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EXISTENCE: SEMANTICS AND SYNTAX

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Preface

This collection of essays grew out of the workshop 'Existence: Semantics and Syntax', which was held at the University of Nancy 2 in September 2002. The workshop, organized by Ileana Comorovski and Claire Gardent, was supported by a grant from the *Réseau de Sciences Cognitives du Grand Est* ('Cognitive Science Network of the Greater East'), which is gratefully acknowledged. The first editor wishes to thank Claire Gardent, Fred Landman, and Georges Rebuschi for encouraging her to pursue the publication of a volume based on papers presented at the workshop. Among those who participated in the workshop was Klaus von Heusinger, who joined Ileana Comorovski in editing this volume.

Besides papers that developed out of presentations at the workshop, the volume contains invited contributions. We are grateful to Wayles Browne, Fred Landman, Paul Portner, and Georges Rebuschi for their help with reviewing some of the papers. Our thanks go also to a Springer reviewer for the careful reading of the book manuscript. We wish to thank all the participants in the workshop, not only those whose contributions appear in this volume, for making the workshop an interactive and constructive event.

Ileana Comorovski
Klaus von Heusinger

ILEANA COMOROVSKI AND KLAUS VON HEUSINGER

INTRODUCTION

The notion of 'existence', which we take to have solid intuitive grounding, plays a central role in the interpretation of at least three types of linguistic constructions: copular clauses, existential sentences, and (in)definite noun phrases.

1. THE INTERPRETATION OF THE COPULA

Copular clauses are one type of stative constructions, a fact that raises the philosophical issue of a typology of states. This question is addressed in the contribution by Claudia Maienborn, who supports her proposals with data from English and German. Her results are incorporated in Ronnie Cann's dynamic syntax analysis of *be*. The meaning of the copula is further considered in the contributions by Ileana Comorovski and Ljudmila Geist, who analyze data from a variety of languages: French, English, Romanian, and Russian.

Copular clauses are exponents of the class of stative constructions, and as such one question they raise is that of a possible typology of states: are there several types of states? The contribution by Claudia Maienborn 'On Davidsonian and Kimian states' tackles this issue and argues that some statives do not denote Davidsonian eventualities (Davidson 1967), but something ontologically 'poorer'. Maienborn draws a distinction between Davidsonian eventualities and 'Kimian' states, with copular clauses falling in the latter category, regardless of whether the predicate denotes a temporary property ('stage-level predicate') or a more or less permanent property ('individual-level predicate').

What are the differences between Davidsonian eventualities and Kimian states? The former are spatio-temporal entities with functionally integrated participants. It follows from their definition that eventualities can be located in space and time. In characterizing Kimian states, Maienborn combines Kim's (1969, 1976) notion of temporally bound property exemplifications with Asher's (1993, 2000) conception of abstract objects as mentally constructed entities. Maienborn defines Kimian states as abstract objects for the exemplification of a property P at a holder x and a time t. From this definition, it follows that Kimian states have no location in space, but can be located in time. Thus statives do introduce an argument; this argument is, however, ontologically 'poorer' than Davidsonian eventuality arguments.

The ontological properties of Kimian states find their reflex in the following linguistic facts: (i) Kimian state expressions cannot serve as infinitival complements

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of perception verbs and do not combine with locative modifiers; (ii) Kimian state expressions are accessible for anaphoric reference (but only with demonstrative pronouns used anaphorically, not also with personal pronouns); and (iii) Kimian state expressions combine with temporal modifiers.

Maienborn shows copular clauses to display the linguistic characteristics listed above, confirming her hypothesis that copular clauses are associated with Kimian states. This hypothesis is adopted by Ronnie Cann in his contribution 'Towards a dynamic account of *be* in English' and encoded in his definition of *be*. Cann analyzes *be* as a semantically underspecified one-place predicate whose content is determined by context through pragmatic enrichment. The analysis is cast in the framework of dynamic syntax (Kempson et al. 2001, Cann et al. 2005), of which the paper contains a clear and concise presentation.

The treatment of *be* as semantically underspecified allows Cann to have a uniform semantics for this verb across constructions. Among the constructions considered in the paper are certain types of ellipsis involving the copula, as illustrated in (1)–(2) below:

(1) Ellipsis in a predicative copular sentence:
John's really happy, John is.

(2) Existential focus construction:
Neuroses just ARE. (= Neuroses exist.)

Other constructions analyzed by Cann are predicative copular clauses and *there be* sentences; particular attention is given to existential sentences, both with indefinite and with definite postcopular noun phrases. As Cann points out, his approach to existential sentences allows an incorporation of Perspective Structure, as presented in Borschev and Partee (2002) and pursued in Partee and Borschev (this volume).

The contributions by Ileana Comorovski and Ljudmila Geist are concerned to a large extent with the analysis of specificational copular clauses (cf. Higgins's 1973 taxonomy of copular clauses). Unlike Cann's paper, Comorovski's and Geist's papers assign at least one full-fledged meaning to the copula.

