht...sondern...' (contrastive 'not...but...') *

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This article presents an analysis of German *nicht...sondern...* (contrastive *not...but...*) which departs from the commonly held view that this construction should be explained by appeal to its alleged corrective function. It will be demonstrated that in *nicht A sondern B* (*not A but B*), *A* and *B* just behave like stand-alone unmarked answers to a common question *Q*, and that this property of *sondern* is presuppositional in character. It is shown that from this general observation many interesting properties of *nicht...sondern...* follow, among them distributional differences between German *'sondern'* and German *'aber'* (contrastive *but*, concessive but), intonational requirements and exhaustivity effects. *sondern*'s presupposition is furthermore argued to be the result of the conventionalization of conversational implicatures.

Keywords: negation, contrast, correction, presupposition, meta-linguistic negation

1 Introduction

As is well known, English *but*, when preceded by *not*, sometimes translates into German *aber* and other times into German *sondern*, with a specific difference in meaning:

(1) a. Mary is not stupid, but she is ugly.

b. Maria ist nicht dumm, aber sie ist hässlich.
(Mary is not stupid, but (nevertheless) she is ugly.)

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c. Maria ist nicht dumm, sondern hässlich.
(Mary is not stupid, but (instead) ugly.)

(Pusch 1976)

The reading in (1b), which can be forced in English by adding for instance *nevertheless*, is sometimes referred to as the *concessive* reading of *but*; the reading in (1c), which can be enforced in English by adding *instead*, is sometimes referred to as the *contrastive* reading. The semantics and pragmatics of the latter is the topic of this paper.

In many cases only one of the two translations of *but* is possible:

(2) a. Lisa cannot yet walk, *but* she can only crawl.
(Lisa kann noch nicht laufen, *sondern (*aber)* erst krabbeln.)

b. Lisa cannot yet walk, *but* she can already crawl.
(Lisa kann noch nicht laufen, *aber (*sondern)* schon krabbeln.)

(Pusch 1976)

The respective ungrammatical versions of (2a-b) demonstrate specific distributional restrictions that underlie the use of *aber*, *sondern* respectively. Such restrictions have been recognized for a long time in the literature (see Abraham 1975, Pusch 1976, Asbach-Schnitker 1979) but an explanation always seemed hard to come by.

Another commonly recognized property of *sondern* is the specific requirements on the intonation of the phrases conjoined by *nicht...sondern…*:[1]

[1] Here and in the following, CAPITAL LETTERS indicate focal stress, whereas the underlines mark the constituent which presumably bears the focus.

(2) c. Lisa kann noch nicht LAUfen, sondern erst KRAbbeln.
(Lisa can yet not walk, but just crawl.)

In (2c), the given intonation and focal structure is the only possible one. It is an example of the ability of *nicht...sondern...* to rigidly constrain the information structure of its arguments. Further examples are presented below.

A third important observation that can be made for *nicht...sondern...* concerns exhaustive interpretation: exhaustive interpretation is known to be an optional (cancellable) process in answers to questions, and as an obligatory effect in, among others, English cleft-constructions and in Hungarian focus-movement:

(3) a. Who walks?

b. John walks = only John walks = $\forall$ x [walk x $\leftrightarrow$ x = j]

c. A girl walks = only a girl walks = $\exists$ x [girl x $\wedge$ $\forall$ y [walk y $\leftrightarrow$ y = x]]

(Groenendijk & Stokhof 1990)

(4) A padlón Péter aludt.
On (the) floor, Peter slept.
'It was Peter who slept on the floor.'

(Szabolcsi 1981a)

(5) It was his coat that John lost = John only lost his coat.
(Levinson 1983)

Just this kind of strengthened interpretation can also be observed in the conjuncts of *nicht...sondern...*:

(6) Nicht John, sondern ein Mädchen geht spazieren.
(Not John but a girl goes walk.)
'Not John, but a girl walks.'
John walks = only John walks = ∀ x [x walks ↔ x = j].
A girl walks = only a girl walks = ∃ x [girl x ∧ ∀ y [y walks ↔ y = x]].

In (6), *John* and *ein Mädchen* (*a girl*) have a strong preference to be interpreted exhaustively.

The main claim put forward in this paper is that the mentioned three properties of *nicht...sondern...*: distributional restrictions, intonation, exhaustive interpretation, follow from one and the same presupposition of *sondern*, namely that in *nicht A sondern B*, *A* and *B* are unmarked answers to a common question *Q*.

1.1 'Sondern' and corrective function

Nicht...sondern... has been assumed to be linked to the specific pragmatic function of correction in the literature throughout (Abraham 1975, Pusch 1976, Lang 1984, 1991- see Asbach-Schnitker 1979 for an early overview). In particular, the specific intonation pattern that comes with *nicht...sondern...* has been motivated in this context along the following lines: The focused material following the negative element (*LAUfen* in the above example (2c)) has been assumed to be the element to be corrected; the focused material following *sondern* (*KRAbbeln*) has been assumed to be the particular correction (see for instance Lang 1984). A formal model that tries to capture these intuitions has been presented in Jacobs (1982, 1991), where a special *replacive negation operator* is assumed, which is basically analyzed as a focus-sensitive particle like *only* and *also*. Jacobs' replacive negation operator however only explains the focal stress in the *left* conjunct of *sondern*. It does not predict anything about the intonation in the right conjunct.

But the intuition that *nicht...sondern...* has to be explained with reference to some concept of correction - although commonly agreed upon in the literature - might actually be quite misleading. Take the following examples:

(7) Die aktive Beamtenbestechung sollte nicht mehr als bloßes Vergehen gelten, sondern wie die passive als ein mit Zuchthaus bedrohtes Verbrechen.
'The active bribing of an official should not be considered anymore as a simple offense, but - like the passive case - as a crime threatened with imprisonment.'

(8) Birgit bedauert, dass Mathias sie nicht ins Kino, sondern in ein klassisches Konzert eingeladen hat.
'Birgit regrets that Mathias invited her not to the cinema, rather to a classical concert.'

Neither of these examples seems to be especially dedicated to be used for correction. Nevertheless, *nicht...sondern...* is quite perfect here and looses nothing of its characteristic properties. Furthermore, *aber*, the antagonist of *sondern*, is probably not completely excluded from corrective use:

(9) A: Daddy can do everything!
B: Papa kann zwar *nicht* alles, *aber* doch eine ganze Menge.
'Daddy cannot do everything, but he can though do quite a lot of things.'

For my experience, examples like these do not instantly convince every reader: Constructions like *nicht...sondern...* are so closely linked to the idea of correction that there is the temptation to adjust the meaning of the word 'correction' to whatever properties the so-called 'corrective' constructions might turn out to have, instead of abandoning the traditional prejudice. But I am convinced that no good can come out of such terminological confusion. I rather suggest to reserve the term 'correction' for a speech act where something is

corrected, and where this something is some kind of defective information which is replaced by taken-to-be correct information. However, neither (7) nor (8) can be used this way. They show that there is good reason *not* to explain the properties of *nicht...sondern...* by recourse to the notion of correction.

One interesting property of *nicht...sondern...*, which hasn't been mentioned so far, may have let people come to the impression that *nicht...sondern...* encodes a corrective speech act: Speakers generally agree that in *nicht A sondern B*, A is *suggested in the context*:

(10) *Nicht* um 3, *sondern* um 4 kommt ein Zug von Paddington.
(*Not* at 3, *but* at 4 comes a train from Paddington.)
'A train from Paddington doesn't arrive at 3.00 but at 4.00.'

That a train is arriving from Paddington at three is clearly felt to be somehow suggested in the context in this example. Such an effect can however also be observed in (8): Here, it is suggested that Mathias invites Birgit to the cinema. It is thus in itself not an indicator for the presence of corrective force. I even have doubts that the observed effect is a stable lexical property of *nicht...sondern...*:

(11) Bertie bedauerte in diesem Moment, dass sie *keinen* schnellen,
(Bertie regretted in this moment that she *not* a fast
sondern einen bequemen Wagen gekauft hatte.
but a comfortable car bought had.)
'Bertie regretted in this moment that she hadn't bought a fast but a comfortable car.'

According to my intuition, there is no obligation in this example for the context to suggest that Bertie's car is fast, or, that she regrets that she bought a fast car. But one of these contextual suggestions, that is, that either Bertie's car is fast, or that Bertie regrets that she has a fast car, would be expected if one assumed that such contextual suggestions were projected in the way ordinary presuppositions

do. There is of course the suggestion in (11) that Bertie is in need of a fast car. But *this* suggestion is well motivated by the literal meaning of the sentence alone: if Bertie hadn't been in such a need of a fast car, she probably wouldn't regret not having one.

Let's summarize: *nicht...sondern...* displays three characteristic properties: distributional restrictions, constraints on intonation, and exhaustivity effects. These, so will be argued below, derive from a certain presupposition of *'sondern'*: that in *nicht A sondern B, A* and *B* are unmarked answers to a common question *Q*. The pragmatic function of correction will not only turn out to be superfluous, but it's relevance for the understanding of *nicht...sondern...* is also put into question by counterexamples where *sondern* is not used for correction. A fourth characteristics of *nicht A sondern B,* namely that A is suggested in the context, is to be distinguished from any corrective function of *nicht...sondern...*, and is furthermore likely to be not part of its lexical semantics.

1.2 Outlook

The rest of the paper will proceed with a discussion of the truth-conditional core of *nicht...sondern....* This discussion will basically amount to the question of whether the *nicht* in *nicht...sondern...* is plain truth-conditional negation or instead some special operator which implements metalinguistic negation, replacive negation, or denial. Arguments will be presented that *nicht* in *nicht...sondern...* is indeed plain truth-functional negation. Next, the presupposition which is claimed to lie at the heart of *nicht...sondern...* is described in a rather abstract fashion. As already said, this presupposition roughly says that in *nicht A sondern B*, A and B are presupposed to be *unmarked answers to some question Q*. In the then following section, it will be demonstrated that the main empirical properties of *nicht...sondern...* can be

derived from this presupposition. A somewhat speculative look onto the diachronic origins of *nicht...sondern...* concludes this paper.

2 Truth Conditions

This section discusses the truth-conditions of *nicht...sondern...* as opposed to its presupposition which is the topic of the two subsequent sections. I basically want to defend in this section the claim that the truth-conditional aspect of the meaning of *nicht...sondern...* are simply as follows:

(12) [[nicht A sondern B]] = ¬ [[A]] ∧ [[B]]

Any other aspect of the encoded meaning of *nicht...sondern...* I assume to be presuppositional. (12) follows traditional logical analysis: *nicht* is translated into ordinary truth-functional negation, *sondern* is translated into ordinary logical conjunction. (12) is furthermore the natural result of a mechanical interpretation of the syntactic structure of *'nicht A sondern B'* if one makes the natural assumption that *nicht* is syntactically embedded under *sondern* in the following sense:[2]

(13) [[... nicht ...] [sondern ...]] ...

[2] That *nicht* does not necessarily c-command the whole rest of the left conjunct is illustrated in (i):

(i) Aber man fragt MICH ja nicht, sondern lieber Dan AYKroyd.
(But one asks ME not, but rather Dan AYKroyd.)
'But one doesn't ask me, rather more Dan Aykroyd.'

2.1 Metalinguistic negation

The major objection to (12) stems from the various cases of so-called *metalinguistic negation* which can often be observed in *nicht...sondern...:*

(14) a. Der nächste Irak-Krieg ist *nicht* wahrscheinlich, *sondern* sicher.
(The next Iraq War is *not* probable *but* certain.)

b. Das ist *nicht* eiNE AdverbiaLE, *sondern* EIN AdverbiIAL.
(This is *not* a-FEM adverbial-FEM,
but a-NEUT adverbial-NEUT.)
(Jacobs 1991)

(15) a. The next Iraq War is not probable.

b. This is not an adverbial.

(14a) doesn't imply (15a), nor does (14b) imply (15b). It has been argued that in (14a), the scalar implicature that would be triggered by the stand-alone *the next Iraq War is probable* is negated by *nicht (not)*, and that in (15a) the specific morphological form of the lexeme *adverbial* has become the target of negation. For a thorough discussion of the whole empirical range of metalinguistic negation, including the rejection of stylistic register, the reader is referred to *the* canonical text on metalinguistic negation, which happens to be Horn 2001, ch. 6.

How is it that non-truth-functional stuff - implicatures, morphology, style and the like - can become the target of negation? Both Horn (2001) and van der Sandt (1991) believe that there is always an utterance token preceding the metalinguistic negation which resembles the actually negated phrase. It is the pragmatic properties of this antecedent which are negated: the actually negated phrase merely functions as an anaphora which refers back to the original token. Jacobs (1991), on the contrary, ascribes the presuppositions, implicatures, morpho-phonological properties and stylistic register which are targeted by

replacive negation to the very token under the negative element itself, without being able to explain how these come into existence at the point of semantic interpretation where the negation operator is applied (see Jacobs 1991 for a self-criticism along these lines). Van der Sandt makes a concrete proposal as to how metalinguistic negation works which amounts to the claim that the pragmatic properties of utterances are kept in a Discourse Representation in propositional format and can then later be negated by a special *denial operator*. Horn insists that metalinguistic negation is "second-pass" and not part of the literal meaning of a sentence (which remains a contradiction in cases like (14a-b) according to Horn).

The mentioned approaches agree basically on two convictions concerning the metalinguistic negation cases: (i) they require an antecedent in discourse, and (ii) morphological negation, re-analyzed as denial or correction, plays a crucial role. Both convictions have however been drawn into question, by (among others) Atlas (1980), Kempson (1986), McCawley (1991), Carston (1996), Chapman (1996), Geurts (1998), Burton-Roberts (1999), Seuren (2000).

One early author who questions the first conviction is Atlas (1980) who presents discourses containing metalinguistic negation where no suitable antecedent is present. A similar example which involves the use of '*sondern'* is the following headline of a newspaper article:[3]

(16) *Kein* Haushalt, *sondern* ein Sieb - Die Löcher in Eichels Finanzhaushalt werden immer größer.
'*Not* a budget, *but* a sieve - The holes in Eichel's financial budget are ever increasing.'

[3] Die Tageszeitung, 11 November 2002.

The containing discourse, how ever far one supposes it to extend into the past, is somewhat unlikely to contain the utterance *Eichel's financial budget is a budget*. What is instead certainly the case is that this statement is suggested to be true in the context, a property of *nicht...sondern...* which has already been discussed above. But the existence of an empirical utterance act and the suggested truth of the uttered information are two different things that should not be confused. And the metalinguistic analysis relies on the existence of the former, not the latter.

A particular striking example to this point has recently been put forward by Bart Geurts:

(17) Until the end of the 18th century, Englishmen didn't [dɑːns] but [dæns].
(Geurts 1998)

If this sentence was the correction of a previous utterance in discourse, that antecedent utterance had to be something like:

(17') Until the end of the 18th century, Englishmen [dɑːns].

Again, one can have serious doubts that (17) actually requires or at least suggests (17') as an antecedent in discourse. But there is more to this example: If (17') *was* actually uttered in discourse, this very antecedent had already to be interpreted metalinguistically: The temporal modifier *until the end of the 18th century* obviously does not restrict the time span were Englishman danced, rather the timespan where Englishmen used the accentuation [dæns] in order to refer to dancing. This indicates that the metalinguistic aspect of the expressed proposition is quite independent from both negation and corrective use.

That linguistic properties other than ordinary meaning can become the target of semantic operators other than negation has been observed by Horn himself ("*was the conductor Bernst[ɪ̯] or Bernst[aɪ̯]n*" - Horn 2001). Robyn Carston (1996) has also pointed to the fact that certain examples of metalinguistic negation are closely related to *echoic use* in the sense of Relevance Theory (Sperber & Wilson 1995), and that metalinguistic readings can be found quite independent from negation and/or correction. Carston however shares with Horn and van der Sandt the conviction that metalinguistic uses are anaphoric in character - a stance that must be drawn into question, as the just presented examples show.

2.2 Quotation

Bart Geurts' example hints to a quite different view on metalinguistic negation that becomes increasingly popular, namely that metalinguistic negation involves hidden quotation marks (see Chapman 1996, Carston 1996, Geurts 1998, Burton-Roberts 1999, Recanati 2000, Potts 2004, Geurts (to appear)). It seems that such hidden quotation marks would resemble those overt ones found in written examples of *mixed quotation* like the following ones:

(18) a. Alice said "Life is difficult to understand". *(direct quotation)*

b. Alice said that life is difficult to understand. (*indirect quotation*)

c. Alice said that life "is difficult to understand". (*mixed quotation*)

(Cappelen & Lepore 1997)

In mixed quotation, quoted and unquoted material coexist in one and the same syntactic structure. According CappelenandLepore, mixed quotation is like

direct quotation able to bring certain utterance properties under the scope of a semantic operator, namely the verb *say*. For instance:

(19) Alice sagte, dies sei "eine Adverbiale".
(Alice said that this be "an-FEM adverbial-FEM".)
'Alice said that this is "an adverbial".'

(20) a. Alice said that the "next Iraq War" is probable.

b. Alice said that the next Iraq War "is probable".

(19) has a reading where Alice has wrongly used a feminine form of *adverbial*. In (20b), but not in (20a), Alice is ascribed an utterance which can trigger whatever conversational implicature is related to the choice of the term '*probable',* as opposed to '*certain*'.[4]

There is not yet much agreement as to how quotation marks and their impact on truth conditions and/or utterance meaning is properly analyzed. But one approach, namely that of Bart Geurts (to appear), allows for a particular economic theory of metalinguistic negation: According to his view, metalinguistic negation just contains hidden quotation marks. These quotation marks in turn trigger a presupposition to the effect that a particular utterance situation, including a speaker, exists where the quoted material has been uttered, and the meaning that the quoted material had in the presupposed utterance situation is taken as the semantic value that the quoted part contributes to the very sentence in which it appears. Under such kind of analysis, the *nicht* in *nicht...sondern...* is just to be analyzed as plain truth-functional negation.[5, 6]

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[4] For me, (20b) but not (20a) is able to trigger a scalar implicature in a properly imagined utterance context, but others I asked had divergent intuitions here.

[5] For a more detailed account the reader is referred to the cited text. Opposing views concerning the role of quotation in metalinguistic negation can be found in Recanati (2000)

3 The Presupposition

3.1 Introduction

Now that the truth-conditions of *nicht...sondern...* have been argued to be plain negation and conjunction, the next two sections will look at the very presupposition that, so the claim makes *nicht...sondern* special. As was said before, this presupposition is informally described as follows:

(21) In *nicht A sondern B*, the meanings of A and B are constrained to be *unmarked answers to some question Q*.

I consider A and B in this definition to be sentence-like objects and, not, say, DPs, PPs or VPs, in line with (12), and assume syntactic movement, ellipsis, deletion, type-shifting or the like in any occurrence of *nicht...sondern...* where the conjuncts do not surface as full clauses.[7]

Almost everything of (21) of course depends on what an *unmarked answer to a question* is supposed to be. The following informal definition captures what I take to be the essential properties of an unmarked answer:

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and Potts (2004), the further relying on pragmatic intrusion, the latter on semantically ambiguous negation for their resp. accounts of metalinguistic negation.

[6] Notice that Geurts' analysis doesn't predict that there is an antecedent utterance in discourse (which was a conviction ascribed to the classical analysis and claimed to be false above), since the presupposed utterance situation need not be actual - it might be accommodated, say in the scope of a negation or propositional attitude operator.

[7] This assumption is in accord with the analysis of the German negation (ordinary and "replacive") as an adverbial modifier in Jacobs 1982.

(22) An *unmarked answer to a question*...
i. intuitively resolves the question,
ii. licenses the exhaustive interpretation typically observed in answers,
iii. triggers the obligatory intonation that is found in answers to questions,
iv. is incompatible in the specific context with any other unmarked answer to the same question.

(22i) expresses that we are interested in direct and complete answers to a question. The answer should not only be "pragmatically" an unmarked answer, but also "logically". This point will be made more precise below. (22ii) and (22iii) express that we count the intonation and exhaustivity effects to be essential parts of the semantic object we are after. (22iv) is to be understood in relation to the notion of a *complete pragmatic answer* that has been put forward in Groenendijk and Stokhof (1990): Groenendijk and Stokhof (1990) assume that an interrogative describes a partition of the Common Ground (CG) which is roughly the set of worlds compatible with contextual knowledge. In particular, the interrogative in (23a) describes the partition of the Common Ground which is given by (23b):

(23) a. who walks?

b. { {w | exactly X walk in w, w ∈ CG} |
X a (possibly empty) set of individuals } \ {∅}

The elements of (23b) are called the *complete pragmatic answers* to the interrogative depicted in (23a). Groenendijk Stokhof maintain that these complete pragmatic answers are just the unmarked way to answer the question expressed by (23a). Since (23b) is a partition of the CG, as the reader is invited to check, its elements - the complete pragmatic answers of (23b) - are pairwise incompatible in the context. (22iv) thus just expresses a typical property of an

unmarked answer to a question, at least to the extent that Groenendijk and Stokhof's observation is correct that the unmarked answer to a question is a complete pragmatic answer.