In her contribution 'Predication and equation in copular sentences: Russian vs. English', Ljudmila Geist bases her analysis of specificational clauses on data from Russian and suggests a way of extending her analysis to English. The sentences below provide the basis for Geist's analysis:

(3) a. Ubijca staruxi (*ėto) Raskol'nikov.
murderer$_{\text{Nom.}}$ of-old-lady this Raskolnikov
'The murderer of the old lady is Raskolnikov.'

b. Pričinoj avarii *byla / byli neispravnye tormoza.
reason$_{\text{Sg.Fem.Ins.}}$ of-accident was$_{\text{Sg.Fem.}}$/were$_{\text{Pl.}}$ broken brakes$_{\text{Pl.}}$
'The reason for the accident was broken brakes.'

c. Edinstvennyj, kto stal na našu storonu, *byl / byla Varvara.
only-person$_{\text{Masc.Nom.}}$ who came to our side was$_{\text{Masc}}$/was$_{\text{Fem}}$ Barbara$_{\text{Fem}}$
'The only person who defended us was Barbara.'
(Padučeva and Uspenskij 1997:178)

Geist compares the specificational sentences in (3) with equative and predicational copular clauses, arriving at the following results: (i) Example (3a) shows that the predicate proform *ėto* is excluded in specificational clauses. This fact suggests very strongly that Russian specificational clauses do not belong to the equative type of copular clauses (which require the presence of *ėto*), and therefore the two noun phrases that specificational clauses contain cannot both be referential. (ii) Examples (3b, c) show that the first noun phrase can occur either in the Nominative or in the Instrumental case. Since the case alternation Nominative/Instrumental is only possible with predicative noun phrases, these data provide crucial support in favor of assigning predicate status to the leftward noun phrase (cf. Padučeva and Uspenskij 1997, Partee 1998). (iii) Examples (3b, c) also show that Russian specificational clauses display an inverted agreement pattern, an indication that the rightward noun phrase serves as the syntactic subject.

From these observations, Geist concludes that specificational clauses can be syntactically analyzed as involving predicate inversion. Geist follows Partee (1986) in treating the copula as essentially predicative, with the semantic structure $\lambda P \lambda x[P(x)]$. In a specificational clause, the definite subject noun phrase undergoes Partee's (1987) *ident* operation, which shifts its type from e to $\langle e, t\rangle$. For instance, the sentence-initial noun phrase in (3a) denotes the property of being identical to the murderer of the old lady. The copula (which in Russian is phonetically empty in the Present Tense) serves as an instruction to predicate this property of *Raskolnikov*. Specificational sentences differ in information structure from the corresponding predicational sentences: in a predicational sentence, the topic is the e-type noun phrase, whereas in a specificational one, the topic is the $\langle e, t\rangle$-type noun phrase.

Geist extends her analysis of specificational clauses to English, arguing against their treatment as equatives proposed by Heycock and Kroch (1999). To account for the English data, Geist puts forth a type-shifted version of the copula of predication. This comes very close to defining a copula of specification, which is the line of analysis taken in Ileana Comorovski's contribution 'Constituent questions and the copula of specification'. Comorovski provides a cross-linguistic investigation of interrogative and declarative specificational clauses. The data she examines are drawn from French, Romanian, and English; these are languages in which, unlike in Russian, the copula is always overt in finite clauses. The data Comorovski examines lead her to the conclusion that specificational subjects must be non-rigid designators (type $\langle s, e\rangle$) that are 'indirectly contextually anchored'. Indirect contextual anchoring is a link between the denotation of an intensional noun phrase and the context of utterance; this link is established with the help of a referential expression contained in the noun phrase.

Comorovski argues that the specificational reading of copular clauses is induced by the copula of specification, for which a definition is provided. Several arguments are advanced in favor of a lexical approach to copular clauses with specificational interpretation. One of these arguments is based on French and Romanian copular constituent questions with specificational answers. French and Romanian have interrogative pronouns (Fr. *quel*, Rom. non-discourse-linked *care*) that can occur only as predicate nominals in such questions: their limited distribution is taken to indicate that they are selected by a particular lexical head, namely the copula of specification.

2. EXISTENTIAL SENTENCES ACROSS LANGUAGES

This part of the volume considers some of the existential constructions of Chinese, Russian, and Italian. Existential constructions bring together issues discussed in Parts I and III: the meaning of the verb 'be', the semantics/pragmatics of (in)definites, and the role of existential presupposition in the interpretation of noun phrases.

In their paper 'Existential sentences, *be*, and the genitive of negation in Russian', Barbara Partee and Vladimir Borschev are concerned with the forms and meanings of the verb *byt*' ('be') in existential and other sentences, as well as with the way *byt*' interacts with the Genitive of negation. These issues lead to a re-examination of what counts as a negative existential as opposed to a negative locative sentence.

Partee and Borschev take up the way of distinguishing existential from locative sentences proposed in Borschev and Partee (2002), namely in terms of Perspective Structure, a notion which relates to a difference in predication in the two types of sentences. Both types of sentences have the argument structure BE (THING, LOC). Partee and Borschev suggest that an 'existence/location situation' may be structured either from the perspective of the THING or from the perspective of the LOCation. They introduce the term 'Perspectival Center' for the participant (THING or LOC) chosen as the point of departure for structuring the situation. In the unmarked structure, the THING is chosen as 'Perspectival Center'. This yields a locative sentence, which is a standard predicational sentence. Thus locative sentences are a type of copular sentences of the kind analyzed by Cann and Maienborn in Part I of the volume. In contrast to locative sentences, in an existential sentence, it is the LOC that is chosen as 'Perspectival Center', a choice that turns the predication around: saying of the LOC that it has THING in it.

The following principle holds of Perspectival Centers: any Perspectival Center must be normally presupposed to exist. It follows from this principle that the THING denoted by a Nominative subject in a negative locative sentence is normally presupposed to exist, whereas in negative existential sentences (where the subject is Genitive), only the LOCation is normally presupposed to exist. This is confirmed by examples like (4):

(4) a. Studenty ne byli na koncerte. Koncerta ne bylo.
Students-NOM NEG were at concert. Concert NEG was
'The students were not at the concert. There was no concert.'

b. Studentov na koncerte ne bylo. # Koncerta ne bylo.
Students-**GEN** at concert NEG was. Concert NEG was
'There were no students at the concert. #There was no concert.'

The semantics of negative existential sentences is formulated in terms of Perspective Structure: a negative existential sentence denies the existence in the Perspectival Center LOCation of the thing(s) described by the subject noun phrase. Existence is understood to always be relative to some LOCation. The LOCation may be indicated explicitly, or it may be implicit, given by the context, e.g. 'here' or 'there', 'now' or 'then'.

While in Russian many sentences with the structure BE (THING, LOC) are clearly associated with either typical existential or typical locative morpho-syntax, some of the negative sentences with the structure BE (THING, LOC) present a mixture of the morpho-syntactic properties of typical negative locative sentences (e.g. Nominative subject) and typical negative existential sentences (e.g. presence of *net* ('is not')). One source for the break-up of the clustering of properties is the divergence of Theme (an information structure notion) and Perspective Center. An important question raised by the mixed sentence forms is whether they can all be analyzed as instances of sentence negation, or whether what appears at first sight to be a negative sentence is in fact just an instance of constituent negation. Thus the question that arises is what negative sentence is the negation of an affirmative sentence, and moreover, of which type of affirmative sentence (existential or locative)?

One set of intermediate cases discussed by Partee and Borschev involves sentences with definite subjects that have morpho-syntactic characteristics of existential sentences. Since it is indefinites that typically occur in existential sentences, the question is whether this type of intermediate cases call for the postulation of (at least) a third class of sentences, existential-locative sentences, with the suggestion that the classification of sentences with the structure BE (THING, LOC) may not be discrete. The suggestion that at least some of the sentences with definite subjects and (partial) existential morpho-syntax are plain existential sentences converges with a similar suggestion made in the contribution by Ronnie Cann, who, unlike many of his predecessors, does not analyze English existential sentences with definite subjects as 'presentational', but as existential.

Partee and Borschev note that the existential interpretation of the intermediate cases is favored by the presence in the sentence of a possessive expression (e.g. *u nas*, lit: 'at us'). This brings us to the topic of 'have'-existentials, such as those analyzed in the contribution on Chinese by Jianhua Hu and Haihua Pan, 'Focus and the basic function of Chinese existential *you*-sentences'. The authors use data from the Chinese existential *you*-construction, the closest counterpart of the English *there*

be construction, which show that the Chinese construction can be used to introduce not only a new entity, but also a new relation, such as the membership relation or the type-token relation. The authors argue that the basic function of Chinese existential *you*-sentences is to introduce into the discourse something new, be it an entity or a relation. Hence, the 'Definiteness Effect' in Chinese is only a by-product of the discourse function of the existential construction.

The Perspective Theory developed in Borschev and Partee (2002) is the background against which Lucia Tovena casts her contribution 'Negative quantification and existential sentences'. Tovena proposes a new analysis of Italian negative existential sentences that contain negative determiners, but no copula. This type of sentence is illustrated below:

(5) a. Nessuno testimone intorno a lei.
(There were) no witnesses around her.

b. Niente processo per la truppa.
(There will be) no trial for the troops.

Tovena develops a semantics of this type of negative existential sentences as tripartite structures. The negative quantifiers *nessuno* and *niente* take the head noun as restrictor and the predicate expression as nuclear scope. The semantic characteristic that the two negative existential sentences above share is that the intersection of the sets denoted by the head noun and the predicate expression is empty. However, the two constructions show subtle semantic differences, which are reflected in their syntactic properties. In order to account for these facts, Tovena adapts Borschev and Partee's Perspective Structure and reformulates it in terms of Generalized Quantifier Theory. Tovena's approach also accounts for some fine-grained interactions between the general semantics of Italian verbless sentences and some of the semantic/pragmatic properties of their arguments, such as specificity, familiarity, and presupposition. These properties will be a central issue of the third part of the volume.

3. EXISTENCE AND THE INTERPRETATION OF NOUN PHRASES

Existence also plays a prominent role in the interpretation of noun phrases. The existential quantifier is one of the two elementary quantifiers in predicate logic, employed for the description of language by Frege. However, it has become clear that the interpretation of indefinite noun phrases involves not only the assertion of the existence of some set denoted by their descriptive part, but that they often have additional semantic and pragmatic properties. According to Krifka (1999), indefinite (or existential) determiners add to their logical meaning of existence some pragmatic constraints. Such additional constraints on indefinite noun phrases are discussed in the contributions by von Heusinger and by Zamparelli. Von Heusinger suggests that specific indefinites are characterized by contextual anchoring (sim-

ilar to the indirect anchoring of a class of definites discussed in the contribution by Comorovski); Zamparelli proposes that the Italian indefinite determiner *qualche* has the pragmatic function of domain extension. Corblin observes that the interpretation of modified numerals like *at least n* involves the existence of two sets. His analysis is developed in the framework of DRT, which is also used by Geurts, who considers the issue of whether the existential import of universal quantifiers is a presupposition or not. One of his main arguments against a semantic presupposition analysis is based on English existential sentences.

The contributions in the third section of the book address some of the intricacies of noun phrase interpretation, going beyond the issue of existence, including number and maximality, indefiniteness and specificity, and contextual anchoring. In his contribution 'Existence, maximality, and the semantics of numeral modifiers', Francis Corblin proposes a model for the existence claim and the maximality claim associated with modified numerals. In particular, Corblin sets out to explain why the noun phrase *ten kids* in (6a) has a different interpretation from *at least ten kids* in (6b). The difference is illustrated by the different interpretation of the two plural pronouns (cf. Kadmon 1987): the pronoun *they* in (6a) refers to exactly ten kids (cardinality reading), while the pronoun *they* in (6b) refers to all the kids entering the room (maximality reading).

(6) a. Ten kids walked into the room. They were making an awful lot of noise.

b. At least ten kids walked into the room. They were making an awful lot of noise.

In order to account for this difference, Corblin suggests that numeral modifiers such as *at least, at most, exactly* introduce two sets into the discourse: (i) a set having the cardinality expressed by the numeral, and (ii) the maximal set of individuals satisfying the conditions expressed by the sentence. Relying on this assumption, he can account for the maximality reading of the pronoun *they* in (6b). Among other extensions of his account is the interpretation of numeral modifiers in existential sentences.