3.2 A more formal characterization

The following definitions are intended to spell out (22) in a more formal fashion:

(24) **Axiomatically introduced entities**:
W is the set of possible worlds,
{T,F} the set of truth values,
Quest is the set of question meanings ("questions" for short),
Ans be the set of meanings of unmarked answers to questions ("answers" for short),
$\downarrow$: *Ans* $\rightarrow$ *W** maps an answer to the proposition it expresses / its truth-conditions.[8]

(25) **Unmarked answers to a question:**
answers : *Ans* $\rightarrow$ *Quest* $\rightarrow$ {T,F} implements the notion of an unmarked answer to a question in the sense of (22).

Let R (for gRammar) be a relation between sentence tokens and logical forms, and [[.]] be an interpretation function over logical forms such that R and [[.]] together express the properties of Standard German. Let furthermore CG be the Common Ground - the proposition which expresses contextual knowledge.

answers has the following properties:

[8] In the following, $\downarrow$ binds by convention stronger than other operators or functional application.

(i) (*resolving the question*) Assume that *answers*([[A^L]],[[Q^L]]) holds and that there are tokens A^S and Q^S such that A^S R A^L and Q^S R Q^L hold. In this case, someone who utters A^S is by those speakers of German who believe that [[A^L]] is true, considered as directly and completely resolving the question posed by someone who previously uttered Q^S.

(ii) (*exhaustive interpretation*) (i) still holds in those cases where A^S requires an exhaustive interpretation which is in a characteristic way stronger than the interpretation A^S receives in other circumstances.

(iii) (*intonation*) In the situation depicted in (i), speakers also think that A^S has an intonation contour which is maximally natural for that situation.

(iv) (*answers are disjoint in the context*) Assume that *answers*(a,q) and *answers*(b,q) holds for some a,b,q: Then either $\downarrow a = \downarrow b$ or $\downarrow a \cap \downarrow b \cap CG = \varnothing$ holds.

To summarize, the concept of an answer to a question is characterized for the present purposes in terms of two axiomatically given sets *Ans* and *Quest*, an operator $\downarrow$ on the members of *Ans*, and a binary predicate *answers* relating members of *Ans* and members of *Quest*. *answers(A,Q)* is intended to just express that A is an unmarked answer to Q.

Some readers will already have noticed that (25) allows us to derive the concept of the *answer-set* of a question, understood as the following set of propositions: $\{ \downarrow A \mid$ *answers*$(A,Q) \}$, where Q is a question meaning, just gives us the already mentioned logical notion of a question, as proposed and investigated by Groenendijk and Stokhof (1984) and subsequent work, which was illustrated above in (23).

The reader will also have noticed that (25) still doesn't provide any comprehensive definition or theory of an unmarked answer to a question but instead just lists some properties which are felt to be essential. This is an important aspect of the thesis being put forward in this paper: The claim is *not*

that the conjuncts of *nicht...sondern...* conform to some sufficiently well understood theoretical entity called "unmarked answer to a question". The claim is instead that the conjuncts of *nicht..sondern...* resemble in certain relevant aspects just those empirically found sentences which are well-described as stand-alone "unmarked answer to a question". The claim is thus both weaker and stronger than one that would rely on a concrete formal construction of the concept of an answer to a question: it says that you find - with respect to the aspects singled out by (25i-iv) - in the conjuncts of *nicht...sondern...* just what you find in stand-alone unmarked answers to a question, whatever that turns out to be, and how well or not well understood it might currently be.

3.3 A meaning rule

It is now possible to restate (12) - the truth-conditions of *nicht...sondern...*, and (21) - its presupposition - in a more explicit fashion:[9]

(26) **meaning of *nicht...sondern...***
[[nicht A sondern B]] is defined iff [[A]],[[B]] ∈ *Ans* and for some Q, Q ∈ *Quest* such that *answers*([[A]],Q) and *answers*([[B]],Q) hold.
In this case: [[nicht A sondern B]](w) = ¬ ↓ [[A]](w) ∧ ↓ [[B]](w).

According to this meaning rule, [[nicht A sondern B]] is not itself a member of *Ans*, a statement that could well be questioned. However, since nothing depends on this, I will keep with this maybe slightly inacccurate description of the state of affairs.[10]

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[9] Here and in the following I make the familiar assumption that a presupposition is a constraint over the domain of the function which makes up the semantic value of the very expression which triggers the expression.

[10] It is interesting to notice in this context that *nicht...sondern...* as an immediate response to an interrogative often sounds a bit unmotivated: "*Who walked?*" "*Not a boy, but a girl*."

A more serious objection against (26) amounts to saying that it is not compositional: As will turn out below, a compositional version requires further assumptions regarding *Quest*, *Ans*, and *answers*, and will be discussed below.

4 The Empirical Case

After the main hypothesis concerning the presupposition of *nicht...sondern...* has been presented in the previous section, this section will make the empirical case by showing that this presupposition predicts just the main empirical properties of *nicht...sondern...* which were presented in the introduction, namely: intonation requirements, exhaustive interpretation, and distributional restrictions.

4.1 Intonation

(26) in combination with (25iii) just says that the intonation in *nicht A sondern B* is always parallel to some stand-alone occurrences of A and B as *answers* to a common question Q. As an illustration, consider again (10), here repeated:

(10) *Nicht* um 3, *sondern* um 4 kommt ein Zug von Paddington.
(*Not* at 3 *but* at 4, comes a train from Paddington.)
'A train from Paddington doesn't arrive at 3.00 but at 4.00.'

The corresponding question and the relevant answers are likely those in (27):

(27) a. When does a train arrive from Paddington?

b. A train from Paddington arrives at THREE.

c. A train from Paddington arrives at FOUR.

As is easily seen, the intonation of (27b-c) resembles that in the conjuncts of (10). Most instances of *nicht...sondern...* just follow this pattern. There are however examples where (*26*)/(25iii) seems to make the wrong predictions, among them the following:

(28) ? Nora hat *nicht* ihr ZIMmer aufgeräumt,
(Nora has *not* her ROOM cleaned,
sondern ihr ZIMmer verschönert.
but her ROOM brightened up.)
'Nora didn't clean but brighten up her room.'

An element in the focused constituents, namely *ihr ZIMmer* (*her room*) is identical in both conjuncts here. The example should be fine with the indicated intonation, given that in:

(29) a. What has Nora done?

b. Nora hat ihr ZIMmer aufgeräumt.
(Nora has her ROOM cleaned.)
'Nora has cleaned her room.'

c. Nora hat ihr ZIMmer verschönert.
(Nora has her ROOM brightened up.)
'Nora has brightened up her room.'

(29b-c) are unmarked answers to (29a) with the indicated intonation. Nevertheless, (28) is highly marked. The much more natural intonation is:

(30) Nora hat *nicht* ihr Zimmer AUFgeräumt,
(Nora has *not* her room CLEANED,
sondern ihr Zimmer verSCHÖnert.
but her room brightened UP.)
'Nora didn't clean but brighten up her room.'

The crucial point in these examples is that they follow if one assumes that the underlying question Q has just two possible answers, as in (31a):

(31) a. Has Nora cleaned her room or has she brightened up her room?

b. (as unmarked answer to a:) *Nora hat ihr ZIMmer aufgeräumt. (=29b)

c. (as unmarked answer to a:) *Nora hat ihr ZIMmer verschönert. (=29c)

d. (as unmarked answer to a:) Nora hat ihr Zimmer AUFgeräumt.

e. (as unmarked answer to a:) Nora hat ihr Zimmer verSCHÖnert.

As the reader can easily check, the intonation in (30) is now correctly predicted. I want to propose that there is an additional requirement that the conjuncts of *nicht...sondern...* are the *only* answers to some question Q, which I take to be a pragmatic constraint on the accommodation of the presupposition expressed by (*26*):

(32) **Constraint on Accommodation**:
{ A | *answers*(A,Q) } must be minimal for the Q mentioned in (26).

Such a constraint can be motivated along the following line: By relevance, the question Q mentioned in the presupposition corresponds to a salient decision problem. Again by relevance, this decision problem is highly specific and thus more informative.

Alternatively, (26) could be modified to explicitly require that { A | *answers*(A,Q) } is minimal.

The following example illustrates a problem that is completely analogous to that in (28):

(33) * NOra las *kein* BUCH, *sondern* NOra eine ZEITschrift.
(NOra read *not-a* BOOK, *but* NOra a MAgazine.)
'Nora didn't read a book, but Nora a magazine.'

A and B contain multiple focus constituents, the first ones being "accidentally" identical. Again, this kind of over-focusing must be excluded by (32) or some equivalent.

It has often been implicitly assumed or explicitly claimed that in *nicht A sondern B*, *A* and *B* are parallel with respect to their information structure in a more fundamental way, such that the focused parts and the backgrounded parts are of the same syntactic type in both conjuncts (see for instance Jacobs 1991). Such a claim however cannot be substantiated as a true generalization, as the following examples indicate:

(34) *Nicht* Peter, *sondern* die Katze von Peter hat die Lasagne gegessen.
(*Not* Peter *but* the cat of Peter has the lasagna eaten.)
'Not Peter, but Peter's cat ate the lasagna.'

(35) Der Hauptpreis ging nicht an *einen* polnischen Film,
(The main prize went *not* to a Polish film,
sondern an Prikljutschenija Buratino.
but to Prikljutschenija Buratino.)

(36) Der Wirtschaftsnobelpreis wurde *nicht* von Alfred Nobel,
(The Nobel Prize for Economics was *not* by Alfred Nobel,
sondern erst 1968 vom Nobelpreis-Kommittee
but first-in 1968 by-the Nobel Committee
ins Leben gerufen.
into life called.)
'The Nobel Prize for Economics was not founded by Alfred Nobel, but first by the Nobel Committee in 1968.'

In (34), the backgrounded parts differ in type; in the other examples this even holds for the focused parts. This is however just predicted by (26)/(25iii), since

appropriate questions can be found which trigger the indicated intonation patterns:

(37) a. Did Peter or Peter's cat eat the lasagna?

b. Did the main prize go to a Polish film, or to Prikljutschenija Buratino?

c. Was the Nobel Prize for Economics founded by Alfred Nobel, or first in 1968 by the Nobel Committee?

Current approaches to question-answer congruence like those in Rooth 1991, Krifka 1992, Schwarzschild 199, have some problems to correctly predict the intonation found in these examples. These examples are thus a nice illustration of the fact that the claim made in this first part of the paper: the conjuncts in *nicht...sondern...* resemble stand-alone answers to questions - trigger empirical predictions even in the absence of a comprehensive formal analysis of the involved phenomena, that is, the concept of a complete answer to a question.

4.2 Exhaustive interpretation

As already stated in the introduction, exhaustive interpretation which is optional in questions to answers often occur obligatorily in *nicht...sondern....,* as in (6) - here restated:

(6') *Nicht* John, *sondern* ein Mädchen geht spazieren.
'*Not* John *but* a girl walks.'
John = John and nobody else.
A girl = a girl and nobody else.

The availability of exhaustive interpretation immediately follows from (*26*)/(25ii) when taking into account the fact that the same kind of exhaustive interpretation can be observed in the stand-alone versions of *John walks*, *a girl*

walks. That some exhaustive interpretation is also *obligatory* in this case follows from (*26*)/(25iv): Without exhaustive interpretation of at least one of the two DPs, *John walks* and *a girl walks* would hardly be mutually exclusive. (*26*)/(25) generally predicts that some exhaustive interpretation obligatorily applies in all those instances of *nicht A sondern B* where A and B (in their non-exhaustive reading) are compatible with each other in the context, and where no other reinterpretation process is available which renders pairs of answers A and B mutually exclusive.

4.3 Distributional restrictions

As for the distributional restrictions of *nicht A sondern B*, consider again example (2) from the introduction - here repeated:

(2) a. Lisa cannot yet walk, *but* she can only crawl.
Lisa kann noch nicht laufen, *sondern (*aber)* erst krabbeln.

b. Lisa cannot yet walk, *but* she can already crawl.
Lisa kann noch nicht laufen, *aber (*sondern)* schon krabbeln.

In (2b), A corresponds to *Lisa can already walk*, whereas B corresponds to *Lisa can already crawl*. Assuming that children learn to walk only after having learned to crawl, A always implies B. The translation with *sondern* is then readily ruled out by (26)/(25iv), which require A and B to be incompatible in the context. In (2a) however, *Lisa can already walk, Lisa can only crawl* are readily incompatible in the context under the same assumption that children learn to walk after having learned to crawl.

Most examples for the distributional restrictions of *nicht...sondern...* can be reduced along the just presented line of argument to the exclusivity

requirement on A and B. There are however examples that seemingly contradict this simple requirement. Take for instance:

(38) a. * Dies ist*kein* Haus *sondern* ein Gebäude.
(This is *not-a* house *but* a building.)

b. ? Dies ist*kein* Gebäude, *sondern* ein Haus.
(This is *not-a* building *but* a house.

(examples and judgements by Abraham 1975)

(38a-b) clearly violate (*26*)/(25iv). My claim is that these examples become fully acceptable to the extent that they are interpreted as involving mixed quotation:

(39) a. This is not a "house" but a "building"

b. This is not a "building" but a "house"

Such quotation readings might resolve to, say, I didn't say that this was a "house" - I said that this was a "building", or one doesn't refer to this as a "house" - one would just say "building"- depending on the context. My thesis is then that it is such a quotation interpretation that makes these examples satisfy (26)/(25iv). Abraham, who presented (38) in the first place, has himself noticed that the judgments suggested by him are highly context-dependent. It furthermore turns out that such sentences are less unacceptable and in tendency uninterpretable when being embedded below, say, regret, again somehow in dependence of the utterance context:

(40) * A bedauerte, dass er *kein* Tier,
(A regretted, that he *no* animal,
sondern einen Hund angefahren hatte.
but a dog hit-with-a-car had.)
'A regretted that he didn't hit an animal, but a dog with his car.'

This seems to me to be an indication that it is a very special and restricted interpretative process which makes the sentences in (38) acceptable in certain contexts.

There are finally a few reported examples for distributional restrictions in *nicht...sondern...* which do not follow from (26)/(25iv) but instead from certain scope restrictions that indirectly follow from (26):

(41) a. Unsere Wohnung ist leider nicht gross, *aber* zum Glück gemütlich.

b. * Unsere Wohnung ist leider nicht gross,
(Our flat is unfortunately not big,
sondern zum Glück gemütlich.
but luckily comfortable.)
(Pusch 1976)

In this example it is crucial that for (41a) to be acceptable, *leider* (*unfortunately*) must be interpreted to be within the scope of *aber (but)*; in (41b) however, *sondern* (*but*) is interpreted in the scope of *leider* (*unfortunately*):

Scope in 41a: [unfortunately [not big]] but [luckily comfortable]
(but >> unfortunately >> not)

Scope in 41b unfortunately [[not big] but [luckily comfortable]]
(unfortunately >> but >> not)

That (41b) is deviant in this interpretation is obvious since it implies that *our flat* is *unfortunately luckily comfortable* which is a contradiction. But why are the

scope relations of (41a) not available for (41b)? As the next subsection will demonstrate, this state of affairs mechanically derives from the meaning of *nicht...sondern...* as soon as the latter is formulated in a compositional fashion.

5 A Compositional Meaning Rule

The meaning rule of *nicht...sondern...* which has been used so far, namely (26), is in an obvious way non-compositional: the meaning is not decomposed into the meaning of *nicht* and *sondern*. In addition to any general preference for compositionality the reader may share or not, a compositional version of *nicht...sondern...* seems to be desirable because *nicht* is actually not the only possible partner of *sondern,* as the following examples show*:*

(42) Auf diesen Lorbeeren sollte sich aber *niemand* ausruhen, *sondern* sich in Zukunft mit Hilfe von Kursen permanent weiterbilden.
‘But *nobody* should rest on this laurels, *but* in future continue one's education with the help of courses.’

(43) Unsere Zeit findet dabei *kaum* ihren Ausdruck in einer entwickelten Naturphilosophie, sondern wird sicher weitgehend durch die moderne Naturwissenschaft und Technik bestimmt.
‘Our time *hardly* finds its expression in a developed philosophy of nature, *but* is certainly largely determined by modern science and technology.’

(44) Wie Dante denn auch der dritte Reim *selten oder niemals* geniert, sondern auf eine oder andere Weise seinen Zweck ausführen und seine Gestalten umgrenzen hilft.
‘As Dante is *seldom* or *never* ashamed by the third rhyme, *but (rather)* it helps him to do its duty in one or the other way and shape his figures.’

Such variability in the partner of *sondern* suggests that the negative element is not part of a compound lexeme *nicht...sondern...,* but instead compositionally contributes its meaning as usual.

A second argument for a compositional treatment is example (41b) above, since it will turn out now that a compositional meaning rule is able to explain why *unfortunately* must have wide scope in this example.

After all what has been said in section 2 above, in *nicht...sondern...*, *nicht* should simply express ordinary negation, whereas *sondern* carries the presupposition that makes *nicht...sondern...* special. The first step to such a compositional solution is to postulate a negation operator, *neg* in the following, which is defined on elements of *Ans*, and provides the meaning of *nicht*, as well as the negative meaning aspect of the negative elements in (42)-(44) above:

(45) **negating answers to questions**
(i) [[nicht]] = *neg*
(ii) $\downarrow$*neg*(A) = W\$\downarrow$A, for all A $\in$ *Ans*.

(ii) just says that neg implements ordinary negation. Now, intuitively, in order to turn (26), here repeated

(26) **meaning of *nicht...sondern...***
[[nicht A sondern B]] is defined iff [[A]],[[B]] $\in$ *Ans* and for some Q, Q $\in$ *Quest* such that *answers*([[A]],Q) and *answers*([[B]],Q) hold.
In this case: [[nicht A sondern B]](w) = $\neg \downarrow$ [[A]](w) $\wedge \downarrow$ [[B]](w).

into a compositional version, *sondern* must somehow be able to determine from the meaning of some left conjunct *nicht A* whether or not *A* answers *Q*. Formally, this means that a predicate *answers** with the following properties must be available:

(46) **negation and answerhood**
*answers**(neg(A),Q) iff *answers*(A,Q), for all A $\in$ *Ans* and Q $\in$ *Quest*.

The meaning of *sondern* can then be specified as follows:

(47) **meaning of *sondern...***
[[C sondern B]] is defined iff [[C]],[[B]] ∈ *Ans* and if for some Q, Q ∈ *Quest*, *answers**([[C]],Q) and *answers*([[B]],Q) hold.
In this case: [[C sondern B]] = ↓[[C]] ∩ ↓[[B]].

As it turns out, (45)-(47) together suffice to explain that *sondern/but* forces *unfortunately* to take wide scope in example (41b), here repeated:

(41b)* Unsere Wohnung ist leider *nicht* gross,
Our flat is unfortunately *not* big,
sondern zum Glück gemütlich.
but luckily comfortable.)

Assume for the sake of argument that *sondern/but* takes scope over *unfortunately*:

[[(41b)]] = [[C sondern B]],
where
C = our flat is unfortunately not big.
B = our flat is luckily comfortable.

Let Q be some suitable question.

Let A =neg(C)

(47) predicts the following presupposition:

answers*(C,Q) ∧ answers(B,Q)
=> answers(A,Q) ∧ answers(B,Q) (by Def. A)
=> ↓ A ∩ ↓ B ∩ CG = ∅ (by Def. answers - (25.iv))
=> W\↓ C ∩ ↓ B ∩ CG = ∅ (by Def. A, and Def. neg - (45.i))
=> ↓ B ∩ CG ⊆ ↓ C (set theory)

The last line now just says that the fact that our flat is luckily comfortable contextually entails that our flat is unfortunately not big, which seems to be an implausible if not impossible context restriction that isn't accommodated.

5.1 A remark on *answers**

Let's summarize: In order to formulate a compositional meaning rule for *nicht...sondern...,* two further properties of unmarked answers to question must be postulated: Firstly, it must be possible to negate answers (elements of *Ans*). Secondly, this negation must interact in a regular way with the answerhood relation expressed by *answers*, such that it is possible to determine the answerhood properties of some answer A from the value of neg(A). Where could this latter regularity stem from? One idea that comes to mind amounts to the assumption that *neg* is its own inverse:

(48) neg(neg(A))=A, for all A ∈ *Ans*

*answers** is then implemented as follows:

(49) *answers**(A,Q) = *answers*(neg(A),Q).

There is one reason why (48) might however actually be unwanted: An empirical property of *sondern* which hasn't been discussed so far, amounts to the fact that *sondern*, in contrast to *aber* (concessive but), obligatorily selects non-incorporated negation in its left conjunct:

(50) a. Er ist *nicht* freundlich, *sondern* ziemlich unhöflich.
(He is *not* friendly *but* rather impolite.)

b. * Er ist*un*freundlich, *sondern* ziemlich unhöflich.
(He is *un*friendly *but* (instead) rather impolite.)

c. Er ist*un*freundlich *aber* ziemlich höflich.
(He is *un*friendly *but* rather polite.)

Perhaps these contrasts have to be explained along the following lines: Assume that affirmative polarity, as well as the kind of incorporated negation which is operative in lexemes like *unfortunately,* doesn't give rise to the regularity expressed by *answers**. This means in particular that:

*answers**([[he is unfriendly]],Q)

would be false for any Q, which in turn makes *he is unfriendly* always a bad left conjunct for *sondern*. This explanation however requires that (48) does not hold since otherwise the following pair should be equally fine, which it isn't:

(51) a. Er ist selten nicht gekommen, *sondern* war oft sogar zu früh.
(Heis seldom *not* §come *but* was often even too early.)
'He seldom did*n't* come *but* was often even too early.'

b. * Er ist oft gekommen, *sondern* war oft sogar zu früh.
(Heis often come *but* was often even too early.)
'He often came *but* was often even too early.'

If double negation of answers to questions cancels out, as postulated by (48), and if *answers** is indeed the very reason for the obligatory selection of a negative element by *sondern*, (51b) should be (modulo subtleties) the same as (51a).

But is it actually semantics/pragmatics which is responsible for the obligatory selection of a negative element by *sondern?* Couldn't this be just a syntactic constraint? One hint that it is meaning is the following:

(52) a. He wasn't friendly. He was *instead* actually rather impolite.

b. * He was unfriendly. He was *instead* actually rather impolite.

The same selectional requirement that can be found in *sondern* in the frame of a sentence, can be seen to be operative in adversative *instead* across the very sentence border. There must thus be some meaning property that distuinguishes rigidly between the utterances "*he wasn't friendly"* and "*he was unfriendly"*, and the best candidate so far is the predicate *answers**, or any characteristic semantic part of it which requires its first argument to be "explicitly negative".

6 Why Presuppositional?

I have claimed several times now that the particular requirements on *A* and *B* in *nicht A sondern B* which have been the topic of this and the previous section are presuppositional in character: that they do not contribute to what is literally said, but to the requirements on proper use.

Is it so? My immediate intuition, as well as that of others I asked, says so. But there is also a more objective means to tell truth-conditions from presuppositions: It is generally believed that presuppositional content differs from truth-conditional content in that it "survives" negation (and some other embedding contexts) in the unmarked case, though it can be canceled in the marked case:

(53) a. "It is not the case that the King of France is bald."

b. *projected presupposition:* there is a King of France

c. *cancellation:* "In fact, France is a Republic."

This can be verified for the logical implication of (59)/(25.iv) which says that the conjuncts of *nicht...sondern...* exclude each other in the context:

(54) a. "Es stimmt nicht, dass *nicht* um 3, *sondern* um 4 ein Zug von Paddington kommt."
'It is not true that a train from Paddington doesn't arrive at 3.00 but at 4.00.'

b. *(projected presupposition:)*
There doesn't arrive a train from Paddington at both 3.00 and 4.00.

c. *(cancellation context:)*
"In fact, a train from Paddington arrives at every full hour."

(54a) naturally suggests the truth of (54a). However, the continuation of (54a) with (54c) cancels both the exclusivity of *A* and *B*, and the exhaustive interpretation of *at 3*, *at 4*.

7 Apparent Counterexamples

Although the characterization of unmarked answer to a question in (25) does not literally require that these involve exhaustive interpretation, the examples presented so far suggest that answers which are intuitively considered to be unmarked nevertheless typically involve such a particularly strengthened interpretation. Consider:

(55) a. Who has a light? Hans!

b. Where does one drink red wine? In Italy, for instance!

The answer in (55a) when interpreted non-exhaustively, as well as the answer in (55b), which resists exhaustive interpretation due to the presence of *for instance*, are instances of so-called *mention-some* answers (Gronendijk & Stokhof 1984). They would be considered by many to be examples for *marked* rather than

unmarked answers. This makes the following two examples rather problematic for the very thesis put forward so far:[11]

(56) "Wer hat Feuer?" "Hans zum Beispiel !" "*Nicht* Hans, *sondern* Bernd."
'Who has a light?' 'Hans, for instance!' '*Not* Hans *but* Bernd.'

(57) "Rotwein trinkt man *nicht* hier, *sondern* zum Beispiel in Italien."
(Red wine drinks one *not* here, *but* for instance in Italy.)
'One doesn't drink red wine here, rather for instance in Italy.'

In both cases, *sondern* seems to combine with mention-some answers. The use of *sondern* in (56) is to my intuition a bit strange, but certainly not totally out. The use of *sondern* in (57), on the other hand, sounds completely natural to me. How do these examples fit into the picture drawn so far? My tentative answer is that in both cases, the conjuncts of *nicht...sondern... are* in fact unmarked answers at a certain level of interpretation, namely that level where the presupposition of *sondern* is satisfied, and are mention-some answers only at some higher level of interpretation. Three observations to this point:

(i) Both in (56) and in (57), the conjuncts are still interpreted exclusively: The speaker in (56) takes it for granted that Hans and John do not both have a light, and in (57) the speaker takes it for granted that the location pointed to by *here* does not belong to those which are exemplified by Italy.

(ii) A third answer in addition to the *A* and the *B* in *nicht A sondern B* seems to be excluded: The following two are rather odd:

(58) ? "Wer hat Feuer?" "Hans zum Beispiel !"
"*Nicht* Hans, *sondern* Bernd. Und Paul."
'Who has light?' 'Hans, for instance!' '*Not* Hans *but* Bernd. And Paul.'

[11] Many thanks to Katrin Schulz and Gerhard Jäger for hinting me to these examples.

(59) ? "Rotwein trinkt man *nicht* hier, *sondern* zum Beispiel in Italien.
Und in Griechenland."
(Red wine drinks one *not* here, *but* for instance in Italy.
And in Greece.)
'One doesn't drink red wine here, rather for instance in Italy. And in Greece.'

(iii) The examples cannot be freely embedded in their relevant interpretation:

(60) "Bernd hat Feuer!"
Maria bedauerte, dass *nicht* Hans, *sondern* Bernd Feuer hatte.
'Bernd has a light'. Maria regretted that *not* Hans *but* Bernd had a light.

(61) ? Maria bedauerte, dass man Rotwein *nicht* hier, *sondern* zum Beispiel in Italien trinkt.
'Maria regretted that one does *not* drink red wine here, *but* for instance in Italy.'

(i) and (ii) suggest that there is *some* exhaustive interpretation still taking place here. (iii) indicates that the mention-some reading of the conjuncts is a rather marked effect which is not generally available.

I cannot yet offer a complete explanation for these mention-some cases, but I would like to suggest something along the following lines: Assume, following for instance Austin (1950), that sentences do not directly describe the world, but instead describe some part of it, typically a temporally and spatially restricted section, a *situation*. My stipulation is now that the conjuncts of *nicht...sondern...* in (56) are complete unmarked answers, and also receive an exhaustive interpretation, but one with respect to a question which *concerns a relative small situation* which is contained in the bigger the situation the previously uttered question "*who has a light?"* is about. This smaller situation might include just, say, one maximally relevant person who has a light, which is *Hans* for the person who uttered *Hans for instance*. The subsequent utterance of "*not Hans but Bernd"* comments on this small situation by saying that this

maximally relevant person is not Hans, but Bend. What gives the utterance of "*not Hans but Bernd"* the mention-some flavor is the particular context, which makes it clear that the small situation (the maximally relevant individual having a light) is actually embedded in a more extended situation, namely the one "*who has a light?"* is about. In other words: The utterer of "*nicht Hans sondern Bernd"* gives a mention-some answer to "*who has a light?"* by means of giving mention-all answers to a more restricted question.

I believe that basically the same mechanism is at work in the second example, (57). My claim is that *zum Beispiel* (*for instance*) operates non-recursively and just adds to the statement it is attached to the comment that this statement is to be considered as presenting just one example for a more general fact. What is going on in (57) is then roughly the following: Truth-conditionally, the conjuncts of *nicht...sondern...* provide unmarked answers to some question regarding where one drinks red wine, and regarding some limited situation. The *zum Beispiel* which is attached to the second conjunct, which is identical to the truth-conditions of the whole statement, marks via presupposition that the whole statement was intended to present just an example for something more general. This leads the hearers of (57) to re-interpret the mention-all answer "*one drinks red wine in Italy"* as a mention-some answer to some more general question which concerns a more extended situation.

To summarize: at least some mention-some answers do not necessarily cancel exhaustive interpretation at the truth-conditional level, but are a posteriori effects of the interpretation of the whole utterance.

8 The Diachrony of 'sondern'

In this last section of the first part I'd like to present a hypothesis about the diachronic origins of the presupposition and truth-conditions of *sondern*. The story goes as follows:

(i) *sondern* started out as a sentence marker and only later acquired its full syntactic flexibility as a conjunction-type connective. The truth-functional meaning component - logical conjunction - is simply the basic manner in which consecutive assertive statements are interpreted, which became lexicalized in the predecessor of *sondern* when it turned from a sentence marker into a conjunction-type connective.

(ii) The particular presuppositions of *sondern* are the effect of a conventionalization of relevance implicatures: Interpreting an assertion as the answer to a contextually supplied question certainly makes the assertion relevant, and that such mode of interpretation regularly obtains well justifies its categorization as a relevance implicature. It is just this kind of relevance implicature that I take to be conventionalized twice (once for A, once for B) in *nicht A sondern B*.

As an illustration, consider the following example:

(62) Was ist ein Ende? Das Ende ist nicht die Stelle, wo das Seil aufhört. Sondern in der Seemannssprache heißen alle Leinen und Seile einfach nur "Ende". Wenn ein Seemann also sagt: "Bring mir mal das Ende.", dann meint er: "Bring mir mal das Seil.".
‘*What is an 'end'? The end is not the point where the rope ends. But in the sailer's language, all cords and ropes are simply called 'end'. When a sailer says: 'Bring me the end', then he means: 'Bring me the rope.')*’[12]

sondern is used here as a sentence marker. This can be seen from the punctuation which mirrors phonological phrasing, and from the syntactic

[12] Kundschafter-Beobachterprüfung und Bronzelilie der Pfadfinder - Benenne die Teile eines Seiles, as found in the Internet.

position of *sondern*, which is that of the adsentential *aber* and *denn*, and syntactically highly marked for the case of *sondern.*[13] Furthermore, the question to which the conjuncts below *nicht*, *sondern* resp. provide the answers is explicitly given in the text. Speakers had well interpreted the proposition below *nicht*, and the subsequent statements as answers to the explicitly given question, even if presented a variant of (62) where *sondern* had been elided. (62) would thus work well with a historical predecessor of *sondern* which is a sentence marker that is somehow rhetorically adequate for the rhetorical figure: *question - negated false answer - asserted true answer*, without being at all restricted to such contexts.

The German connectives *stattdessen* (*instead*) or *vielmehr* (*rather, lit.: much more*) may serve as an illustrative example of how such predecessor of *sondern* might have been looked like; *stattdessen* and *vielmehr* have interesting things in common with a certain class of concessive sentence connectives which include *nevertheless*, *notwithstanding*, *just the same*, *even now*, and others: For these, Ekkehard König (1988) has observed in his typological study on concessive connectives that they are often composite in nature and have a very transparent etymology. He furthermore proposed that their meanings have evolved from the conventionalization of relevance implicatures - it was this hypothesis that has inspired my own hypothesis on the evolution of the meaning of *sondern*. König finally observes that concessive markers came into existence

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[13] *'s*ondern*'* *can* precede the preverbal *Vorfeld* position, as is demonstrated in (i):

(i) Nicht Peter, sondern Luise kommt.
'Not Peter comes, but Luise'

This peculiar configuration is however always licensed by a focused phrase in the Vorfeld position (see Jakobs 1982), and is accompanied by *not* being in a likewise peculiar position. Both features are absent in (62).

late in the history of the languages, and are rare and generally unspecific in meaning in Old English and Old German.

While it may well be true that *stattdessen* and *vielmehr* are rather young, it seems at first sight that *sondern* can be traced back to Old High German *suntar/suntir* , as is illustrated by the following versions of the line *But deliver us from evil* of *Lord's Prayer*, whose modern German version includes, of course *sondern*:

(63) a. *suntir* irlose unsih fona dem ubile (AHG)

b. *sunder* verloese uns von Übel. (MHG)

c. *sondern* erlose vns von dem vbel. (Early NHG)[14]
‘b*ut* deliver us from [the] evil.’

As (63a) indicates, some etymologically related word *suntir* already appears in Old High-German as the translation of the Latin conjunction *sed*. But this does not even prove that *suntir* included the meaning of *sondern* as a meaning variant, since rather different complementizers seem to fit the place that *suntir*/*sondern* occupies in this example: Among the complementizers one finds in various Old and Middle High German variants that roughly mean *and*, or *also*. Sometimes the complementizer is simply missing.

A superficial look at other sources suggests instead that a predecessor of *sondern* which overlaps in distribution with modern *sondern* is unlikely to be widespread before Middle High German: The *Middle-high German Conceptual*

[14] Adelung 1809: “128. Notker um 1000” p.196, “132. Ein Ungenannter um 1400” p.189, Luther 1522.

Database[15] does not contain any single use of a verb morphologically related to *sondern* which displays the typical characteristics of its modern counterpart. In the texts of the *Bonnner Frühneuhochdeutschkorpus* on the other hand, which includes samples from between 1350 and 1700, *sondern* or its variant *sonder,* when used as a sentence conjunction (not as an adjective), is always preceded by a negated sentence. *sondern*/*sonder* furthermore sometimes exhibits the syntactic flexibility of modern *sondern*, and can be embedded, as is illustrated in (64):

(64) Ein solchen tugentlichen Khuenig / begern wir auch zuhaben/ *dem* nit das Gold/ *sonder* Waffen liebten. (1557)[16]
(A such virtous King / seek we also to-have / who *not* the gold/ but *weapons* likes.)
'We seek to also have such a virtous King, who doesn't like the money but weapons.'

This *sondern*/*sonder*, even in adverbial or adsentential use, had of course a broader meaning than the contemporary form (see Rieck 1977, Pfeifer et. al. 1989).

The comparison of the two corpora suggests that *sondern/sonder* became popular as some kind of contrastive sentence marker not before Middle High German. *sondern*'s history was therefore not so far away from those of the adversatives that König investigated.

[15] The *Middle-high German Conceptual Database (mhdbdb.sbg.ac.at)* announces itself as containing the most important literary texts from the period in question.

[16] Taken from: Das Bonner Frühneuhochdeutschkorpus (www.ikp.uni-bonn.de/dt/forsch/frnhd/), Text 115: Sigmund Herberstein: Moscouia, Wien 1557.

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A Discourse-Based Approach to Verb Placement in Early West-Germanic*

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The paper presents a novel approach to explaining word order variation in the early Germanic languages. Initial observations about verb placement as a device marking types of rhetorical relations made on data from Old High German (cf. Hinterhölzl & Petrova 2005) are now reconsidered on a larger scale and compared with evidence from other early Germanic languages. The paper claims that the identification of information-structural domains in a sentence is best achieved by taking into account the interaction between the pragmatic features of discourse referents and properties of discourse organization.

Keywords: verb-second, early Germanic, discourse, information structure

1 Introduction

In investigating the role of information structure for the development of the word-order regularities of the Germanic languages, Hinterhölzl et al. (2005) observe that the position of the finite verb in 9th-century Old High German (henceforth OHG) clearly contributes to the separation of the information-structural domains of *Topic* vs. *Comment* and *Focus* vs. *Background* in the

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utterance on the one hand, as well as to the division of episodes and sub-episodes in the structure of running texts on the other hand. These findings show that verb placement in early Germanic – though subject to much more variation in comparison with the modern varieties of these languages – is by no means random but rather highly sensitive to a complex set of factors pertaining to information packaging and discourse organization as a whole.

These aspects of the function of the finite verb in early Germanic are addressed in Hinterhölzl and Petrova (2005) who take a first attempt at describing word order variation in the early Germanic languages in a dynamic model of discourse relations as outlined in the Segmented Discourse Relation Theory (SDRT) by Asher and Lascarides (2003). On the basis of data from OHG, it is claimed that the position of the finite verb is a device of indicating coordination vs. subordination as the two major types of rhetorical relations distinguished in the theoretical model stated above. This role of verb syntax mainly manifests itself in the opposition of verb-initial vs. verb-second structures in OHG. Verb-initial placement is generally found in sentences providing what is called the main story-line of the narrative and therefore attribute to the coordinating type of rhetorical relations, regardless of the informational status of the discourse referents in terms of the given-new distinction. By contrast, verb-second sentences typically occur in contexts providing additional, for example explanatory or descriptive information on a contextually given entity and therefore constitute discourse parts that are subordinated in text structure.

According to these observations it may be concluded that syntactic patterns other than the basic verb-final order started to emerge in early Germanic for reasons of discourse organization and rhetorical explicitness. Such a hypothesis bears far-reaching consequences concerning the development of the present-day syntax of the Germanic languages. In this respect, the purpose of the present

study is twofold. First, it aims at providing more theoretic and empirical support for the claim that verb syntax in OHG is to great extent a matter of discourse relations and information packaging. Second, the hypothesis of the discourse-functional role of verb placement in early Germanic gained on the basis of material from the OHG period has to be examined from the perspective of other related Germanic languages attested from the same period of time.

2 The Initial Hypothesis: The Case of the Old High German Tatian (9th century)

In order to investigate the role of information structure in the syntax of OHG, Hinterhölzl et al. (2005) pursue an approach that especially concentrates on the relationship between the informational status of discourse referents and the placement of the finite verb in the sentence. For several methodological reasons outlined in Hinterhölzl et al. (2005, pp. 4–6), the empirical basis of the analysis is restricted to such examples from the OHG *Tatian* translation (9th century) in which the OHG text differs from the word order of the underlying Latin original. The analysis of the data provides significant points in favour of the interdependence between information structure and verb syntax in OHG. These can be best demonstrated on instances belonging to the presentational/thetic vs. categorical distinction in grammar as outlined in Sasse (1987, 1995) among others.

First, presentational sentences in OHG will be examined. These belong to a pragmatically defined class of sentences used to introduce a new discourse referent into context and thus provide a classical instance of thetic, all-focus structures in which no topic-comment division applies (cf. Drubig 1992; Lambrecht 1994, pp. 127–131, 137–146 and 177–181 on this matter). Here, two

patterns seem to prevail in OHG. In the first one, the finite verb[1] occupies the position at the beginning of the entire sentence as in (1 a), whereas in the second one the verb is preceded only by a frame adverbial like OHG *tho* 'then', *thar* 'there' etc., see (1 b):

(1) a. OHG uuas thar ouh sum uuitua (T 201, 2)
Lat. vidua autem quaedam erat
'There was a widow there too'

b. OHG tho uuas man In hierusalem.(T 37, 23)
Lat. homo erat In hierusalem.
'There was a man in Jerusalem'

Despite of the syntactic differences at the left periphery of these sentences, they nevertheless have one important property in common: both types place the new referent **after** the finite verb, see OHG *sum uuitua* 'a widow' in (1 a) and OHG *man* 'a man' in (1 b), thus making clear that the post-verbal position is associated with the discourse-new property of sentence constituents. Furthermore, there is evidence leading to the assumption that the pattern in (1 a) is preferred over that in (1 b) in presentational contexts in OHG. Most revealing is the fact that in numerous examples of presentational sentences, frame adverbials are found post-verbally as well, especially when added against the Latin original, see OHG *thar* in (1 a). From this we may conclude that the initial position of the finite verb is strongly associated with the functional type of presentational, or thetic/all-focus sentences in the early period of German.

By contrast, categorical sentences providing a comment on a discourse-given or contextually inferable referent are systematically realized as verb-

[1] The finite verb in both OHG and Latin, as well as in all instances from other early Germanic dialects considered later in this paper, is underlined for clarity. A slash stands for end of verse or text line according to the graphical representation of the instances in the manuscripts respectively.

second structures in OHG against various word order patterns occurring in the Latin original, see (2 a–b):

(2) a. OHG ih bin guot hirti. guot hirti/ tuot sina sela furi siniu scaph. (T 225, 16-17)
Lat. ego sum pastor bonus. bonus pastor/ animam suam dat pro ouibus suis
'I am a good shepherd. The good shepherd gives his soul for his sheep.'

b. OHG Inti ira namo uuas elisab&h (T 26,2)
Lat. & nomen eius elisab&h
'and her name was Elizabeth'

A general property of the verb-second instances in (2) distinguishing them from the structures in (1 b) consists in the type of phrase that occupies the pre-verbal position. In verb-second structures of the categorical kind as in (2), the position preceding the finite verb is fixed to the constituent functioning as the aboutness-topic of the utterance (cf. Reinhart 1981).