In his contribution *Existential import*, Bart Geurts discusses the status of the existential assumption associated with certain quantifiers. He considers the following sentences in a context where it is assumed that there are no Swiss bullfighters:

(7) a. Every Swiss matador adores Dolores del Rio.

b. Most Swiss matadors adore Dolores del Rio.

(8) a. Some Swiss matadors adore Dolores del Rio.

b. No Swiss matador adores Dolores del Rio.

(9) a. There are no Swiss matadors in the drawing room.

b. There are some Swiss matadors in the drawing room.

The general wisdom is that informants judge sentences (7a, b) as infelicitous and sentences (8a, b) as true or false – with some informants that think that (8a, b) are infelicitous (cf. Lappin and Reinhart 1988). The general account for this 'existential import' effect has been the assumption that strong quantifiers presuppose the corresponding existential statement (cf. de Jong and Verkuyl 1985). Geurts argues against a simple theory of existential presupposition and shows that, in the case of weak quantifiers, 'existential import' depends on the information structure of the sentence. He illustrates this fact with existential sentences, as in (9a, b). In the imagined situation, these sentences are judged as true and false respectively even by informants that judge (8a, b) as infelicitous. According to Geurts, this is so because, given the ban on presuppositional noun phrases in existential sentences as well as the non-topic status of the post copular non phrases, the weak quantifiers that introduce the noun phrases *no Swiss matadors* in (9a) and *some Swiss matadors* in (9) come with an empty domain presupposition. In contrast, the same noun phrases can be taken as topics of (8a, b) in an appropriate discourse, and thereby get a presuppositional interpretation. Geurts concludes that 'existential import' is not just an existential presupposition, but an instruction to recover a suitable domain from the context. Furthermore, this view of 'existential import' is argued to apply not only to weak quantifiers, but also to strong ones.

Specific indefinites are another kind of noun phrases whose interpretation is not sufficiently covered by pure existential quantification. They need additional contextual information for their interpretation. This context-dependence is shown in both their semantic and their syntactic behavior. In his contribution 'Referentially anchored indefinites', Klaus von Heusinger analyses the particular semantics of specific indefinites. In (10) below, the referent of the specific indefinite *a* (*certain*) *task* can depend either on the context of utterance, namely the speaker, or on the noun phrase *each student*. In the former case, the specific indefinite takes wide scope, whereas in the latter it takes intermediate scope.

Von Heusinger argues that specificity expresses an anchoring relation to an argument, rather than to a set, as was proposed in Enç's (1991) analysis of specificity in terms of partitivity. He formulates his analysis in terms of file change semantics: while a definite noun phrase indicates that the referent is already given in the context, a specific indefinite introduces a new discourse item that has a (pragmatically salient) link to an already given discourse item. In this way, not only the wide scope of specific indefinites can be accounted for, but also their intermediate scope. The analysis is illustrated with data from Turkish, a language that marks specificity morphologically with a case suffix on the direct object. In (11) the specificity marker on the direct object is present with both the wide-scope and the intermediate-scope reading:

(10) Bill gave each student a (certain) task to work on.

(11) Her antrenör belli bir atlet-i / *atlet çalış-tır-acak.
Every trainer certain one athlete-ACC work-CAUS-FUT.
'Every trainer will train a certain athlete.'

a. All trainers paired with the same athlete (specific wide scope).

b. Each trainer paired with a different athlete (specific narrow scope).

The Turkish data also show that intermediate readings of indefinites are specific, a fact that contradicts the assumption that all specific indefinites must be linked to the speaker, thereby getting wide scope. It rather seems that specificity is a more general property of being referentially anchored to another argument, rather than being epistemically dependent on some agent.

The contribution *On singular existential quantifiers in Italian* by Roberto Zamparelli discusses a related issue: what are the syntactic and semantic conditions that determine the different interpretations of indefinite determiners? Zamparelli investigates the Italian determiner *qualche*. *Qualche N* is shown to introduce an undetermined but small number of *N*s, while *un qualche N* is shown to be an 'epistemic indefinite' (cf. Alonso-Ovalle and Menéndez-Benito 2003 for Spanish *algun*) and therefore have a free choice interpretation. The most striking aspect of the semantics of *qualche N* is that this expression selects a singular count noun, but denotes a plural entity. Zamparelli argues that *qualche N* and *un qualche N* have the basic logical meaning of existence, i.e. they are used to assert that the intersection of the set denoted by their head noun and the set denoted by the predicate is non-empty. He then derives the differences between their interpretations from the interaction of their syntactic position within the DP with contextual domain restriction and pragmatic Horn scales. Thus this study is another clear illustration of the fact that the issue of existence is deeply embedded in linguistic structure and plays a crucial role in the interfaces between different linguistic components.

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PART I

THE INTERPRETATION OF THE COPULA

RONNIE CANN

TOWARDS A DYNAMIC ACCOUNT OF BE IN ENGLISH

Abstract. This paper presents an analysis of the *there be* construction in English in which these words are taken to project a radically underspecified propositional structure which is updated by postcopular material. The analysis takes as its point of departure the hypothesis that the copular verb itself projects a semantically underspecified one-place predicate and shows how this hypothesis can be used to provide straightforward analyses of elliptical, predicative and existential focus constructions involving *be*, using the framework of Dynamic Syntax. It is argued that different interpretations of *there be* constructions depends on the interaction of pragmatic and syntactic processes mediated by the properties of the expressions with which the string is collocated.

1. ANALYSING 'BE'*

The perennial problem with analysing the copula is that it appears in a wide range of constructions, apparently involving postcopular elements of different sorts, and giving rise to a variety of different interpretations. For example, in English *be* may apparently do little more than host tense and agreement information with adjective, prepositional and nominal phrases in predicatives (1a); induce an interpretation of identity with a noun phrase complement in equatives (1b); give rise to existential interpretation in construction with *there* (1c); act as some sort of presentational marker with an expletive subject (1d); act as part of a construction determining focus in cleft (1e), and pseudo-cleft (1f) constructions; (rarely) provide 'existential focus' in certain intransitive constructions (1g), and with present and past participles give rise to progressive and passive readings, respectively (1h,i):

(1) a. Mary is happy/in the gym/a student.
b. John is the teacher.
c. There is a riot on Princes Street.
d. It's me.
e. It is Mary who is the dancer.

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f. What I want is a good review.
g. Neuroses just ARE (they don't need a cause).
h. Kim was running to the shops.
i. The fool was hit by a truck.

The variability in the interpretation of *be* in (1) is further compounded by the subtle differences in meaning exhibited by very similar sentences. For example, copular clauses involving a definite noun phrase give rise to slightly different interpretations according to whether the definite NP precedes or follows the copula. Equative clauses, as in (2a), involve a postcopular definite which appears to be fully referential, while specificational clauses, as in (2b) involve an initial definite which appears to provide a description of an unknown entity, rather than to pick out some specific object.[1]

(2) a. John is the culprit.
b. The culprit is John.

Such subtle variation in interpretation, again generally according to the properties of a postcopular noun phrase, is found also in constructions of the copula with the expletive pronoun *there*. So, for example, when the postcopular noun phrase (the *associate*) has a weak (or intersective, Keenan 1987,2001) determiner, this gives rise to the 'standard' existential interpretation illustrated in (3a,b). With postcopular definites, however, we have presentational or locative readings as in (3c,d), while numerals may give rise to existential, presentational or locative interpretations depending on context, as in (3e).

(3) a. There's a riot on Princes Street.
b. There's a rabbit in the garden.
c. There is the student that you wanted to see in the corridor.
d. There's that cat again.
e. There are three students in the common room.

Reconciling these different interpretations of copular clauses in English is not straightforward.[2] There is little apparent semantic similarity between existence, equation, presentation and predication, let alone the progressive and passive. Yet treating *be* as multiply homonymous is not an attractive option, neglecting as it would the interaction of whatever meaning the copula has with the semantics of the expressions with which it combines. Hence, many discussions in the literature try to reconcile the different interpretations as far as possible. Such accounts tend

[1] See Heycock 1994, Heycock and Kroch 1999, Mikkelsen 2004, etc.

[2] I restrict all my remarks in this paper to English. There are languages with more than one true copula verb (such as Lakhota, Malayalam, Thai) and others with no overt copulas at all (such as Bambara, Tagalog, Maori) to which the current discussion is unlikely to generalise in its entirety. See Pustet 2003 for a typological overview of copula systems.

to be restricted to reconciling predicate and equative (and specificational) readings which minimally seem to require two homonyms with distinct semantic structures. Montague (1973) treats the copula as equative, giving it a translation $\lambda\wp\lambda x\wp\{\hat{y}[{}^{\vee}x = {}^{\vee}y]\}$. This permits an account of predicational uses with indefinite postcopula expressions, but does not treat adjectival predicative constructions. Other semantic attempts to resolve this ambiguity, such as those in Williams (1983) and Partee (1986) favour treating the copula as 'essentially' predicative. Partee's account, for example, provides the copula with a semantic type $(e \rightarrow t) \rightarrow (e \rightarrow t)$ with the semantic structure: $\lambda P \lambda x . P(x)$.[3] The difference between predicative and equative readings is derived through a type shifting operation (*Ident*) on a postcopular term to turn it into an identity predicate, thus shifting the homonymy to the term rather than the copula.

The details of Partee's analysis (and other similar ones, see also Partee and Borschev this volume) are not important here but one of the things such an analysis fails to account for is the interpretational effect of existence for *be* exhibited not only in the *there be* construction in (1c) but also in the intransitive usages in (1g) and the more common (although quasi-idiomatic) strings in (4).[4]

(4) a. I think therefore I am.
b. To be or not to be.

But this gets us back to an apparently irreconcilable homonymy for the copular verb between denoting existence and providing no semantic content at all. It also signally fails to account for the context sensitivity of the interpretation of *be* in various constructions. As noted above, whether a string consisting of two noun phrases and a form of the copula is interpreted as predicative or equative depends largely on the definiteness of the postcopular term: an equative reading is only possible if this is definite. Furthermore, if both noun phrases are definite, then either an equative or a specificational reading may result, depending on whether the postcopular term may (or must) be interpreted as fully referential in context and whether the initial term need not be. A sentence such as that in (5) where both noun phrases contain the definite article may be interpreted as equative or specificational according to the context of utterance.

(5) The culprit is the teacher.

There have, of course, been a number of interesting and elegant attempts to deal with this problem semantically (see in particular Heycock and Kroch 1999). However, the problem of context-dependence reasserts itself, more strongly, with respect

[3]Partee, in fact, allows a variable type and analysis with the arguments of the expression appearing in either order, i.e. $\lambda x \lambda P . P(x) : e \rightarrow ((e \rightarrow t) \rightarrow t)$.

[4]It is, of course, considerations like these that have led to the longstanding philosophical debate about the ambiguity of *be* and the relation between *be* and *exist* which I do not go into here, but see Miller 2002 for a summary of the principal issues.

to constructions involving *there be*. This construction gives rise to a range of different interpretations, depending on the properties of the postcopular noun phrase (the 'associate') and the rest of the clause (often referred to as the 'coda'). In the examples in (6) below, we have existential, presentational and locative readings associated with minimally different syntactic contexts.

(6) a. There's a chemist shop on Princes Street.
b. There is the chemist shop on Princes Street that you wanted to go to.
c. There's that chemist shop again.

The existential/presentational distinction seems to correlate with the definiteness of the postcopular noun phrase. Clauses with definite associates are thus typically interpreted as locative or 'presentational' (the latter being a catchall term that seems to refer to interpretations that are neither existential nor locative). Consider again example (3c), repeated below.