The analysis provided on instances of the thetic vs. categorical distinction shows that in OHG the position of the finite verb exhibits a strong sensitivity towards the informational status of the discourse referents. It further allows for an initial generalization concerning the placement of the finite verb in early German as well. In all cases considered above, the finite verb occupies one and the same position, namely the one at the beginning of the new-information focus domain. This generalization may be represented as in (3):

(3) **thetic** a. $_{FOC}$[**Vfin** … DR_{new} …]
b. Frame $_{FOC}$[**Vfin** … DR_{new} …]
categorical $_{TOP}$[DR_{giv}] $_{FOC}$[**Vfin** ...]

This situation provides strong evidence for a post-verbal position of new-information focus in OHG. However, given this conclusion, we are in need of an explanation for verb-initial structures containing discourse-given material which is viewed to belong to the background of the utterance, see (4) below. Moreover, the definite expression *ther phariseus* 'this Pharisee' is a suitable topic candidate but nevertheless fails to occupy the position at the left periphery of the sentence as topic expressions in categorical sentences do, see (2) above:

(4) OHG bigonda ther phariseus innan imo/ ahtonti quedan (T 126, 5f.)
Lat. **P**hariseus autem coepit intra se/ reputans dicere
'This Pharisee began to speak thinking by himself'

On closer inspection, it turns out that verb-initial structures containing discourse-given material show a clear positional and functional distribution in OHG. First of all, they typically occur in text-initial sentences or at the beginning of new episodes as in (5 a–b):

(5) a. OHG uuard thô gitân In then tagon (T 35, 7)
Lat. **F**actum est autem In diebus illis'
'[It] happened in those days'

b. OHG Intfiengun sie tho thes heilantes lichamon (T 321, 29)
Lat. **A**cceperunt autem corpus ihesu
'Then they took the body of Jesus'

Episode onsets, for instance the shift to another place of reference in the source text of the New Testament, are signalled by concordance notes in the left-hand margins of the Latin column or between the Latin and the OHG text. Additionally, the beginning of a new paragraph is often marked graphically in the Latin part of the manuscript by using bald capital letters as shown in (4) and (5 a–b); see also Picture 1 and 2 in the Appendix. This strategy to mark the

beginning of new text units and thus to distinguish coherent parts in written discourse by means of punctuation and graphical representation is typical for the text production in early medieval times, especially in Carolingian manuscripts of both Latin and vernacular texts (cf. Bästlein 1991, p. 59 and pp. 214–242). As for the manuscript of the OHG Tatian, it has been observed in previous research that this strategy of dividing episodes and sub-episodes through initial capital letters predominantly applies for the Latin section of the text and only rarely occurs in the OHG part (Simmler 1998, pp. 306–307). At the same time, we now observe that the graphical distinction of new episodes in the Latin original correlates with the regular pre-posing of the finite verb in the OHG translation. This simply implies that the syntactic means of verb fronting systematically applies for marking episode onsets in OHG as a functional equivalent of the graphical highlighting of corresponding lines in the Latin original. To support this view, we shall pay attention to the fact that exactly on episode onsets, not only full DPs as in (4) but also pronominal subjects inserted against the Latin original (cf. OHG *sie* 'they' in (5 b)) have to follow the sentence-initial verb form.

Furthermore, verb-initial structures with discourse-given material regularly occur with certain groups of main verb predicates. The most common among these are motion verbs (6 a), verbs of saying (6 b) as well as verbs of sensual or cognitive perception (6 c), the latter especially encoding an inchoative meaning, that is, implying the initiation of a new state of affairs (6 d):

(6) a. OHG quam thara gotes engil (T 35, 32)
Lat. & ecce angelus domini
'There appeared God's angel'

b. OHG antlingota tho ther engil (T 28, 26)
Lat. & respondens angelus
'Then the angel responded'

c. OHG furstuont siu thó in ira lihhamen/ thaz siu heil uuas fon theru suhti (T 95, 14f.)
Lat. & sensit corpore/ quod sanata ess& a plaga
'Then she felt in her body that she was recovered from this plague'

d. OHG giloubta ther man themo uuorte (T 90, 24)
Lat. credidit homo semoni
'The man believed (=started to believe) in this statement'

How can the initial position of the finite verb in these examples containing discourse-given material be re-unified with the fact that the same structure occurs in presentational sentences with brand-new referents as well? A plausible explanation of this phenomenon can be gained if next to the informational status of referents, discourse relations among sentences are considered as well. This can help to avoid the practice of directly associating pragmatically given material with *Topic* as well as of restricting *Focus* to contextually new information only. From the point of view of discourse organization, it becomes clear that examples (4)–(6) do not act as categorical sentences providing comments on a given referent but rather act as event-reporting sentences answering implicit questions like "What happened then?/How does the story go on?" etc. This makes clear that the discourse referents contained in the instances under scrutiny are not mentioned as the starting point, or the *Topic* of the utterances but just as being involved in the new state of affairs reported here. From this perspective, sentences (4)–(6) have to be viewed as all-focus sentences just like the presentational ones given in (1). Since the post-verbal position is associated with new-information focus as shown in (3) above, fronting of the finite verb in those sentences may be viewed as a special strategy used to highlight the entire proposition and to disable a topic-comment reading, especially whenever discourse-given material is contained in a sentence.

A further argument in favour of this account on verb-initial placement in OHG comes from the lexical meaning of the predicate groups involved. Since these affect the main indices providing the deictic orientation of a situation, these being 'place', 'time' and 'participant', they can be attributed to an overall function of indicating a change within the narrative situation of the text[2]. According to these considerations, the presentational sentences in (1) are part of a subset of sentences establishing a new situation by introducing new participants to the discourse. This observation well fits into the fact that the shift of place and/or participant of the action is a typical instance in which episode onset is marked by initial capital letters in Carolingian manuscripts (cf. Bästlein 1991, p. 168 and p. 192).

These observations show that verb placement in OHG correlates not only with the informational status of the referents in the sentence but with discourse organization as well. In all cases, verb-initial placement occurs in instances bearing distinctive features of theticity like wide (sentence) focus and no topic-comment structure. So it is the role of the sentence in the context, that is, discourse organization proper, that provides crucial criteria for deciding whether a context-given discourse referent makes up the topic of the sentence or whether the same constituent belongs to the domain of wide (sentence) focus of the utterance despite of its informational status.

In order to explain the role of verb placement in OHG, I invoke the distinction between coordinating and subordinating discourse relations as developed by Asher and Lascarides (2003) and claim that at a certain stage in the history of German, the position of the verb was a means for distinguishing the type of rhetorical relation the sentence implies with respect to the previous context.

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[2] I am thankful to Roland Hinterhölzl (p.c.) for drawing my attention at this consideration.

The discourse analysis of the data given above gives rise to assume the following distribution of word order patterns in OHG:

- **verb-second** placement occurs in topic-comment structures that serve the conditions of Elaboration or Explanation on another utterance situated higher in discourse hierarchy; this pattern therefore marks relations of **subordination** in context. In particular, it marks chains of subsequent utterances being equally situated on a lower level of dependency, that is, the relation of Continuation;
- by contrast, **verb-initial** placement goes with **coordination** whose prototypical case – Narration – serves to carry further the discourse by providing chronologically sequenced units and establishing no dependency relation among the units involved. Following this, it can be said that Narration provides the level of main action in text structure. It either constructs the basis for subsequent Elaboration or Explanation as in the case of presentational or text-initial sentences, or it signals that a previous sequence of Continuation is suspended and discourse proceeds from a lower to a higher level of narrative structure as in the case of verb-initial sentences with discourse-given material, for instance in episode onsets.

Crucial support for the association of word order patterns with types of rhetorical relations as done above comes from the kind of temporal order between the sentences as one of the most important criteria in distinguishing coordination vs. subordination outlined in Asher and View (2005). In the case of topic-comment sentences in (2), explanatory or supportive information like description, characterization, motivation etc. is provided on a discourse referent or action previously mentioned. Consequently, events described in these structures temporally overlap with the state of affairs of the preceding sentence. This is rather different with the verb-initial sentences in (4)–(6) which clearly contribute to the temporal progression of the narrative, regularly marked by the

connective OHG *tho* ‘then’. So simultaneity in subordination vs. temporal succession in coordination are two aspects of discourse organization that can be well observed in the OHG examples presented above.

3 Comparison to Other Early Germanic Languages

3.1 Methodological issues

The hypothesis about the role of verb placement as a discourse-structuring device in OHG would gain strong support if it turned to hold in other early Germanic languages as well. In order to check this, it is necessary to compare the results gained from the analysis of the OHG material to other early Germanic dialects attested.

In the present study, texts from Old English (OE) and Old Saxon (OS) attested nearly from the same period of time as the OHG *Tatian* are taken into consideration. Brief accounts on the precise age and some general properties of the texts investigated from these dialects will be given at the beginning of the sections, respectively. Other early Germanic dialects, for example the Gothic or Old Norse records, have to be excluded from the analysis for methodological reasons.

Gothic, which apart from the runic inscriptions provides us with the earliest written records of the Germanic group, leaves only little ground for any reliable conclusions about authentic word order. The basic text of the corpus, the translation of the New Testament from Greek made by Wulfila in the 4th century and attested in fragments of copies from the 5th and 6th century (cf. Braune & Heidermanns 2004, § E5, p. 6), shows an overwhelming identity with the word order of the parallel Greek text. If this is indeed the text taken as the source for the Gothic translation, future work could address especially sentences deviating from the syntactic structure of the Greek original, an approach similar to the one

pursued for the OHG *Tatian* above. According to Fourquet (1938, pp. 234–281), such sentences in Gothic really exist. A full sample of these would provide a basis for a subsequent analysis of verb placement, too.

Old Norse, on the other hand, although exhibiting a rich amount of authentic text material, starts its written records only very late, in the 12th century (Ranke & Hofmann 1988, pp. 13–18), that is, at a time at which in other Germanic dialects we already speak of Middle High German or Middle English respectively. Moreover, most of the prose is attested to us in copies of a later time; innovation in the language, for example, in the field of syntax is not excluded since the texts were not memorized but written down freely (cf. Ranke & Hofmann 1988, p. 16; Rögnvaldsson 1996, p. 59)[3]. This explains why a relatively rigid verb-second order in main clauses and little variation in verb placement according to the criteria of discourse organization were discovered in sketchy examinations of the ON prose material done for the purpose of the present study. A notable exception is the verb-initial placement in declarative sentences, also called 'narrative inversion' (cf. Heusler 1967, § 508, p. 173 and Sigurðson 1994) which often applies within a passage of related and chronologically successive events. It has already been noted in previous literature that verb placement takes the role of linking events to consistent units of running discourse called 'periods' according to the ancient Latin syntactic tradition, see Kusmenko (1996) and Donhauser et al. (to appear). However, this phenomenon turns out to be at present in OS too and will be discussed in more detail in 3.3 below.

[3] A different picture may be obtained from the examination of the ON poetic records. These texts were created much earlier (9th and 10th century) and are said to preserve the forms and structures of the language at the stage of their creation due to the fact of being memorized and transmitted through time without any changes (Ranke & Hofmann 1988, p. 18). However, the effort of examining poetic texts of the ON record could not be taken at this stage of the investigation.

3.2 Old English

3.2.1 Some previous accounts

In both language typology and diachronic text linguistics, OE has received much attention as a good example for exploring various strategies of foregrounding and backgrounding in discourse structure. A great amount of work deals with the role of the connectives in running discourse, among which the most prominent one – OE *þa* 'then' – was lately viewed by Enkvist and Wårvik (1987) in their analysis of several OE prose texts to be a special marker of foregrounding in discourse since it either signals main-line sequentiality or serves to highlight narratively important conditions. In recent generative work on diachronic Germanic syntax, the connective OE *þa* has also gained sufficient attention as a special discourse operator (cf. van Kemenade 1997, p. 333) triggering regular verb-second patterns in OE, though the pragmatic function as well as the theoretic status of the connective as an operator proper needs further specification (cf. van Kemenade 2005).

Further properties of text organization in OE prose are investigated by Hopper (1979 a, b) who observes that word order – especially verb placement – is a fundamental means for signaling foregrounding vs. backgrounding in discourse. In his analysis of the OE *Anglo-Saxon (Parker) Chronicle*, Hopper (1979 a, pp. 48–56) claims that sentences bearing distinctive features of foregrounding in discourse like dynamic, punctual verb meaning, temporal progression, etc. regularly exhibit verb-final order (OV), whereas structures attributed to the function of providing background, or supportive information through durative predicates in temporal relations of simultaneity to main actions tend to advance the verb to a position at or near the beginning of the sentence. One of the patterns well exhibited here is the SVO order in explanatory or descriptive (thus background) sequences on a pre-established topic constituent.

Besides this, Hopper observes verb-initial order in introductory sentences in OE. These he interprets as instances of backgrounding since they "set the scene for the main action" (p. 53) in subsequent OV-instances of foregrounding (cf. also p. 49). Nevertheless, Hopper discovers a principled mismatch between discourse function and verb placement in OE as described above and his own observations on Malay provided in the same paper (cf. pp. 40–49). According to these, Malay uses verb-initial placement next to morphological marking (suffix *lah* added to the fronted verb) in foregrounding sentences (cf. p. 44), whereas in OE the same structure turns out to signal background in introductory sentences.

In another paper Hopper (1979 b, pp. 221–226) offers a slightly different account on the distribution of verb placement as a text-structuring device in OE prose. He still regards background as marked by medial verb placement as in SVO order (p. 222) whereas foregrounding is now said to be generally characterized by peripheral verb placement, including both verb-final and verb-initial. The distribution of these two types of verb pattern in foregrounding is further specified by "discourse considerations" (p. 221): verb-initial is viewed to occur in introductory parts, that is, at the beginning of new episodes, whereas verb-final is bound to episode-internal sentences. Nevertheless, according to Hopper (p. 221), the choice for the one or the other verb-peripheral pattern seems to be rather arbitrary.

This shows that the picture concerning the analysis of OE prose is rather unclear and has to be reconsidered on the basis of further evidence from the same period. Moreover, the basic means providing foregrounding in OE in the model suggested by Hopper concerns verb-final – a pattern that has not been mentioned in the discussion of the matter for OHG above. Therefore, it is of interest to look whether this is a principled difference between the two languages in the way they utilize verb placement for discourse-structural purposes.

3.2.2 An alternative approach: discourse functions of verb placement in the OE *Beowulf*

In the present analysis, the contexts and factors described as favouring verb-initial vs. verb-second placement in OHG *Tatian* above are reconsidered on the basis of data from the OE *Beowulf*, the oldest epic narrative of all early Germanic literature. The text, comprising some 3.000 alliterative lines, is composed in the 8th century in the Anglian dialect and written down in the later half of the 10th century in Late West Saxon – the standard OE dialect at that time – though a number of original Anglian forms remain (cf. Lehnert 1960, vol. I, p. 43).

Starting with a review of typical verb-first occurrences in OE *Beowulf*, it is important to note that these are in no way rare or uncommon for this text of the Early Germanic period. First of all, and quite similar to the picture drawn for OE prose by Hopper (1979 a, b) and described for OHG above, *Beowulf* tends to expose instances of verb-initial placement regularly in text-initial position as well as at the beginning of a new text section. New chapters called 'fits' are easily detected in *Beowulf* since they are marked by Roman numbers in the manuscript (cf. Bästlein 1991, pp. 214–216). At the beginning of such chapters, verb-initial placement goes with all types of main-verb predicates. So in (7 a) the sentence at the beginning of a fit XII describes a statal (durative) condition, whereas in (7 b) the predicate at the beginning of fit XIX clearly describes a punctual event:

(7) a. OE Nolde eorla hleo […] / cwealm-cuman cwicne forlætan (Beow 791f.)
'The protector of the warriors did not wish to let the monster go alive'

b. OE **S**Igon þa | to slæpe (Beow 1252)
'They sank then to sleep'

Next to their occurrence at episode onsets, verb-initial structures in *Beowulf* tend to appear frequently with certain groups of main-verb predicates, which is another striking parallelism to the situation described for OHG above. The overall impression gained from the analysis of these structures in OE is that they occur exactly in cases where the plot enters a new stage of development or the narration needs to be pushed forward. Among the cases of verb-first placement in such contexts, motion verbs constitute the overwhelming part. In such instances, both discourse-given and discourse-new referents are involved, see (8 a) vs. (8 b). Note that in (8 b) Wealhtheow, the wife of the Danish king Hrothgar, is mentioned for the first time in the narrative:

(8) a. OE Com þa | to lande lid-manna helm (Beow 1623)
'Then the protector of the sailors approached to the shore'

b. OE eode wealh-þeow forð cwen hroð-gares (Beow 613)
'Then came Wealhtheow, Hrothgar's wife'

Further verb-initial structures containing motion verbs are found 5 times at the beginning of a new fit (II, XVII, XXVII, XXVIII and XXXV). One of these occurrences – the beginning of fit XXVII – is provided as an example in (9):

(9) OE CWOM þa | to flode fela modigra/ hæg-stealdra (Beow 1889f.)
'The heap of warriors came then to the sea'

Verb-initial order is also common with verbs of saying or perception verbs appearing both at the beginning of fits, see (10 a)–(11 a), but regularly within some, too, see (10 b)–(11 b). Obviously, these sentences share the property of relating an unexpected but extraordinary important event or action, ex. a turning point in the course of the events. This is at best shown in (11 a) narrating how

Beowulf suddenly detects a weapon with which he is going to win the battle against Grendels' mother:

(10) a. OE **H**eht ða þæt heaðo-weorc to hagan biodan (Beow 2893)
'He ordered to announce that battle-toil'

b. OE Spræc/ ða ides scyldinga (Beow 1170f.)
'Then queen of the Danes spoke'

(11) a. OE **G**E-seah ða on | searwum sige-eadig bil (Beow 1558)
'In the middle of the battle he saw a triumphant blade'

b. OE geseah | ða/ sige-hreðig […] maððum-sigla (Beow 2756f.)
Then the hero saw a treasure'

As with verbs of saying, the verb-second structure as in (12) below also occurs. A typical property of this type of expression is that a discourse-given referent, mainly a changing interlocutor in a dialogue, is placed before the verb and an apposition follows it. However, this type of structure seems to be restricted to the verb OE *maþelian* 'say, speak', here in the form of the 3sg. preterit *maðelode*, see also Todt (1894, p. 237), a fact providing indications for a kind of idiomatic expression standing beyond the analysis of word order variation in this functional domain:

(12) OE Bio-wulf maðelode bearn ecg-ðioes (Beow 1999)
'Beowulf spoke, the son of Ecgtheow'

Furthermore, verb-initial order also correlates with different main verbs sharing the property of perfective, punctual semantics which – used within a fit – denote the initiation of a new state of affairs. Due to their aspectual properties, these verbs take the function of dividing the chapter into sub-episodes and smaller

text-units and are especially suitable to signal new situations and progress in narration:

(13) a. OE Gesæt ða on næsse niðheard cyning (Beow 2417)
‘Then, the brave (proven in troubles) king sat down on the earth’

b. OE aras þa se rica (Beow 399)
‘Then this hero stud up’

c. OE bær þa seo brim-/wyl […] aringa þengel to/ hofe sinum (Beow 1506f.)
‘Then the brine-wolf brought the lord of rings to her lair’

Also in striking parallelism to the picture drawn for OHG above, all verb-initial structures in the cases considered so far contain frame adverbials like OE *þa* ‘then’ placed **after** the verb. Verb-initial order as an indication of a change within the narrative setting is thus preserved, see (7 b), (8 a), (9), (10 a–b), (11 a–b) as well as (13 a–c). Next to such cases, instances of verb-second order introduced by initial *þa* as in (14) co-occur in all the functions and context described for verb-initial sentences so far:

(14) a. OE **Ð**a com of more under mist-hleoþum/ grendel gongan (Beow 710f.)
‘Then from the moorland, by misty crags, Grendel came’

b. OE **Ð**a wæs swigra secg sunu/ ecglafes (Beow 980f.)
‘Then this man, the sun of Ecglaf, became more silent’

To sum up, the initial position of the finite verb in both the functional domains and with the predicate groups distinguished as triggers of the same structure in OHG appears to be a wide-spread pattern in the OE *Beowulf* as well. In previous literature, fronting of a finite verb before any other argument position in OE has already been associated with the purpose of highlighting “a new or surprising

subject" (Stockwell 1984, p. 576). Due to the property of the verb-initial sentences to carry further the discourse, especially in episode onsets, we may now extend the function of verb-initial placement to the function of focussing not only the subject but the entire proposition. That the picture drawn for OE is a realistic one gains support from the fact that several of the constructions involving a post-verbal subject in present-day English appear exactly in the conditions discovered for the older stage of this language, too. Presentational and existential contexts, motion verbs, verbs of saying after citations etc. are the most prominent among these (cf. Green 1980; Stockwell 1984, pp. 579–583; Hansen 1987, p. 202). This syntactic peculiarity of present-day English may now be viewed as a remnant of a general word order strategy used to signal sentence focus, or progress in narration in the older stages of the language.

Turning to sentences of the categorical kind and comparing the results from OE with the preferred verb-second placement in such contexts in OHG, we encounter a basic difference between the two languages. The verb-second pattern with a left-peripheral topic constituent dominating in this pragmatic domain in OHG is indeed found in part of the evidence from OE. This is the case in (15) which clearly allows for an interpretation as an identificational sentence answering the preceding question "Who are you?":

(15) OE we | synt gum-cynnes/ geata leode (Beow 260f.)
'We are by kin of the clan of Geats'

The same kind of topic marking also occurs in parenthetic constructions providing additional information on an entity just mentioned:

(16) OE wulfgar maþelode þæt wæs wendla leod (Beow 348)
'Wulfgar spoke – this was the Wendles' chieftain'

Due to the pragmatic status of the referents and on the basis of discourse interpretation, it can be concluded that the finite verb in structures of the type in (15) and (16) is set to distinguish the aboutness-topic from the new information supplied by the rest of the sentence.

Nevertheless, patterns other than verb-second also appear in categorical sentences of OE. Consider the following example in (17):

context: het ða in beran eafor-/ heafod-segn. heaðo-steapne helm/ hare byrnan guð-sweord geato-lic/ gyd æfter wræc
'Then he [=Beowulf] ordered to bring him the boar-head standard, the high battle-helm, and the gray breastplate, the splendid sword, then he spoke:'

(17) OE me | ðis hilde-sceorp/ hroðgâr <u>sealde</u>' (Beow 2155)
'These ornaments of war were given to me by Hrothgar'

A short characterization of the situation is crucial for the understanding and the proper information-structural analysis of this example: after his return to his home land, Beowulf relates his adventures with the Danes and is eager to present the gifts that he has obtained from them as an award for his successful fight against Grendel. So he asks to bring these gifts and as they lay in front of his counterparts, he utters the sentence quoted in (17). Thus, the context of this text passage bears strong indications for the interpretation of the sentence as a categorical one. It is also clear that the definite expression OE *ðis hildesceorp* 'these ornaments of war' best qualifies to be the aboutness-topic of the utterance, for it refers to a previously mentioned referent and is expected to be the starting point of a sentence providing more information on it. However, this constituent is not separated from the rest of the utterance by means of verb placement as demonstrated for the parallel cases in (2) from OHG and (15)–(16) from OE. Rather, the aboutness-topic of the utterance in (17) shares the same syntactic domain with referents belonging to different information-structural

categories, for example the familiarity topic OE *me* ‘me/to me’ as well as the focus of the sentence, the donor of the weapons *hroðgâr* ‘Hrothgar’.

The examples discussed in this section provide important points for the evaluation of the interaction of verb placement and discourse relation in OE. On the one hand, the cases of verb-initial structure confirm the findings for OHG. On the other hand – and in clear opposition to the OHG facts – relations of subordination turn out to be not obligatorily fixed to verb-second placement in OE. Cases like the one discussed in (17) show that verb-final structures in OE, against the claims of Hopper (1979 a, b), are also found in sequences providing supportive, or descriptive information and thus belong to the parts representing the background of the narration.

3.3 Old Saxon

After having pointed at a crucial difference between the syntactic realization of categorical sentences in OHG and OE, we turn to the investigation of evidence from the OS period. The data is based on the most representative text of the OS corpus – the *Heliand* – a $9^{th}/10^{th}$-century poetic gospel harmony comprising 5.983 alliterative lines (cf. Rauch 1992, p. 1).

It has been pointed out in previous literature that patterns in which the finite verb precedes all arguments in main clauses are extremely frequent in OS syntax. Rauch (1992) estimates sentences initiated by a particle followed immediately by the finite verb to be the most common pattern in OS and therefore accounts them to be “[t]he unmarked word order of the OS independent declarative sentence” (p. 24), followed in number by ‘pure’ verb-first sentences. As early as in the revealing work of Ries (1880), the kind of logical relations between sentences in context have explicitly been accounted for as the main factor triggering this kind of fronting of the finite verb in OS.

Looking at the correlation between the finite verb form and the informational status of discourse referents, we encounter a slightly different situation in OS in comparison to OHG. On the one hand, in presentational contexts, the type of verb-second preceded by a frame adverbial in initial position as in (18 a–b) seems to be more frequent than verb-initial sentences as in (19) thus establishing a quantitative relation opposite to that of the same patterns in OHG:

(18) a. OS than uuas thar en gigamalod mann (Hel 72)
'Then it was an old-aged man there'

b. OS Than uuas thar en uuittig man (Hel 569)
'There was a wise man there'

(19) OS Lag thar en felis biouan (Hel 4075)
'A stone lay there upon [the entry of the tomb]'

On the other hand, categorical sentences – for example those directly following presentational ones – exhibit the structure established for OHG already, that is, they use to fill a single position before the finite verb form with the topic of the utterance, most usually in form of an anaphoric pronoun referring backwards to the entity just introduced to context, see (20):

(20) a. OS that uuas fruod gomo (Hel 73)
'that was a wise man'

b. OS That uuas so salig man (Hel 76)
'This was such a blessed man'

This situation leads to some conclusions about the interaction between information structure and syntax in OS. First, it points at a higher stage of generalization of the verb-second rule in OS as this structure appears in different contextual types of main sentences despite of the type of constituents or the

informational status of the referents involved. Second, it shows that new information in all cases follows the finite verb and therefore confirms the view of a right-peripheral focus domain in early Germanic as stated so far. This is also demonstrated by other instances bearing a brand-new referent, for example in the object position of a transitive verb, see (21):

(21) OS Thar fundun sea enna godan man (Hel 463)
'There, they found a good man'

Although verb-initial instances turn out to be less frequent in presentational contexts in OS, it is interesting to look for further utilizations of verb fronting aside from these classical cases of all-focus sentences. As a matter of fact, such instances really occur in OS exactly in the conditions under which they systematically appear in OHG and OE discussed above. Also quite similar to the situation in these languages, verb-initial placement in all occasions is doubled by the verb-second patterns with a preceding frame adverbial as an optional variant in the same pragmatic domains.

First, we shall turn to sentences at the beginning of a new text section. There is no problem to isolate such instances in *Heliand* as the text is divided in chapters termed 'fits' ('vittea') in the Latin preface of the poem. Verb-initial structures occur with all sorts of predicates describing both states and actions, see (22 a–b) vs. (22 c–d):

(22) a. OS Habda im the engil godes al giuuîsid […] (Hel 427)
'The angel of god had shown all to them'

b. OS Stod imu tho fora themu uuihe uualdandeo Crist (Hel 3758)
'Then the almighty Christ stood in front of the temple'

c. OS Giuuet imu tho that barn godes innan Bethania (Hel 4198)
'Then this child of God went to Bethany'

d. OS Vurdun tho thea liudi umbi thea lera Cristes/ umbi thiu uuord an geuuine (Hel 3926f.)
'Then, these people became wandering about the message of these words'

Second, verb-initial structures regularly occur in sentences containing the predicate groups distinguished as triggers of verb-initial placement in OHG above. Like in OE, the most common examples are provided by sentences containing motion verbs. In general, these occupy the initial position in the sentence despite of the pragmatic status of the referent involved or the position of the utterance in global text structure. As (23 a) vs. (23 b–c) show, both discourse-new and discourse-given referents are found in post-verbal position, and only (23 b) is one at the beginning of a new fit, the rest of the examples signal a change of the situation within one and the same episode:

(23) a. OS Tho quam thar oc en uuif gangan (Hel 503)
'Then, a woman came there, too'

b. OS Giuuitun im tho eft an Galilealand Ioseph endi Maria (Hel 780)
'Joseph and Mary went to the land of Galilee'

c. OS Forun thea bodon oƀar all (Hel 349)
'The messengers went all over the country'

Further, verbs of saying also regularly occur in sentence-initial position, see (24 a–b). Verb-second order after a frame adverbial is functionally equal in such contexts, see (24 c):

(24) a. OS Hiet man that alla thea elilenduiun man iro odil sohtin (Hel 345)
'It was ordered that all these foreign people should go to their native country'

b. OS Het imu helpen tho/ uualdandeo Krist (Hel 4101f.)
'The almighty Christ ordered to help him'

c. OS Tho sprak thar en gifrodot man (Hel 208)
‘Then a wise man spoke there’

Finally, predicates pointing at the beginning of a new physical or cognitive state of affairs on a discourse-given referent regularly expose the verb-initial structure, see (25 a–b); verb-second order after a frame adverbial is again an equivalent to that, too:

(25) a. OS uuarð ald gumo / sprâka bilôsit (Hel 172f.)
‘The old man became bereft of speech’

b. OS Uuard Mariun tho mod an sorgun (Hel 803)
‘Then, Mary became anxious’

c. OS Thô uuarð hugi Iosepes, / is môd giuuorrid (Hel 295f.)
‘Then, Joseph became worried’

Apart from these instances in which – quite similar to the other investigated old Germanic languages – OS makes use of initial verb placement to signal progress in narration, OS itself offers a number of special cases in this direction.

One of the peculiarities of OS is the use of the verb-initial pattern in explanatory parts of the narration denoting durative conditions on a discourse-given referent. Due to the criteria for distinguishing types of discourse relations in text hierarchy described in section 2, such cases should be classified into the domain of subordination in discourse covered by the verb-second pattern in the OHG, OS and part of the OE data analyzed before. However, the OS data give reason to believe that pre-posing of the verb in explanatory parts of the narration does not occur randomly but applies exactly in sentences announcing an outstandingly important event or property, that is, a state of affairs which is crucial for the further development of the narrative (cf. Ries 1880, p. 19 for a similar interpretation of such instances). Applying our previous account on cases

like these, we may conclude that fronting of the finite verb to the beginning of the sentences is a syntactic means used to highlight the importance of the entire proposition in relations to the surrounding units of discourse. Verb-first and verb-second patterns form an interesting opposition, as will be shown by the following examples taken from story about the nativity of John the Baptist (Luke 1):

(26) OS a. Than uuas thar en gigamalod mann,/ b. that uuas froud gomo […] c. That uuas so salig man/ […] d. Uuas im thoh an sorogon hugi,/ that sea erbiuuard egan ni moustun (Hel 72–86)
'Then, there was an old-aged man, this was a wise man […] This was such a blessed man […] But they had great sorrow, for they had no child'

In the categorical sentences in (26 b and c) providing additional information about the discourse referent introduced in (26 a), the verb-second pattern in structures distinguishing the information-structural domains of *Topic* and *Focus* by means of verb placement applies. In (26 d), a characterization of the referent is given which is more important than the already provided information about his age and his wisdom. Zachariah's and Elizabeth's lack of a child is crucial for the further development of the story; it is a condition which is going to change and to motivate a chain of subsequent events constituting the further course of the narrative.

So in this case, a special utilization of verb fronting as a signal of sentence focus appears. Whenever an important feature of a referent, or a crucial event of the story is narrated, the language switches to verb-initial placement in order to highlight the whole proposition and to set it up against other, not so important parts of the discourse.

As a further peculiarity of OS, verb-initial placement appears not only at episode edges but within episodes of temporally successive events called

‘periods’ according to the ancient grammatical tradition (cf. Kusmenko 1996, 147). This phenomenon of verb syntax in early Germanic is already known and described for Old Norse prose (Heusler 1967, §508, p. 173; Kusmenko 1996, 150–153 and Donhauser et al., to appear). Consider the following example:

(27) OS a. Thô uuarð thar an thene gastseli / megincraft mikil manno gisamnod […] b. Quâmun managa / Iudeon an thene gastseli; c. uuarð im thar gladmôd hugi, / […] d. Drôg man uuîn an flet / […] e. Uuas thes an lustun landes hirdi […] / f. Hêt he thô gangen forð gêla thiornun (Hel 2733 – 2745)
‘a. There was a mighty crowd of men gathered together in the guest hall [...] b. Many people came to that guest hall […]; c. there they became glad-hearted [...]. d. Wine was brought to the room [...]. e. The herdsman of the land bethought him with joy [...] / f. He ordered to go for the gay maiden’

The example gives a chain of chronologically ordered events all exposing no dependency relation among each other but being equally situated on the layer of main action. In a case like this, we observe a classical instance of Narration as a prototypical example of rhetorical relations of the coordinative kind. Again, verb-initial placement signals that each sentence in a narrative chain like the one in (27) reports a new event and thus forms an all-focus instance by itself in which no topic-comment distinction applies.

It is a peculiarity of OS that although verb-second order seems to prevail in main sentences of different pragmatic classes, verb-initial placement nevertheless systematically applies as a means of establishing main-line sequentiality and sentence focus both on episode onsets as well as within episodes.

4 Conclusion

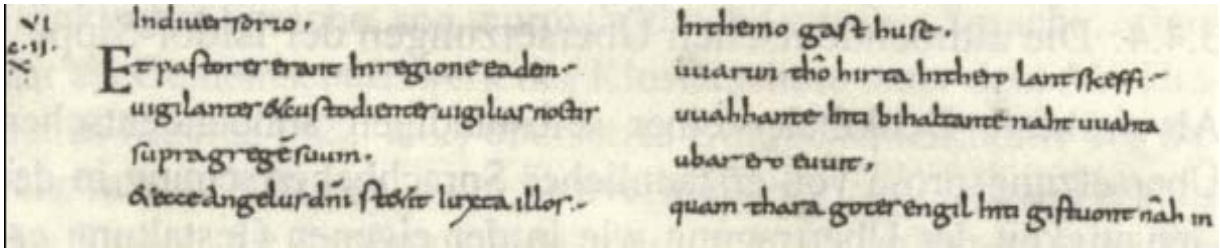
The most important conclusion of the foregoing investigation is that apart from OHG, other older Germanic dialects also provide evidence for the claim that verb placement plays a role as a text-structuring device in early Germanic. In other Germanic languages, verb-initial instances show up more or less regularly in the functional domains outlined for OHG and associated with coordinative linking in discourse, though with a slightly different distribution and frequency. A crucial domain of difference among the early Germanic situation was discovered in the field of rhetorical relations of the subordinating kind. Here, the pattern of verb-second placement used in OHG and broadly grammaticalized in OS seems to co-occur with verb-final structures in OE. These differences in the early Germanic situation could be made responsible for the development of different word order patterns in the modern systems of these languages.

The method of analysis pursued in the present study bears implications on the theory of information structure as well. It aims at showing that the identification of the information-structural domains of *Topic* and *Focus* depends not purely on factors associated with the pragmatic features of the discourse referents involved, that is, on properties like *given* or *new*, but also on properties of discourse organization as a whole. Exactly this is the point where discourse structure is supposed to apply. It is claimed that the rhetorical relation of subordination is a pre-condition for the division of *Topic* and *Comment* in an utterance and a condition for filling the position of a sentence topic respectively. By this, clear criteria can be provided whether a discourse-given referent is used as the topic of the sentence or it is part of the focus-domain of a sentence.

Appendix

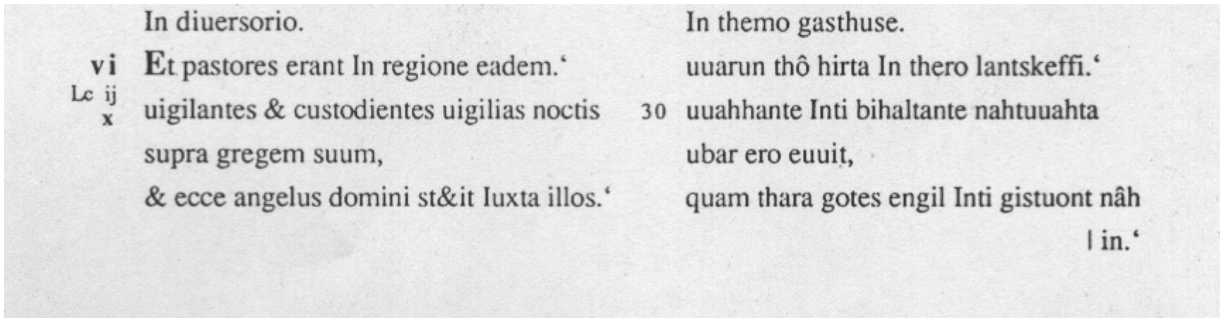
Picture 1.

The beginning of Luke 2, 8 in the manuscript of the St. Gallen, Stiftsbibl. Cod. 56. Facsimile, pag. 35. In Sonderegger (2003, p. 130).



Picture 2.

The same part of the text in the edition of Masser (1994, p. 85).



In diuersorio.
vi Et pastores erant In regione eadem.‘
Lc ij uigilantes & custodientes uigilias noctis
x supra gregem suum,
& ecce angelus domini st&it Iuxta illos.‘

In themo gasthuse.
uuarun thô hirta In thero lantskeffi.‘
30 uuahhante Inti bihaltante nahtuuahta
ubar ero euuit,
quam thara gotes engil Inti gistuont nâh
l in.‘

Primary texts

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The Recognition of the Prosodic Focus Position in German-learning Infants from 4 to 14 Months*

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The aim of the present study was to elucidate in a study with 4-, 6-, 8-, and 14-month-old German-learning children, when and how they may acquire the regularities which underlie Focus-to-Stress Alignment (FSA) in the target language, that is, how prosody is associated with specific communicative functions. Our findings suggest, that 14-month-olds have already found out that German allows for variable focus positions, after having gone through a development which goes from a predominantly prosodically driven processing of the input to a processing where prosody interacts more and more with the growing lexical and syntactic knowledge of the child.

Keywords: prosodic focus, HTP, infants

1 Introduction

Children do not only have to learn how to express and to interpret the propositional content of a sentence, but also what is supposed to be common knowledge for the interlocutors and what is new, that is, focused information. There are basically three ways for a language to mark the focus of an utterance: prosodically, lexically, and syntactically. With respect to prosodic focus marking it is generally assumed that there is a systematic relation between the informational focus of the sentence and its intonation, in the sense that the prosodic prominence (nuclear accent) has to be assigned to the rightmost element of the focused constituent, a principle called Focus-to-Stress Alignment

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(FSA) by Nespor and Guasti (2002) following Jackendoff (1972). This principle predicts that in the case of broad focus, that is, when the whole utterance constitutes new information, the nuclear accent should fall on the rightmost constituent of the sentence. This seems to be the case universally[1]. We may thus consider the way FSA is realized in the case of broad focus as the default, or unmarked case.

But languages vary in how they realise FSA in case of narrow focus, that is, when only a part of the sentence, for instance the subject or the object, is new information. They may basically be differentiated with respect to whether they tend to maintain either the unmarked, canonical prosodic structure as in the case of broad focus, by choosing a word order that places the focused element at the right edge of the clause, where nuclear accent is assigned according to the regular stress rule, as for example in Italian and Spanish. Alternatively, they may assign the nuclear accent to the focused element in its syntactic position, thus abandoning the unmarked, canonical prosodic structure, as for example in English (Büring & Gutiérrez-Bravo, 2001; Nespor & Guasti, 2002; Samek-Lodovici, 2005; Vallduví, 1993). This division basically corresponds to the traditional distinction between free and fixed word-order languages. Languages like German in which both word order and the position of nuclear accent are relatively flexible, occupy an intermediate position. These different strategies are illustrated by the following examples from English, Italian, and German:

(1) a. Who bought a car? JOHN bought a car. vs. * bought a car JOHN.

b. Chi comprò una machina? (Una machina,) la comprò GIOVANNI.

[1] Kiss (p.c.) challenges the claim that broad focus is marked universally on the rightmost phonological phrase, as this does not seem to hold in Hungarian.

c. Wer kaufte ein Auto? PETER kaufte ein Auto. Or: Ein Auto kaufte PETER.

Thus in English, the FSA is satisfied by stress movement (Type A language), in Italian by syntactic movement, for instance by movement of the subject from the canonical to the post-verbal, final position where nuclear accent is assigned according to the regular stress rule (Type B language), whereas German has both options (Type C language). But in German, these options, from the point of view of language usage, are not equivalent. The most frequently realised prosodic pattern in the case of narrow focus is the one with final nuclear stress, corresponding to the constituent order SVO which has to be considered the canonical word order, with the preverbal subject constituting old, that is, topic information, and the postverbal object new, that is, focus information. Given that this is also the stress pattern in the case of broad focus, it is the most common in German overall. Thus, we may assume that the interaction of broad and final narrow focus stress should result in a strengthening of the unmarked case of nuclear stress.

In order for the child to find out to which type of FSA the target language belongs, that is, how prosody is associated with specific communicative functions, she has first to be able to discriminate between different stress patterns which implies the recognition of different stress positions. The child's growing ability to syntactically and semantically analyse the speech elements occupying these positions should then lead the child to infer the principles which determine the association of focused, that is, new information with prosodic prominence, possibly based on a distributional analysis of the co-occurrence patterns of these elements in the input.

The aim of the present study was to investigate the initial phases of this developmental process in a cross-sectional study starting at the age of 4 months.