(3) c. There is the student that you wanted to see in the corridor.

This sentence might be used locatively to tell the hearer that some specified student is here (in the corridor) or 'presentationally' to bring the situation as a whole to the hearer's attention, perhaps reminding her that her afternoon appointments are not completed yet. Interestingly enough, the simple copula clause without *there* (*the student you wanted to see is in the corridor*) can be used to express the locative reading but not the presentational one.

The differences between existential, locative and presentational readings might be taken to indicate differences in the meaning of *there be*. This cannot be the case, however, because definite and indefinite associates can be conjoined, giving rise to apparently mixed readings. Consider the examples in (7).

(7) a. There's a crow on the lawn.
b. There's that bloody cat fighting on the lawn.
c. There's a crow and that bloody cat fighting it out on the lawn.

(7a) seems to be indisputably existential, while (7b) seems to have a presentational reading.[5] (7c) seems to have a number of readings: existential (*there's a crow fighting on the lawn (with that bloody cat)*); presentational (*there is fighting on the lawn (between a crow and that bloody cat)*); or even mixed (*there is fighting on the lawn and there's a crow fighting with that bloody cat*). Such a mixed

[5] As far as I am aware, there is no semantic (or pragmatic) characterisation of what a presentational interpretation is. Most discussions of such constructions refer merely to the apparent syntactic differences between them and existential ones, such as the appearance of definite noun phrases in associate position (see, e.g., Huddleston and Pullum 2002: 1402) without actually indicating what a presentational reading is. What appears to be going on is that a complete situation is being presented for the attention of the hearer. So, in (7b), it is the situation of the fighting by some known cat that is being highlighted (or focused) rather than the cat itself, essentially equivalent to:
i. That bloody cat is fighting on the lawn.

reading is more obvious in the example in (8) where there seems to be asserted the existence of a student standing in the corridor and the presentation of the situation in which the lecturer is standing in the corridor. This should be impossible if the constructional subtypes are semantically discrete.

(8) There's/are a student and the lecturer (you wanted to see) standing in the corridor.

The context-dependence of *there be* constructions is further shown in examples with associates with non-definite strong quantifiers. Although not frequent and often quite marked, universally and other quantified NPs can appear after *there be*, but the interpretation of such sentences depends strongly on context. Compare the acceptable example in (9a) with the odd, but minimally different, example in (9b).

(9) a. There's every PhD student of mine coming to my inaugural.
b. ??There's every student in the garden.

The example in (9a) is likely to be acceptable only in a context which supports the open proposition *There are n students coming to y's inaugural*, the determiner providing the value for *n* (and the pronoun providing that of *y*). This would give rise to a focus effect, which might be considered to be precluded by the universal quantifier *every*. The example in (9b), peculiar out of context, would seem similarly to require some context such as *There are n students in the garden* to be acceptable, and indeed the exchange in (10) appears to be well-formed. In a null context, however, the sentence is odd, if interpretable at all.

(10) I think there are only one or two students in the garden.
No, there's EVERY student in the garden.

Another example in (11a),[6] is interpretable without further contextualisation but requires inference over *every chain restaurant* to *every type of chain restaurant*. The example in (11b), on the other hand, while it could be interpreted in a similar fashion requires more effort and a more elaborated context to achieve a similar result, because it is pragmatically unlikely that every type of restaurant (*tout court*) could be found on a single street.

(11) a. Within 15 minutes, there is every chain restaurant in the USA.
b. ??Within 15 minutes, there is every restaurant in the USA.

Again this construction does not seem to involve different interpretations for *there be*, as illustrated in (12) where a definite or an indefinite may be conjoined with a universal to give possible mixed readings.

[6] From http://www.24hoursofadrenalin.com/sched_mass.cfm, October 2002.

(12) There's the Chancellor, a lord of the realm and every student of mine coming to my inaugural.

If it is true that the phrase *there be* itself does not have different interpretations directly, then the interpretation of the various constructions involving this string must result from inference over whatever single meaning it has and the meanings of its associates and codas. Analyses of the existential construction typically concentrate on properties of the associate and mostly on the existential reading. As already noted, in one of the most influential semantic accounts, Keenan (1987) identifies associates as needing to be intersective DPs in order to give rise to an existential reading. Musan (1995), on the other hand, analyses the construction in terms of a temporal variable indicating stage level predication, while McNally (1998) interprets the construction in terms of the properties of non-particulars. In a more pragmatic account, Zucchi (1995) argues that the existential reading occurs just in case the associate presupposes neither the existence nor the non-existence of some entity. Ward and Birner (1995), concentrating on definite associates, again adopt a pragmatic approach to the felicity of such constructions, attributing acceptability to the possibility of construing the postcopular definite as providing 'hearer-new' information.

We do not go into a discussion of these various accounts, but it is notable that in none of them is there an analysis of the string *there be*. The following statement by Louise McNally sums up the apparent attitude of most researchers in this area (although very few even acknowledge this lacuna in their discussion):[7]

> 'I treat *there be* as an unanalyzed unit; I do this . . . partly because there is no decisive evidence concerning the individual semantic contributions of the individual words' (McNally 1998: 354).

The existential force of the construction is hypothesized to come from the way that associates and codas are interpreted or it is just assumed. Little attempt is made to derive the interpretations compositionally or to explore how (and indeed why) definiteness interacts with *there be* to give rise to different interpretations. The variability in interpretation of such clauses and, in particular the possibility of conjoining different types of coda to give mixed readings strongly indicates that existential, presentational and locative readings cannot be semantically distinct. A pragmatic account seems, therefore, to be favoured.