This age was chosen on the basis of recent findings that children between 6-12 weeks of age are able to discriminate between languages which differ with respect to the position of prosodic prominence within the phonological phrase (Christophe et al., 2003). This should allow us to find out whether German-learning children would treat sentences with initial and final stressed narrow focus differently. Two possible reasons for why the child may show an initial bias for final nuclear stress are, first, that this is, as mentioned above, the most frequent narrow focus position in German, and second, that it coincides with the universally preferred position for nuclear stress in the case of broad focus. If there was a bias for one position that would mean that later in development the child would have to overcome this bias in order to realise that there are multiple focus positions in German. Only then prosodic prominence could be used by the child in the process of sentence interpretation as a reliable indicator of the (semantic) focus of the sentence. Three additional groups of 6-, 8-, and 14-month-olds where tested with the same material. The age of 6 months was chosen because this is the age at which the first open class lexical items are selectively segmented from continuous speech (Jusczyk, 1997), and there is evidence that they distinguish between sentences containing clauses with pauses in natural and unnatural positions (Hirsh-Pasek et al., 1987; Schmitz, Höhle & Weissenborn, in prep.). At 8 months German-learning children are able to recognise closed-class lexical items in continuous speech (Höhle & Weissenborn, 2003), and at 14 months they have discrete lexical representations for closed-class, functional elements, like determiners which are a prerequisite for the analysis of noun phrases in the speech input (Höhle et al., 2004).

We predicted that these developmental changes in the linguistic processing abilities of the child should be reflected in changing reaction patterns to the prosodically and segmentally identical test sentences at the different ages.

2 The Study

2.1 Experiment with 4-month-old infants

2.1.1 Participants

Twenty-four German-learning infants from the Potsdam area participated in this experiment. Their mean age was 4 months and 20 days, with a range of 4 months and 2 days to 4 months and 30 days. All infants were born full term and have no known hearing deficits (according to a questionnaire filled out by the parents). The data of 5 additionally tested infants could not be included in the analysis due to parent intervention (1), falling asleep during the experiment (2), crying (1) and problems with the technical equipment (1). Of the remaining 24 subjects, 14 were girls and 10 boys.

2.1.2 Stimuli

The sentences we used during the experiment were all sentences with canonical word order, that is, SVO, consisting of a single Intonation Phrase. All in all, 56 sentences of the type NP1 AUX NP2 PART (e.g., *Das Auto hat Reifen gebraucht*; the car has tyres needed; 'the car needed tyres') were constructed.

In order to obtain test sentences in which nuclear stress naturally, that is, according to the FSA rule holding for German, falls on the first or the second NP, we recorded the test sentences in a Narrow Focus question-answer context, as in:

(2) Q: Wer hat Flöte gespielt?
Target: Der ENKEL hat Flöte gespielt[2].
Who has played the flute? The GRANDSON has played the flute.
'Who played the flute? The grandson played the flute'.

[2] In this paper capital letters are used to indicate prosodic focus marking.

(3) Q: Was hat der Enkel gespielt?
Target: Der Enkel hat FLÖTE[3] gespielt.
What has the grandson played? The grandson has played the FLUTE.
'What did the grandson play? The grandson played the flute'.

The stimuli were recorded by a female native speaker of German.[4] She was instructed to read both the question and the answer in a friendly child-directed manner.

After the digital recording, the target sentences were extracted, and prepared for use in the experiment. For that, 16 blocks of seven sentences each were constructed, eight blocks containing sentences with the prosodically highlighted first NP (e.g., *Der ENKEL hat Flöte gespielt*) and the other eight blocks containing the corresponding sentences with prosodically highlighted second NP (e.g., *Der Enkel hat FLÖTE gespielt*). Between the sentences of a given block a pause of 900 ms was inserted. The mean duration of the sentences blocks with focused NP1 was 18.5 s (Range: 17.5 s to 18.9 s) and the mean duration for blocks with focused NP2 was 18.8 s (range: 18.1 s to 19.3 s).

The sentences were analysed using the Praat program (Boersma & Weenink, 1992-2005)[5]. The mean-F0 features of the noun in NP1 (e.g., *Enkel*) had an average value of 339 Hz in the condition when it is focused, and 224 Hz in the condition when it is not focused. This difference is statistically significant: $t_{(55)} = 18.20$; $p < 0.01$. Comparably, the data for the nouns in NP2 (e.g., *Flöte*) had an average value of 333 Hz, when it was focused and 195 Hz when it was not focused. Again, this difference is statistically significant: $t_{(55)} = 22.74$; $p < 0.01$.

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[3] Under the assumption that the main prominence or nuclear stress is supposed to fall on the rightmost element, one would expect the participle to carry nuclear stress. We assume, following Büring (2005, footnote 10) that due to a prosodic integration process, the participle is prosodically incorporated into the direct object, which in turn gets the nuclear accent.

[4] Many thanks to Ulrike Kölsch for being "The Voice".

[5] We want to thank Ruben van de Vijver for providing the Praat script for the analysis.

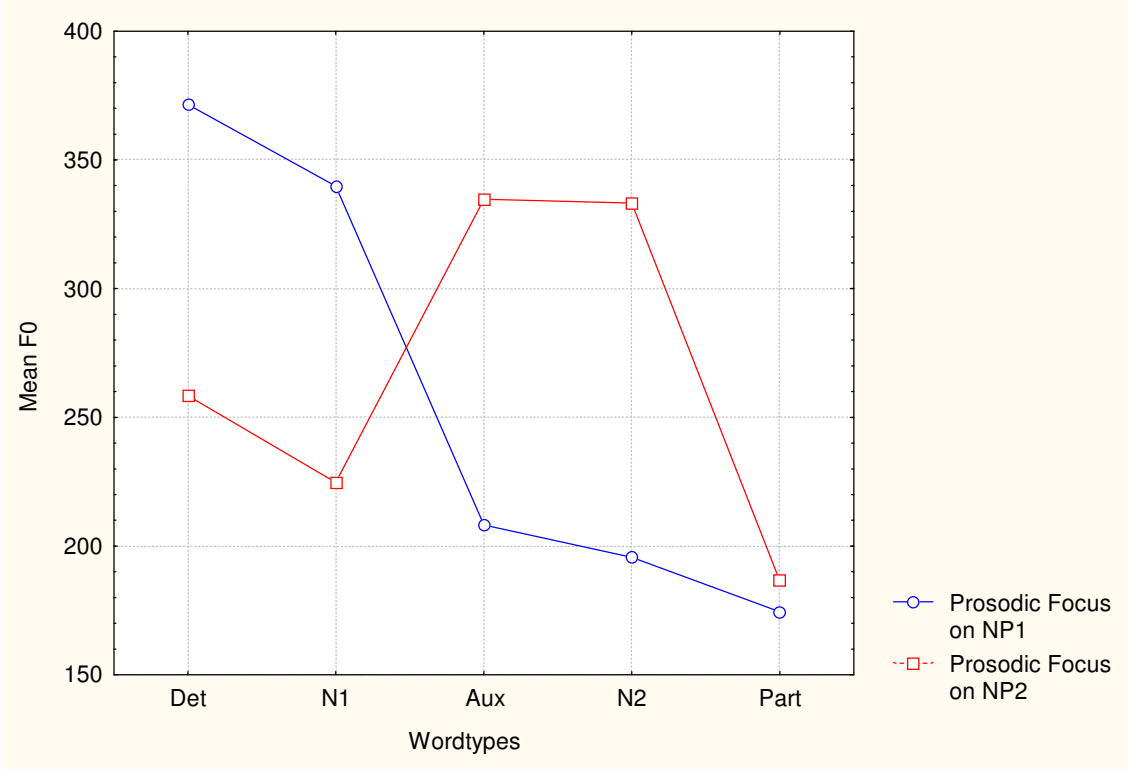

Figure 1: Mean pitch of the words in each focus condition

Also, the duration of the nouns was significantly longer in the focused condition than in the unfocused condition: 517 ms vs. 422 ms for the first NP, $t_{(55)} = 11.79$; $p < 0.01$; and 502 ms vs. 392 ms for the second NP, $t_{(55)} = 18.22$; $p < 0.01$, respectively. Thus, a noun has a significantly longer duration and a higher pitch when focused compared to the same noun in unfocused condition (for comparable findings see van de Vijver, Sennema & Zimmer-Stahl, this volume).

2.1.3 Method and procedure

A variant of the head turn preference paradigm was used (Kemler Nelson et al., 1995). To test 4-months-olds we made a slight modification in the procedure: as infants that young still have problems to move their heads to left and right in order to fixate the side lamps at the 90° angle, the lamps for testing the infants were all mounted at the back panel of the testing booth. The green lamp is

placed in the centre beneath the hole for the camera lens. The red side lamps were mounted at the same height as the green lamp, each in a corner of the back panel. The loudspeakers were mounted immediately besides the red lamps outside the booth.

The infant was seated on a caregivers' lap who was instructed to keep the infant in a reclining position. The caregiver wore headphones during the experiment over which masking music was played, so that the caregiver could not influence the infants' reactions to the stimuli in a systematic way. The experimenter sat in the adjoining room and coded the infants' looking behaviour with a push-button box. The loudspeaker of the monitor was silent, so that the experimenter was blind to the condition the infants listened to and thereby was prevented from influencing the experiment results.

Each experimental trial started with the blinking of the green centre lamp. When the infant orientated towards the lamp, one of the red side lamps started to blink. When the infant looked towards this lamp, the experimenter started the auditory stimulus. The dependent variable in this kind of experiment is the so-called orientation time (OT), that is, the amount of time the infant spends looking at the blinking lamp, thus listening to the presented auditory stimuli. When the infant looked away for less than two seconds, the presentation of the stimulus continued, but the time was excluded. When the infant looked away for more than two seconds the experimental trial was suspended (time-out) and the next trial started with the blinking of the green centre lamp. The first four trials (two sentence blocks with focused NP1 and the corresponding two blocks with focused NP2) were used to make the infant familiar with the auditory material and the experimental procedure, that is, to ensure that the infant learned that the auditory stimulus will be played as long as the infant is looking towards the blinking lamp and thereby being able to influence the amount of time the

stimulus can be heard. These first four trials were excluded from the statistical analysis, only the remaining 12 blocks were subject to analysis.

The material was presented in four different randomised orders of presentation. Each infant was randomly assigned to one of these randomisations. In each order the number of girls and boys was balanced.

2.1.4 Results

The time each infant spent listening to the stimuli of both conditions was calculated. Then the data was pooled and statistically analysed. The analysis of the data of the 24 infants revealed no preference for either the condition with focused NP1 or focused NP2. The mean orientation time towards the sentence blocks with prosodically focused NP1 was 9606 ms (SD = 3274 ms) and for the sentence blocks with stressed NP2 9389 ms (SD = 3132 ms). This difference is statistically not significant: $t_{(23)} = 0.62$; $p = 0.54$.

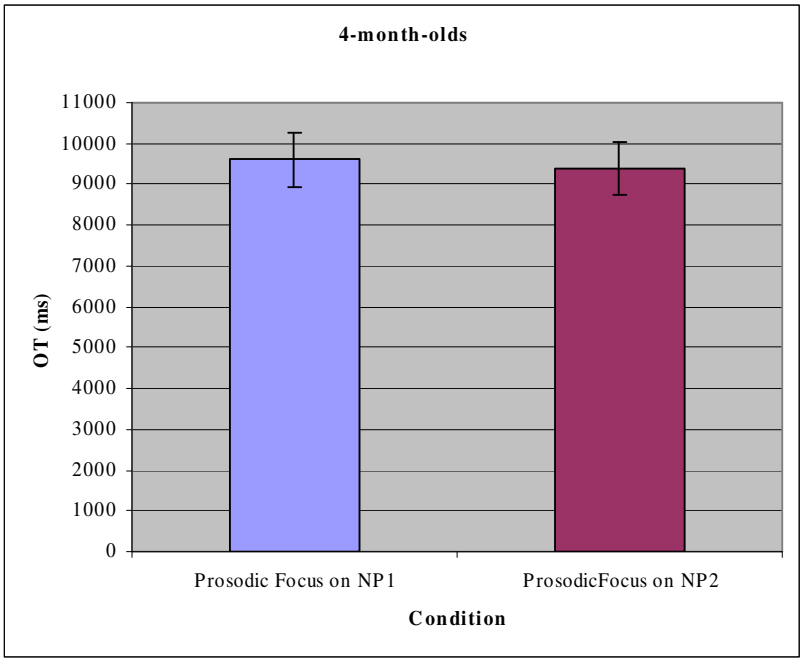

Figure 2: Mean orientation time of the 4-month-old infants

2.1.5 Discussion

These results show that infants of 4 months of age do not react differently to sentences with focused NP1 and focused NP2. The nearly identical orientation times towards each condition suggest that the infants either did not perceive the different prosodic focus structures or that they accept both types of sentence in the same way, showing no preference for one prosodic structure over the other.

2.2 Experiment with 6-month-old infants

2.2.1 Participants

Thirty-two 6-month-old infants participated in this experiment. The mean age of this group was 6 months and 13 days, with a range from 6 months 1 day to 6 months 30 days. The selection criteria were the same as in the first experiment. Again, the infants were randomly assigned to one of the experiment versions, yielding 8 infants per randomisation.

The data of an additionally tested 8 infants could not be included into the analysis for the following reasons: technical problems (3), infants' crying (4), and one child had a strong preference for one of the presentation sides, ignoring the other side completely. We therefore decided to exclude her data from the analysis. The remaining group comprised 16 girls and 16 boys.

2.2.2 Stimuli

The same stimuli as in the previous experiment were used.

2.2.3 Method and procedure

We used the basically same method as in the first experiment. One change was made with respect to the head turn preference procedure: as infants from 6 months are freer in their head motion and are able to look to the left and right, we returned to the original method by placing the red side lamps at the sides of the test booth in 90° angle from the centre green lamp. The loudspeakers were

mounted outside of the booth immediately behind the red side lamps as in the original design described by Kemler Nelson et al. (1995).

The procedure used was identical to the first experiment.

2.2.4 Results

The time each infant spent listening to the stimuli of either condition was calculated. Then the data was pooled and statistically analysed. The result shows that the 6-month-olds, as the 4-month-olds, give no indication of preferring either one of the experimental conditions. The mean orientation time towards the sentences with focused NP1 was 8404 ms (SD = 3310 ms), whereas the mean orientation time for the sentences with the focused NP2 was 7951 ms (SD = 3000 ms). This difference is statistically not significant: $t_{(31)} = 1.23$; $p = 0.23$.

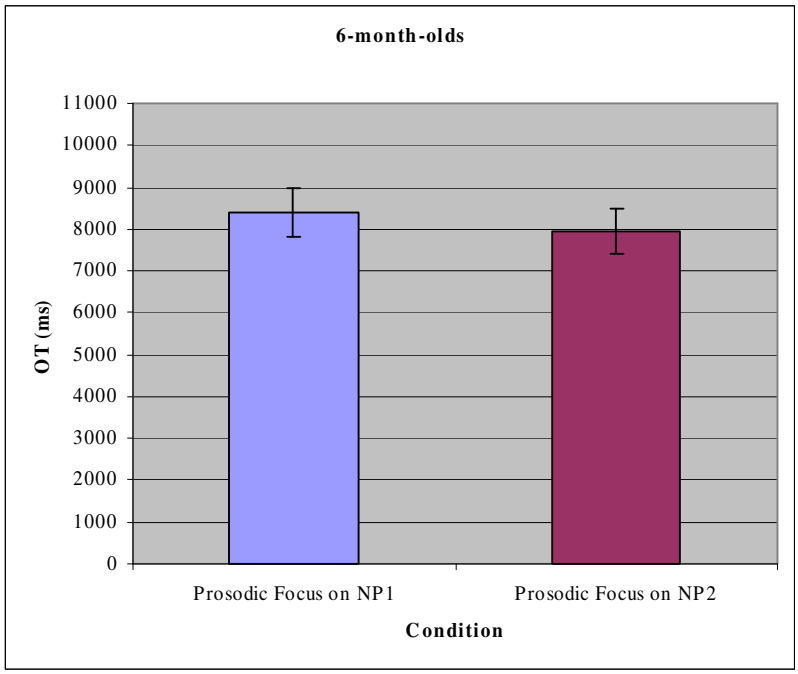

Figure 3: Mean orientation time of the 6-month-old infants

2.2.5 Discussion

In this experiment, again, we did not find a significant preference for either of the different prosodic structures, although the infants showed a slight tendency to listen longer to the condition in which the first NP was prosodically highlighted. This tendency could possibly be interpreted as a novelty effect for the more infrequent, thus marked, sentence initial prosodic prominence. If this were the case, we would expect an even clearer novelty effect for older infants, who would have had a longer experience with the unmarked structures. It would hardly be plausible to interpret the performance of the 6-month-olds as due to an insensitivity to prosodically marked linguistic properties of the input language, as infants from 6 months on have been shown to be sensitive to different kinds of prosodic features within sentences (Hirsh-Pasek et al., 1987; Schmitz et al., in prep.). It may rather be the case that, like possibly for the 4-month-olds, the prosodic wellformedness of both of the test sentences lead to this result.

2.3 Experiment with 8-month-old infants

2.3.1 Participants

Thirty-two 8-month-old infants participated in this experiment. The mean age of these infants was 8 months and 15 days (range: 8 months 1 day to 8 months 28 days). The criteria for inclusion were the same as before. As before, each infant was randomly assigned to one of the four experiment versions.

The data of 11 additionally tested infants could not be included into the analysis for the following reasons: crying, etc. (4), fussiness (4), and overall too short orientation time (3). The remaining group of 32 children consisted of 16 girls and 16 boys.

2.3.2 Stimuli

The same material as in the previous experiments was used.

2.3.3 Method and procedure

The same method and procedure as in experiment 2 were used.

2.3.4 Results

The time the infants spent listening to the stimuli of each condition was calculated and the data were subjected to a statistical analysis.

The orientation time data of the infants show a significant difference between the sentences with NP1 focus, which was 7386 ms (SD = 2166 ms), and the sentences with NP2 focus, which was 6276 ms (SD = 2133 ms; $t_{(31)} = 2.98$; $p < 0.01$).

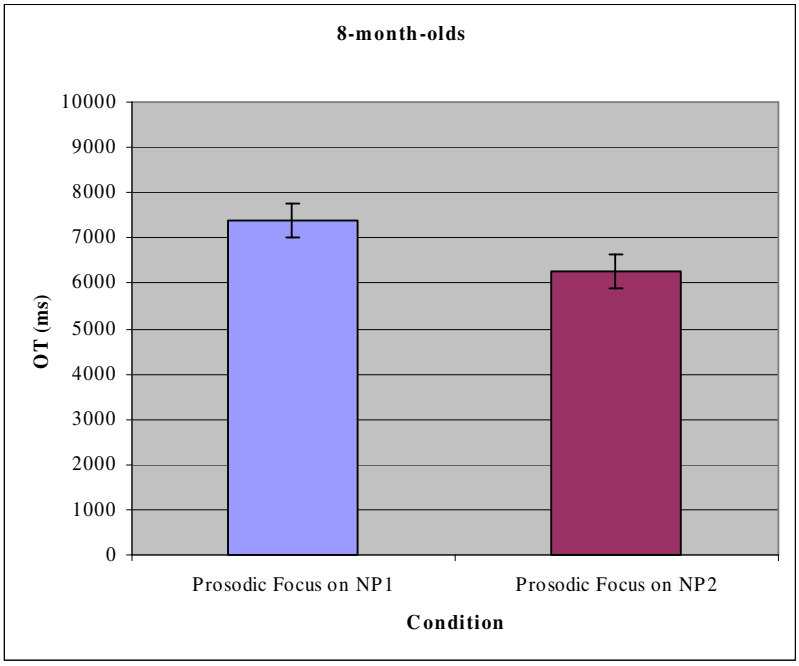

Figure 4: Mean orientation time of the 8-month-old infants

2.3.5 Discussion

This result thus seems to support our prediction, based on the slight preference of the 6-month-olds for the more uncommon prosodic pattern with nuclear stress on the first NP, that the reaction of the infants might be interpreted as a kind of

"novelty effect"[6]: instead of preferring the more frequent prosodic pattern, the infants listen longer to the prosodic pattern which is more uncommon in their native language (cf. the assumptions about the default structure of focus prosody in German sentences (Büring & Gutiérrez-Bravo, 2001, p. 16f)).[7]

2.4 Experiment with 14-month-old infants

2.4.1 Participants

Twenty-seven infants have been tested so far. The mean age of the infants is 14 months and 15 days (range: 14 months and 0 days to 15 months 0 days). The criteria for the selection of the infants were the same as before. Seventeen additionally tested infants had to be excluded from the data analysis for the following reasons: not completing the experimental session (6), fussiness (3), technical problems (3), and an overall too short orientation time to one of the experimental conditions (5). The remaining group of 27 children consisted of 20 boys and 7 girls, and as before, the children were randomly assigned to one of the four experiment versions.

2.4.2 Stimuli

The same stimuli as in the previous experiments were used.

2.4.3 Method and procedure

The same method and procedure as in experiment 2 were used.

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[6] This kind of surprise reaction to an unexpected event has currently been observed in infants in linguistic and non-linguistic tasks (e.g., Höhle et al., 2004; Saffran, Aslin & Newport, 1996).

[7] We can not discuss here how the proposal of (Büring & Gutiérrez-Bravo, 2001, p. 16f) concerning the default structure of focus prosody in German sentences fairs with the assumption of Féry (1993), that the pitch of sentences containing narrow subject focus in initial position is more comparable with the overall pitch contour of neutral sentences, in which the sentence initial element carries the highest pitch, even when not focused, due to the fact that a relative decline towards the end of the sentence must be ensured.

2.4.4 Results

As the experiment is not yet completed, the results can only be seen as preliminary.

The orientation time for the condition with NP1 focus is 6022 ms (SD = 3283 ms), and for the condition with NP2 focus 5458 ms (SD = 2023 ms). The difference is statistically not significant: $t_{(26)} = 0.95$; $p = 0.35$.

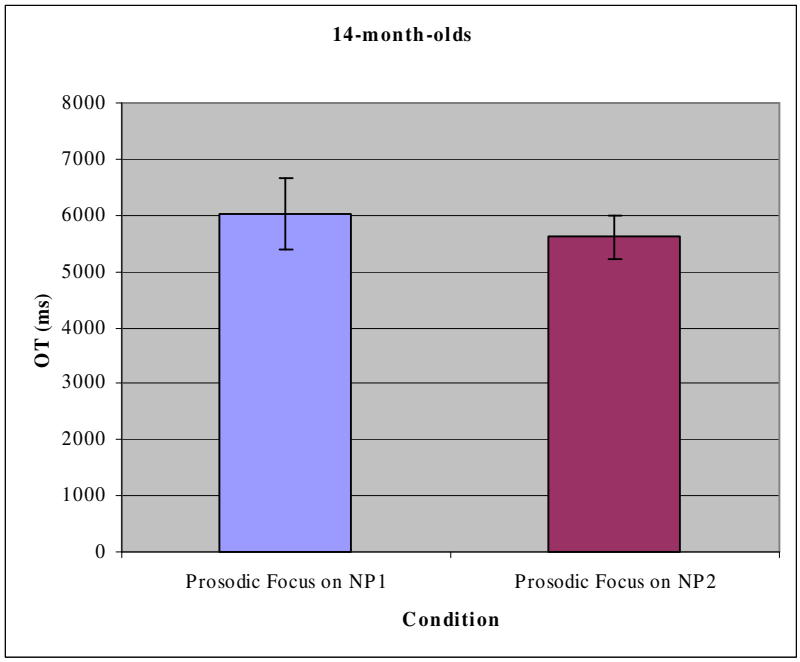

Figure 5: Mean orientation time of the 14-month-old infants

2.4.5 Discussion

Thus, contrary to the results of the 8-months-olds, the 14-month-olds do not seem to make a distinction between both prosodic focus conditions.

The finding that the 14-month-olds behave like the 4- and the 6-month-olds obviously asks for another explanation than the one given for the younger children, that is, that the infants either did not perceive the different prosodic focus structures or that they might not just have recognised the more frequent pattern in their speech input.

As we will argue more in detail in the General Discussion below, we would like to suggest, that the behaviour of the 14-month-olds can most plausibly be accounted for, if we assume that it reflects target language knowledge, in that the infants already have realised that their language belongs to Type C, that is, that it allows for various focus positions, and that they therefore do no longer differentiate between two prosodic patterns solely on the basis of a difference in their frequency of occurrence.

3 General Discussion

The aim of the present study was to elucidate in a cross-sectional study with 4-, 6-, 8-, and 14-month-old German-learning children when and how they may acquire the regularities which underlie Focus-to-Stress Alignment (FSA) in the target language. We assumed that in order for the child to find out to which type of FSA the target language belongs, that is, how prosody is associated with specific communicative functions, she has first to be able to discriminate between different stress patterns which implies the recognition of different stress positions. The child's growing ability to syntactically and semantically analyse the speech elements occupying these positions should then lead the child to infer the principles which determine the association of focused, that is, new information with prosodic prominence, possibly based on a distributional analysis of the co-occurrence patterns of these elements in the input.

More specifically, we predicted that the developmental changes in the linguistic processing abilities of the child, contributing to the acquisition of the FSA rule, should be reflected in the changing reaction patterns to the prosodically and segmentally identical test sentences at the different ages.

The general developmental path we observed may be described as taking the shape of an inverted U-shape development, where the identical reactions of the

children to the same stimuli at the age of 4, 6 and 14 months, as we suggested, have to be differently accounted for. The 4- and the 6-month-olds gave no indication of preferring either of the prosodic focus conditions, the orientation times for both conditions were statistically not different. Given that in the light of previous findings, infants already at birth rely on rhythmic patterns to distinguish their native language from a different language (Mehler et al., 1988), and given the findings of Christophe et al. (2003) mentioned above, we rejected the interpretation, that the children did not perceive the different prosodic patterns. Instead, we proposed that they had not yet gathered enough information about the distribution of these different prosodic patterns in their target language (i.e., the difference between the marked structure where the prosodic focus lies on the first NP and the default structure with prosodic focus on the rightmost constituent) to establish a preference for one over the other.

In contrast, the 8-month-olds then clearly distinguished between the two prosodic patterns by listening longer to the more infrequent one. We suggested that this finding reflects a growing sensitivity of the children to the different frequency of occurrence of the opposite prosodic patterns in the speech input.
Though the pattern of results we found in the 14-month-olds is on the surface the same as for the 4- and 6-month-olds, it is implausible to apply the same explanation. Due to the fact that 14-month-olds have had much more experience with their ambient language and taking into account our findings for the 8-month-olds, we would like to suggest two possible explanations:

First, it might be that the 14-month-olds have already learned that their target language belongs to the Type C of FSA, in which the mapping of nuclear stress and the focused constituent is realised either through movement of nuclear stress or syntactic movement. The recognition that both types of sentences used in our experiment are possible structures of German could have lead to

accepting both to the same agree which is reflected by the same listening times to both conditions in our experiment.

We assume that the target like knowledge of the FSA rule is acquired between 8 and 14 months of age on the basis of the increasing abilities of the children to discern the internal lexical and syntactic structure of sentences. Thus work on German (Höhle et al., 2004) and on English (Shady, Gerken & Jusczyk, 1995) has provided evidence, that infants in the first half of their second year of life may already analyse closed class lexical items like determiners together with the following lexical element as a unit, which corresponds to a NP in the target language. This in consequence might be the basis for the children to recognize that nuclear stress in German is not assigned to a fixed sentence position but is assigned to a focused NP which can stay in its canonical position leading to variable stress patterns in German. Whether this prosodically marked focus is already associated to a semantic focus by 14-month-olds cannot be proved on the basis of our set of experiments and has to be a question for further research.

On the basis of our current data we cannot rule out a second, alternative explanation. It could be the case that the 14-month-olds, in spite of the experience with their native language, did not yet have recognised that German is a Type C language. The results then might be due to the fact that infants during their second year of life do no longer rely mainly on prosodic cues to analyse the input, therefore showing no preference for either of the two sentence types used in our experiment which only differed with respect to their prosodic structure while keeping the lexical content and the syntactic structure constant. This was, for instance, suggested by Hirsh-Pasek and Golinkoff (1996) as well as Hollich and colleagues (Hollich et al., 2000). They claimed that the various types of information existing in the child's speech input are used by the children to a different degree at different stages during the language acquisition process, and, according to their model, the beginning of the second year of life marks a

turning point in that children start to increase their reliance on syntactic and lexical information to the detriment of prosodic information, which dominates language processing during the first year of life. Studies by Höhle and Weissenborn (2000) and Jusczyk, Houston and Newsome (1999) provide evidence for this change in language processing: while word segmentation of German and English learners in the first year of life seems mainly be achieved by a metrical segmentation strategy this strategy seems to loose its dominance in favour of the integration of non-prosodic distributional information and lexical top-down mechanism in the recognition of word boundaries at the beginning of the second year of life. The difference we observe in the reactions between the 8- and the 14-month olds of our study might reflect the same change in the domain of sentence prosody.

The data of the German infants alone do not allow us to decide between these two possible explanations for our results. Testing learners of a language with fixed focus position like e.g. Italian, on the other hand, might gain us some insights on the processes going on.

If the Italian infants by 14 months of age have already learned that their language is of the Type B, we would expect the opposite reaction to the one we found in German infants. Having learned that Italian only allows for one focus position at the rightmost edge of the sentence[8] we would expect the Italian infants to clearly distinguish between the sentences with different prosodic focus position when presented with the same stimuli as the German children. If our pattern of results, on the other hand, just reflects a decline on the attention to prosodic information in general, we would expect that the Italian infants also do not make a distinction between both types of stimuli.

[8] Leaving aside left-periphery phenomena, an option also available in German.

Taken together, our findings provide further evidence for a general developmental path, also observed in other areas of pre-linguistic language development, going from a predominantly prosodically driven processing of the input to a processing where prosody interacts more and more with the growing lexical and syntactic knowledge of the child.

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An analysis of pitch and duration in material used to test L2 processing of words.*

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The material reported on in this paper is part of a set of experiments in which the role of Information Structure on L2 processing of words is tested. Pitch and duration of 4 sets of experimental material in German and English are measured and analyzed in this paper. The well-known finding that accent boosts duration and pitch is confirmed. Syntactic and lexical means of marking focus, however, do not give the duration and the pitch of a word an extra boost.

Keywords: Duration, Pitch

1 Introduction

Focus marked by accent has been shown to speed up processing in a native language (see Cutler et al. (1997) for an overview). It has not yet been investigated whether such an effect is also found in processing a non-native language and whether other means of marking focus have the same effect. To this end we have conducted a number of experiments (Sennema et al., 2005). We have designed material in English and German to investigate this question. The experimental material used to investigate this question has been subjected to a measurement of pitch and duration.

This material is being used to test the hypothesis that Information Structure plays a role in L2 processing independent of focus. It is therefore necessary to know exactly what the phonetic properties of pitch and accent in our material are. This paper is a report on the phonetic properties of our material. Both pitch

* Shravan Vasishth's suggestions improved the graphical presentation of the statitics in this paper. Frank Kügler has provided many useful comments.

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Ishihara, S., M. Schmitz, and A. Schwarz (eds.):

and duration are boosted by accent, as expected (Kügler et al., 2003; Kügler & Féry, prep), but the size of the boost is not influenced by structural markers of focus, such as clefts or lexical markers.

This paper is not intended as an analysis of focus and its markers in German and English: There is only one speaker per experimental set, which makes a generalization to the German or English population impossible. Moreover, the material has been controlled for prosodically, but not segmentally.

It is nevertheless important to know the phonetic properties of the material of any auditory linguistic experiment, since (sorry for stating the obvious) they are a factor in the experiment.

This paper is organized as follows: First the material is briefly described, the analysis is presented, which is summarized in the conclusions.

2 Material

There are three sets of experimental material. In the first set the target word is prosodically marked for focus, by means of an accent. There is only an English version of this material (2.1).

The second set consists of material in which the target word is syntactically marked for focus. The target word is in a clefted constituent. There is an English and a German version (2.2).

The third set, finally, consists of material in which the target word is in the scope of a lexical marker for focus. There is an English and a German version (2.3).

The measurements were done with *Praat* (and its algorithms), and pitch measured in the range between 75 and 350 Hz (Boersma & Weenink, 2006). All pitch values were measured in Hz and then transformed to ERB values.

In all sets the duration, the lowest and the highest pitch of the first and the second syllable of the target word have been measured. The pitch values have

been converted from Hz to ERB.[1]

2.1 Prosodic means of marking focus

This material was read by a female native speaker of American English. The material consisted of question–answer pairs. In the answer either the target, a bird name, was accented or an adjective preceding the target. This accent was induced by the preceding question.

(1) *Prosodic marking of focus*

a. What noisy animal did some rude children blame the ruckus on?
Some rude children blamed the noisy GAPPET for the ruckus.

b. What kind of gappet did some rude children blame the ruckus on?
Some rude children blamed the NOISY gappet for the ruckus.

There were 40 such pairs. Only the analyses of the answer sentences are presented here, since these were the sentences used in the experiment. This study was used as a pilot to test whether the phoneme monitoring paradigm was suited for our purposes and therefore we only recorded an English version. For all other experiments there are always two versions, an English version and a German version (see Sennema, prep).

2.2 Syntactic means of marking focus

In the next set of experiments the target word appeared either in a cleft structure or in a default declarative sentence. The target was again accented itself, or preceded by an accented adjective. The English sentences were read by a male

[1] Equivalent Rectangular Bandwidth:
$ERB = 16.6 * log(1 + \frac{Hz}{165.4})$ (Traunmüller, 1990)

native speaker of British English; the German sentences were read by a male native speaker of German.

(2) *Syntactic marking of focus (English)*

a. It's the stale GANNET that is suffering from city development.
b. It's the STALE gannet that is suffering from city development.

(3) *Syntactic marking of focus (German)*

a. Es ist der faule KABU, der stundenlang auf einem Fuß steht.
b. Es ist der FAULE Kabu, der stundenlang auf einem Fuß steht.

2.3 Lexical means of marking focus

The target word in this set is within the scope of a lexical marker of focus (*even* or *only* in the English version. This is experiment is in its preparatory stage and only the English material was available for analysis.

(4) *Lexical means of marking focus* What kind of animal did an ill lawyer move onto the sidewalk?

a. An ill lawyer moved a RUTHLESS ganta onto the sidewalk.
b. An ill lawyer moved only a RUTHLESS ganta onto the sidewalk. What ruthless animal did an ill lawyer move onto the sidewalk?
c. An ill lawyer moved a ruthless GANTA onto the sidewalk.
d. An ill lawyer moved only a ruthless GANTA onto the sidewalk.

3 Analysis of Duration and Pitch

We have measured pitch and duration of the first and the second syllable of the target word, in all conditions.

3.1 Prosodic marking of focus

In figure 1 (page 214) the differences of duration, lowest pitch and highest pitch between the 2 syllables of the accented and unaccented target words are shown. All differences are statistically significant, but the pitch differences in the unaccented syllables are less pronounced.

The unaccented target words were preceded by accented adjectives and were therefore in a focused constituent. This means that being in a focused constituent does not result in boosted prosody.

In figure 1 (page 214)there are three rows. In the first one the barplots of the duration measurements are presented, in the second one the measurements of the minimum pitch and in the third one the measurements of the maximum pitch are presented. In each row there are four barplots. The two leftmost barplots represent measurements of the accented syllables, a stressed one (the first) and an unstressed one (the second) and the rightmost two barplots represent measurements of unaccented syllables, again the stressed one before the unstressed one.

3.2 Cleft

In both data sets it will be shown that accent boosts prosody of the target words, but not cleft. The prosody of a word depends on its accentual status and not on its membership in a clefted or non-clefted constituent.

3.2.1 English

Figure 2 (page 215), shows that the mean duration of the accented syllables is higher than the unaccented syllables. There is no such differences between target syllables in clefts and in non-clefts.

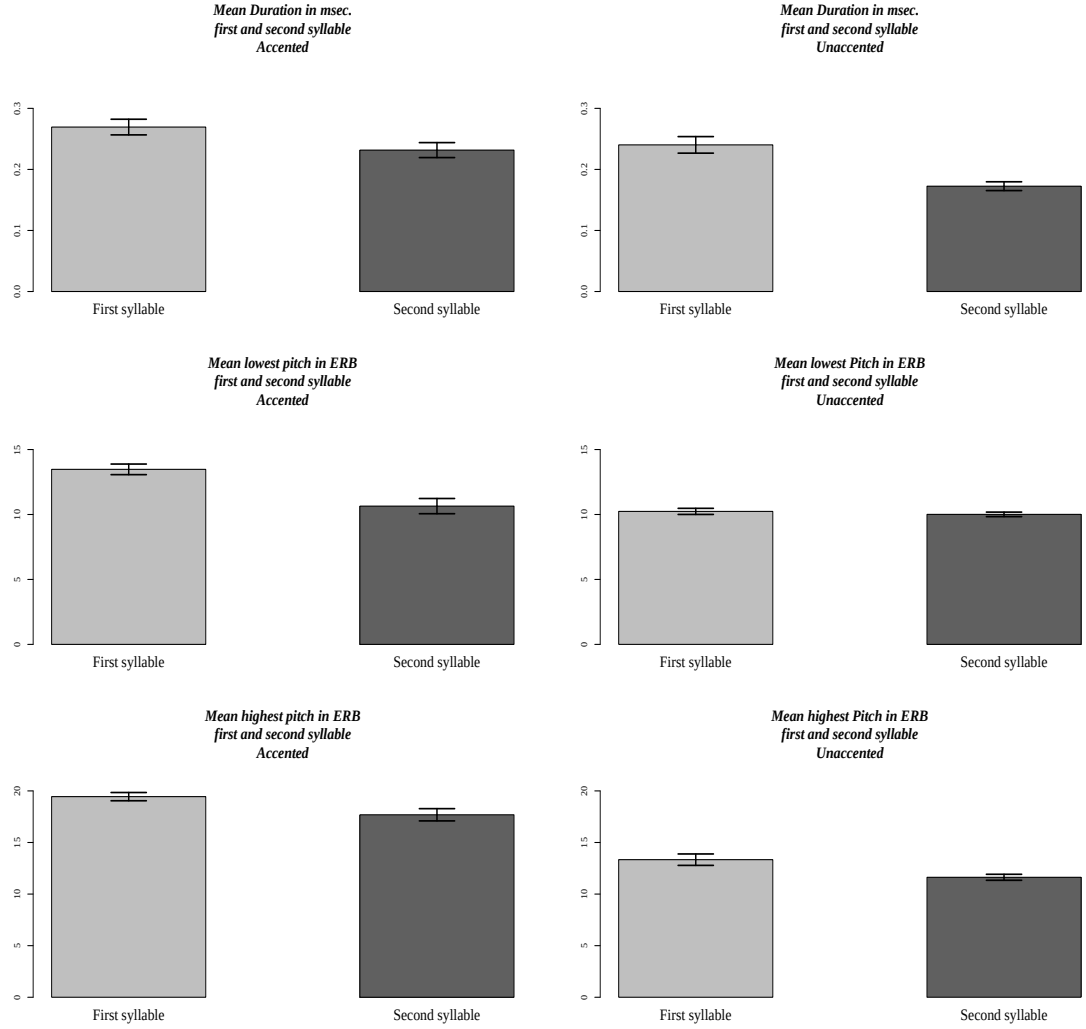

Figure 1: Prosodic marking of focus

Figure 3 (page 216) shows that pitch in accented syllables is higher then pitch in unaccented syllables. There is no consistent difference between syllables in clefts and in non-clefts.

3.2.2 German

The differences in duration in German are not significant. The means in figure 4 (page 217) suggest that neither accent nor cleft make a big difference. A likely explanation is final lengthening. Since the target words are always phrase final

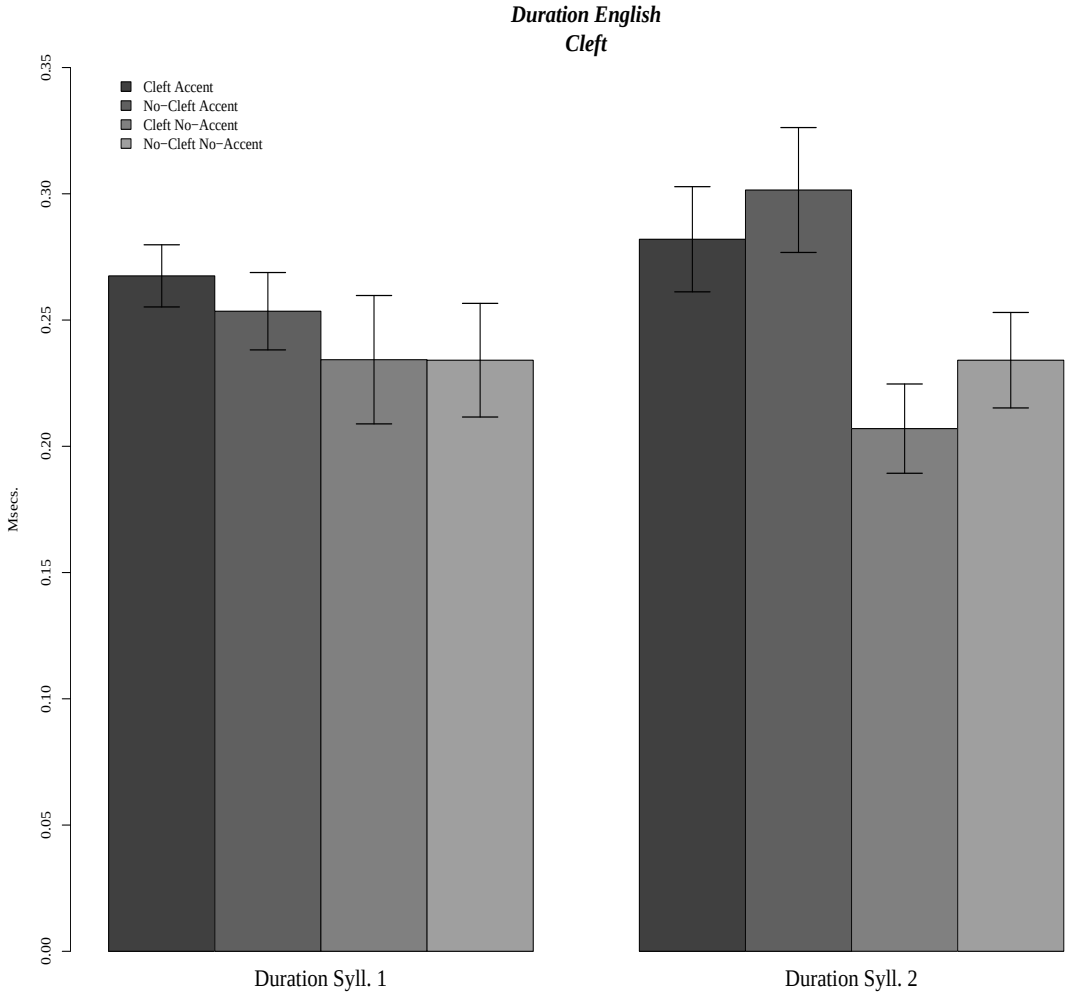

Figure 2: Duration in English clefts and non-clefts

and final syllables of phrases are always lengthened, they are likely to be lenghtened. This counterbalances the lengthening due to accent. Either the lengthening due to accent is not as pronounced as in English, or final lengthening is language specific (Cambier-Langeveld, 2000).