In this paper, I hypothesize that *there be* should be assigned some semantically underspecified meaning which is enriched through inference over the properties of the associate, the coda and the context of utterance. Indeed, I extend the idea to copula constructions in general. In other words, my explanation not only for the peculiarities of the various constructions involving *be* in conjunction with *there*, but also for the variability in interpretation of all clauses involving *be* is couched in

[7] See, however, Rooryck and Barbiers 1998 for a notable exception within a theory that utilises multiple Topic projections at the left periphery.

terms of semantic underspecification and pragmatic enrichment, providing *be* with an interpretation that is context-dependent and uniform across all usages.

Adopting this hypothesis still leaves the problem of the arity of the underspecified predicate that is associated with *be*. That this is a non-trivial problem is shown by the fact that it appears to be able to take complements of various numbers and types. So, as the constructions in (1) illustrate, the copula may appear variously with following definite and indefinite noun phrases, prepositional phrases, present and past participles and adjectives (amongst others). This flexibility of complement type is not matched by other auxiliary verbs, including *have*, compare (13) with (14).

(13)	A: Kim is	a friend of yours the teacher in the garden playing football disliked by Hannibal happy misunderstood *play cricket	
(14)	A: Kim has	a friend of yours the teacher in the garden *playing football *disliked by Hannibal *happy misunderstood *play cricket	(ellipsis only)

This variability in apparent complement type presents quite a serious problem in trying to establish the syntactic properties of the copula, leading in frameworks like GPSG (and HPSG) to the postulation of *syntactic* homonymy for *be*.[8] If *be* is semantically non-homonymous, however, syntactic homonymy should also be excluded and I take the data given above to indicate *be* is uniformly intransitive and that it licenses *no* complements directly. This position is further supported by the data in (15) below. Uses of *be* can give rise to a non-elliptical interpretation in intransitive contexts, unlike other auxiliaries. So, for example, *may* and *can* without VP complements, do not license interpretations where the general modality, such as possibility and ability, are ascribed to the subject. Without a complement VP, modals can only be interpreted elliptically, whereas, as we have already seen, *be* can give rise to a non-elliptical interpretation of existence in intransitive contexts. This strongly indicates that there is no necessary 'complement position'.[9]

[8] See Gazdar et al. 1982 and Warner 1993.

[9] Lamarche 2003 comes to essentially the same conclusion, though for very different reasons.

(15) a. Neuroses just ARE. (= Neuroses exist)
b. Neuroses just MAY. ($\neq$ Neuroses are possible)
c. The students just CAN. ($\neq$ The students are able)

The central hypothesis of this paper is, therefore, that the copula in English projects a semantically underspecified one-place predicate, a semantic placeholder of type $e \rightarrow t$[10] whose content has to be established in context through inference. In this paper, I discuss how this characterisation allows a uniform account of certain types of ellipsis involving *be*, the existential focus construction, predicative uses and *there be* constructions involving definite and indefinite associates.[11]

2. DYNAMIC SYNTAX

The framework I use to account for the vagaries of the copula is that of *Dynamic Syntax* (DS) (Kempson et al. 2001, Cann et al. 2005). In this framework, syntax is defined as the process by which the interpretations of strings of words uttered in context are progressively established. The process of natural language understanding is modelled as a monotonic tree growth process defined over the left–right sequence of words, with the goal of establishing some propositional formula as interpretation. The syntax is not encapsulated and contextual, pragmatic effects interact with the syntactic process to determine the final outcome, making it the ideal instrument to account for the way linguistic context contributes to the interpretation of copular clauses, as discussed above.

Taking information from words, pragmatic processes and general rules, the theory derives partial tree structures that represent the propositional content of a string as interpreted in context up to the current point in a parse. Intrinsic to this process are concepts of underspecification whose resolution is driven by requirements which determine the process of tree growth, having to be satisfied for a parse to be successful. For the purposes of this paper, a central role is given to the underspecification of semantic content and of the status of some element within an emerging propositional structure.

[10] It may be that this has to be modified to allow for propositional and property subjects as exemplified in (i) and (ii):

i. That he will be here soon is highly unlikely.
ii. Honest is honest.

I do not further explore these constructions here, but they do not undermine the essence of the current analysis. The important point here is that *be* does not project an internal argument, whatever the properties of its subject argument may be.

[11] See Cann (2006) and Cann et al. (2005b): ch. 8 for discussion of other copular constructions using the hypotheses put forward in this paper, particularly with respect to equative and specificational clauses.

To model the process of establishing such a structure as interpretation, all nodes in the semantic trees constructed during a parse are introduced with requirements to be fulfilled, reflecting the idea that the tree is underspecified with respect to some property that needs to be specified as the parse proceeds. Requirements may be to specify values for any of the labels that decorate a node, but the principal drivers of the parsing process are requirements to establish nodes of certain types, starting from the initial (universal) requirement to build a representation of the propositional content expressed by a string in context: $?Ty(t)$, an instruction to build a tree rooted in $Ty(t)$, the type of a proposition.

To satisfy such requirements, a parse relies on information from various sources. In the first place, there are general processes of construction which give templates for building trees that may be universally available or specific to a language. One such rule determines that a tree rooted in $?Ty(Y)$ may be expanded to one with argument daughter $?Ty(X)$ and functor daughter $?Ty(X \rightarrow Y)$. An instantiation of this rule is shown in Figure 1 where the initial unfolding of the initial requirement $?Ty(t)$ is construed to be established through the construction of subgoals $?Ty(e)$ and $?Ty(e \rightarrow t)$, requirements to build the subject and predicate nodes, respectively. The 'pointer', $\diamond$, marks the node that is currently being developed.[12]

Information about tree building also comes from packages of actions encoded in lexical entries which are accessed as words are parsed. An entry for a word contains conditional information initiated by a trigger (the condition that provides the context under which subsequent development takes place), a sequence of actions (possibly involving the building of nodes and/or the annotation of a node with type and formula information) and a failure statement (commonly an instruction to abort the parsing sequence) if the conditional action fails. For example, parsing the word *John* gives rise to the set of actions in (16) which annotate the current node with a formula ($Fo(John')$) expressing the content of the concept projected by the word *John'* which is of type *e*, thus satisfying the requirement imposed by INTRODUCTION.[13]

(16)

John	IF	$?Ty(e)$
	THEN	$\texttt{put}(Ty(e), Fo(John'), [\downarrow]\bot)$
	ELSE	ABORT

Thus, given as input the second tree in Figure 1 with the pointer on the open subject node, parsing the word *John* yields the tree in Figure 2, with the subject node now complete and the pointer having moved to the open predicate node.[14]

[12] See Kempson et al. 2001: ch. 3 and Cann et al. 2005b: ch. 2 for technical details. The specific construction rules are not given in this paper as their content can be understood directly from the tree displays.