The differences in pitch are not statistically significant among the conditions. Apart from a difference between the first (stressed) and the second syllable (unstressed), there is no difference between accented and unaccented syllables, and clefted and non-clefted syllables. This is shown in figure 5 on page 218.

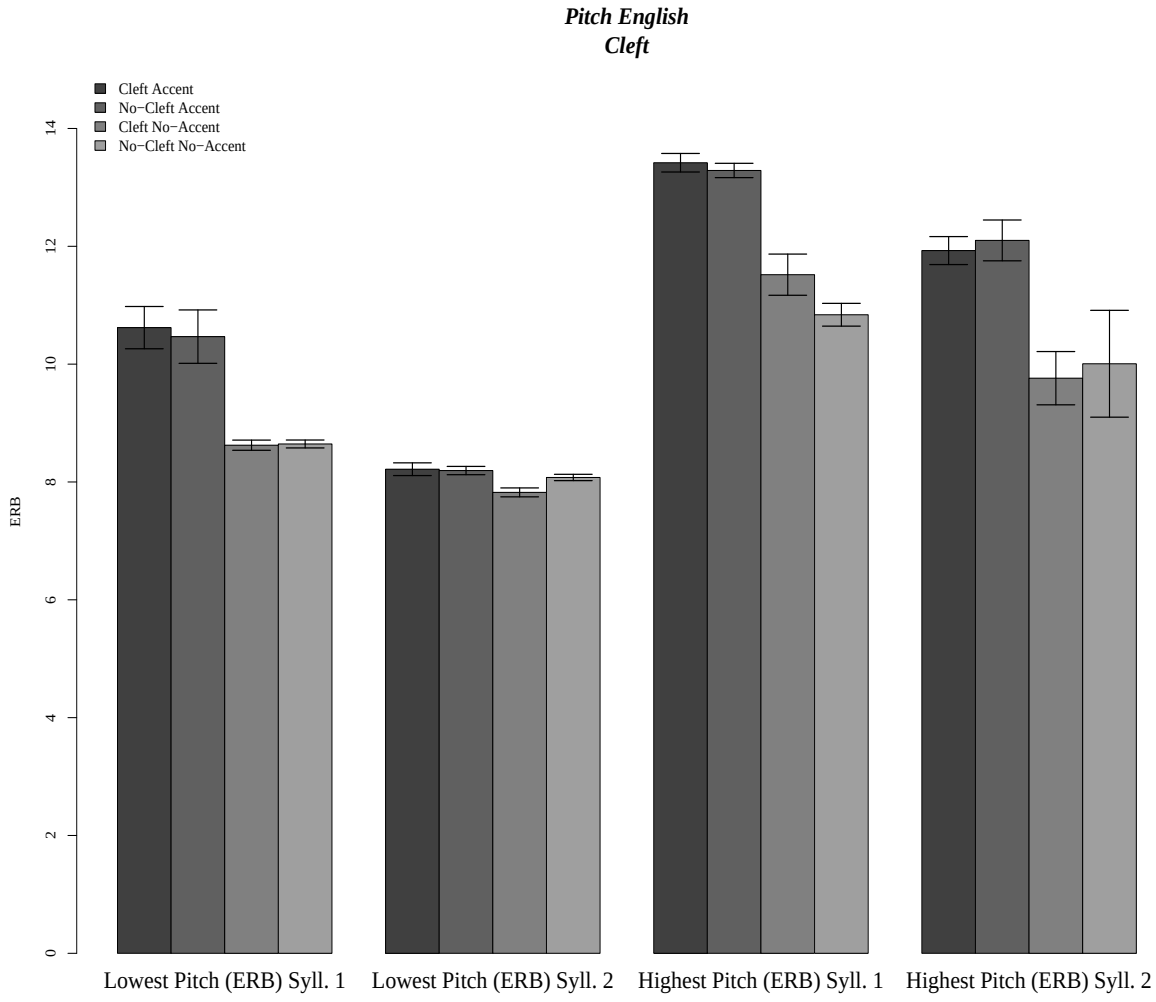

Figure 3: Pitch in English clefts and non-clefts

3.3 Particles

There are no differences between the conditions (see figure 6 on page 219). Apart form a difference between the first (stressed) syllable and the second (unstressed) syllable, there is no difference between accented or unaccented syllables or between syllables that are in the scope of a lexical focus marker and those that are not.

There are clear differences between the mean pitch of accented syllables, but

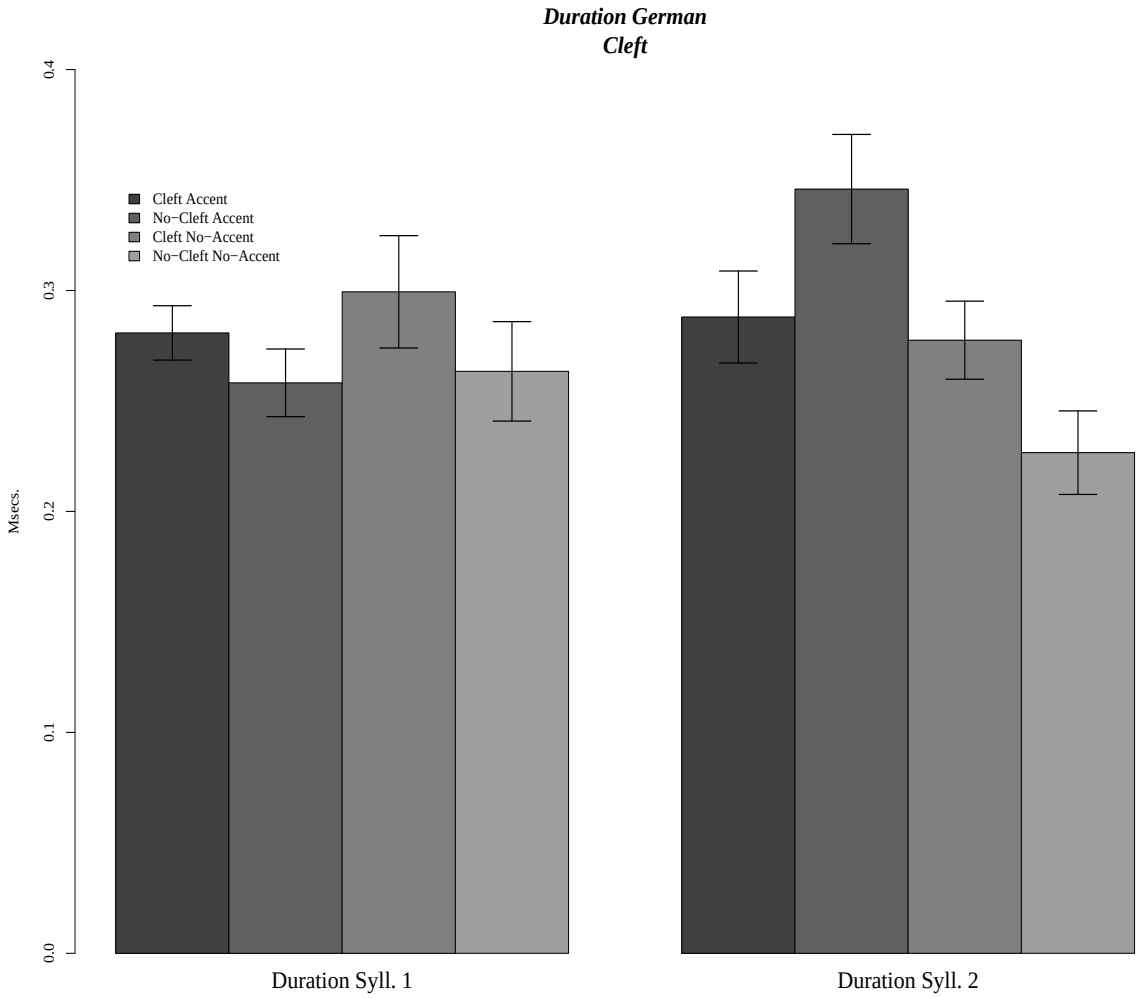

Figure 4: Duration in German clefts and non-clefts

there are no consistent differences between syllables that are within the scope of a lexical marker of focus and those that are not (see figure 7 on page 220).

4 Conclusion

In this paper, we reported on measurements of duration and pitch of target words of three sets of our experimental material. We wanted to investigate whether non-prosodic ways of marking focus (syntactic and lexical) had an effect on the

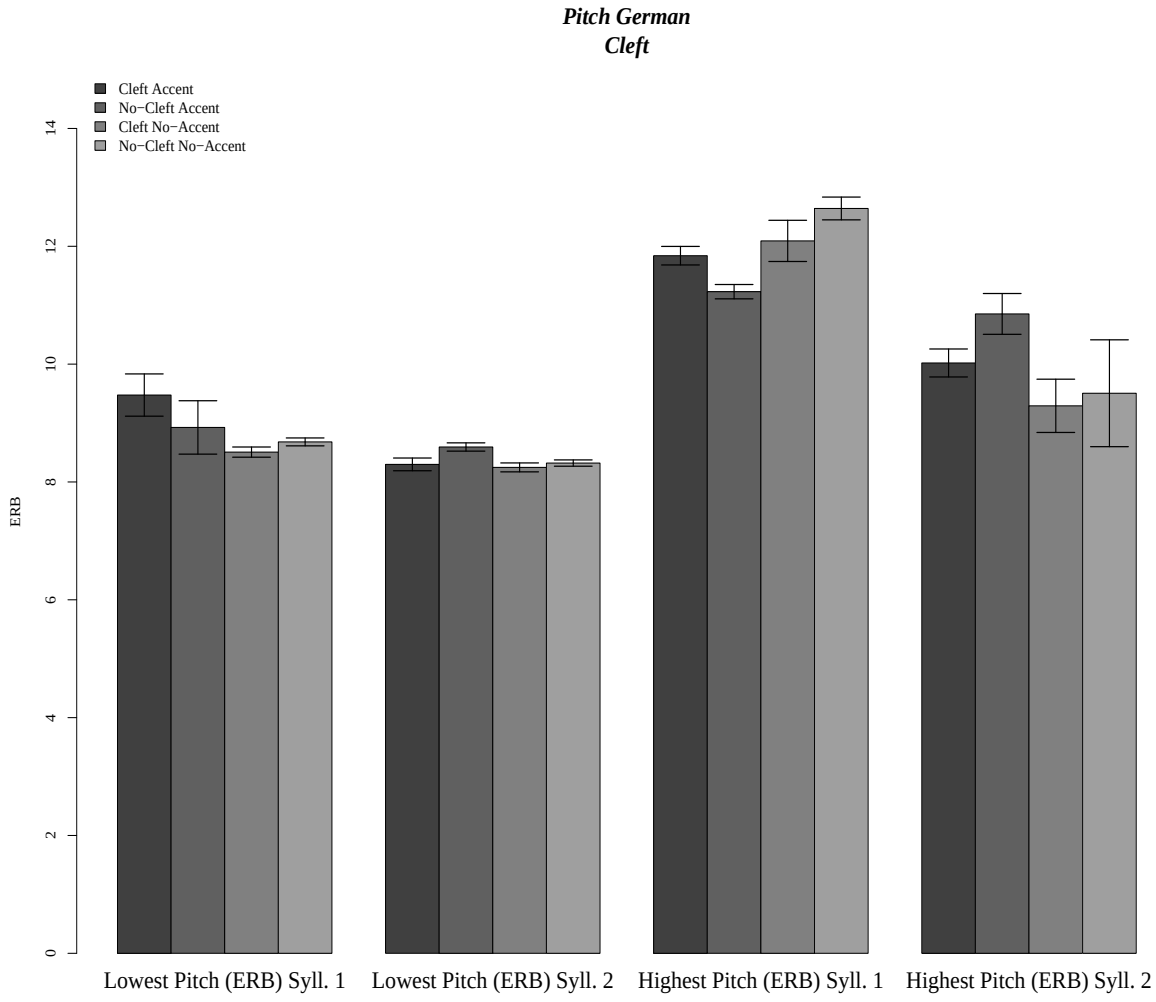

Figure 5: Pitch in German clefts and non-clefts

prosody of our target words. It turned out that it did not. Even though we do not wish to interpret these results beyond the material of our experiments, we have seen that accent boosts both duration and pitch, but neither cleft, as a way of syntactically marking focus, nor lexical focus markers had an additional effect. This is certainly important for the interpretation of our results.

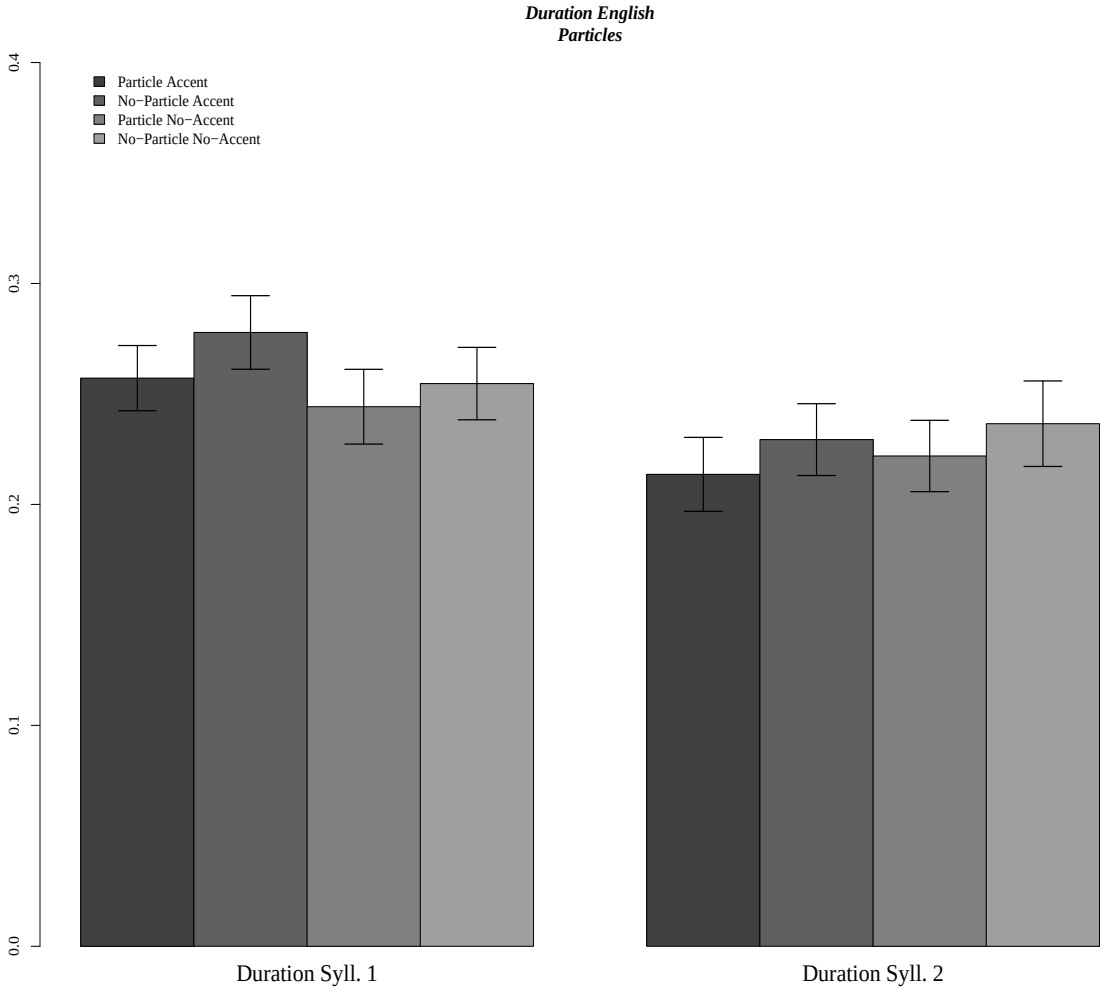

Figure 6: Duration of words in and out of scope of lexical markers

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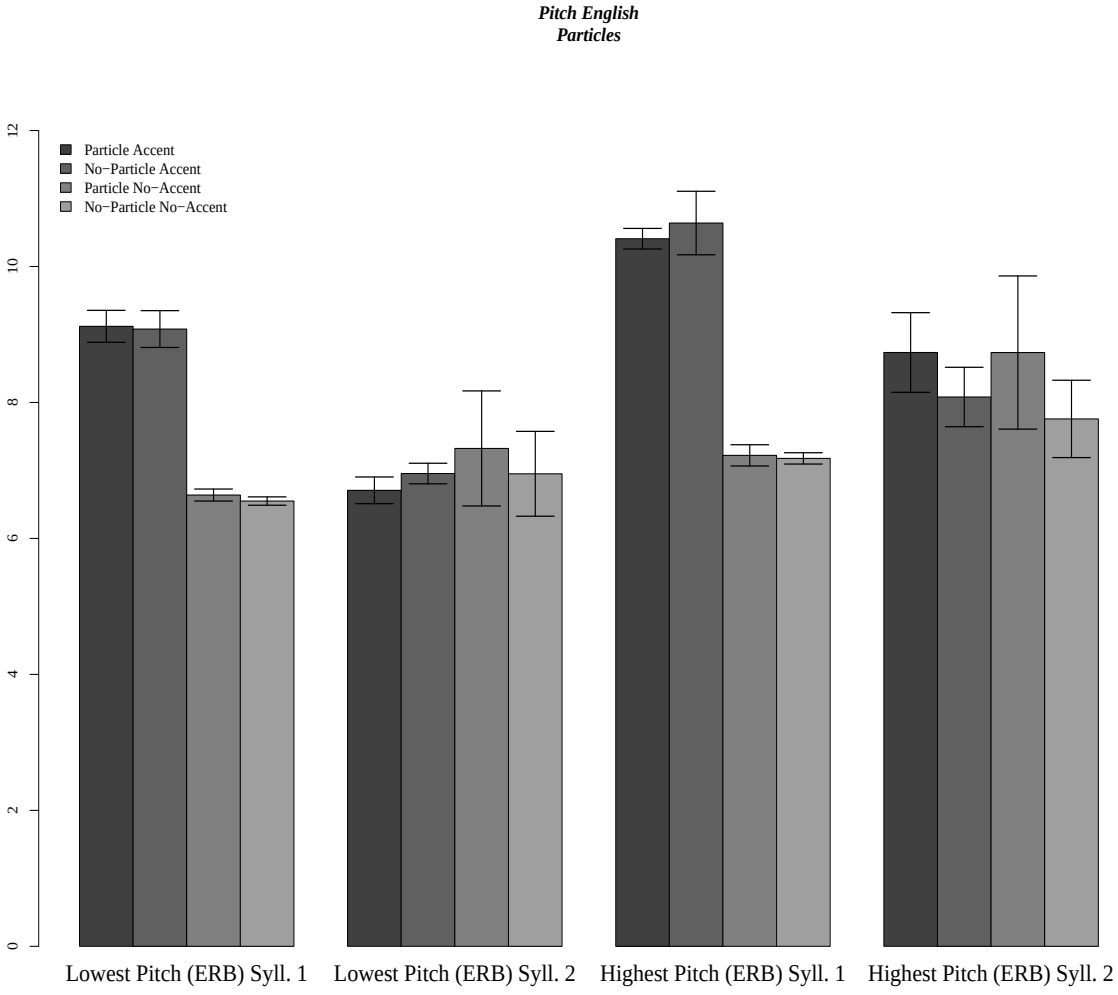

Figure 7: Pitch of words in and out of scope of lexical markers

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