[13] See below for a discussion of the modality $[\downarrow]\bot$.

[14] Again, this simplifies the formal apparatus considerably, but is all that is required for present purposes.

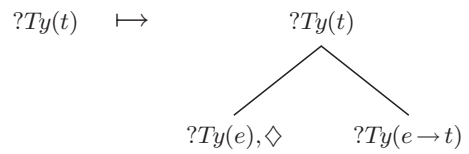


Figure 1. An initial expansion of ?Ty(t)

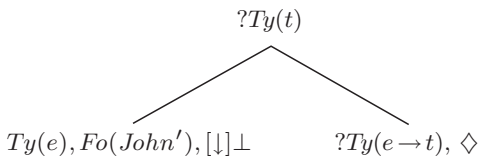


Figure 2. Parsing John

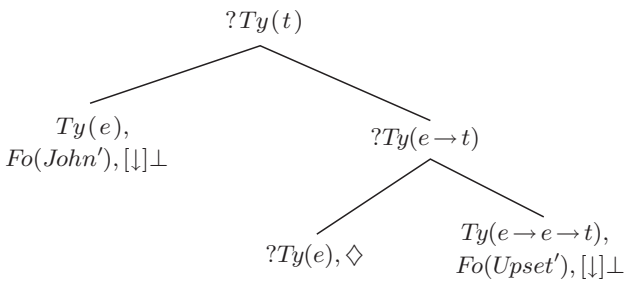


Figure 3. Parsing John upset

Parsing words other than proper names, however, may give rise to a more complex set of actions that build, as well as annotate, nodes. Such is found with parsing transitive verbs, for example. The sequence of actions given in (17) yields the tree in Figure 3, given the input in Figure 2.[15]

(17) *upset*

IF	$?Ty(e \rightarrow t)$
THEN	$\texttt{make}(\langle\downarrow_1\rangle); \texttt{go}(\langle\downarrow_1\rangle);$
	$\texttt{put}(Ty(e \rightarrow e \rightarrow t), Fo(Upset'), [\downarrow]\bot);$
	$\texttt{go}(\langle\uparrow_1\rangle); \texttt{make}(\langle\downarrow_0\rangle); \texttt{go}(\langle\downarrow_0\rangle);$
	$\texttt{put}(?Ty(e))$
ELSE	ABORT

[15]Here and below, all tense information is ignored as not germane to the current discussion.

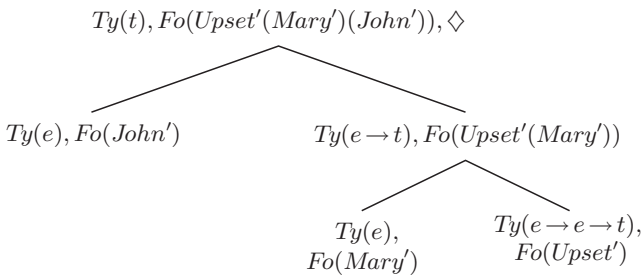


Figure 4. Completing a parse of John upset Mary

Syntactic processing will continue just in case the next word has a trigger of the appropriate type, i.e. $?Ty(e)$, such as another proper noun like *Mary*, parsing which will ensure that all terminal nodes are type and formula complete. The remaining open type requirements on the predicate and propositional nodes are satisfied through the process of COMPILING the tree through functional application over types, yielding the completed tree in Figure 4. Since the tree has no remaining requirements, the parse is successful and the input string accepted as well-formed with the interpretation given.

It is important to note at this point that the tree representations in Figures 1 to 4 (and throughout) do not have nodes decorated by *words* but by the *concepts* expressed by words. Order in the trees is, therefore, entirely irrelevant and an arbitrary decision has been made to order trees in this paper so that arguments appear to the left of their functors. The order of functors and arguments in Figure 4 thus does not reflect string order (English is not SOV), because the trees represent only the *content* expressed by the string, not any phrasal structure. Word order itself is determined by properties of *pointer movement* within the content trees, interacting with computational and lexical actions, induced by the words in the string *in strict linear sequence*. In this way, Dynamic Syntax characterises the syntax of natural languages as the *process* by which the (representation) of interpretative content of a string of words uttered in context is progressively built up on a word-by-word basis.[16]

2.1. Left Dislocation

The driving force of the parsing process is thus the need to resolve requirements to specify underspecified information, of which the most important is the requirement

[16] See Cann et al. 2005b, chapters 1 and 2, for the conceptual underpinnings of the theory and its technical apparatus.

to construct a formula value with a particular type. However, any predicate used to decorate tree nodes may be associated with a requirement and this will drive the parsing process in different ways. One such requirement is the requirement to find a fixed position within a tree. Every node in a tree is associated with an ADDRESS which is encoded as a value to the TREENODE predicate, Tn. The topnode of a tree has an address $Tn(0)$ from which other addresses are constructed regularly: the functor daughter of a node with address $Tn(n)$ has an address $Tn(n1)$ while the argument daughter has an address $Tn(n0)$. In Figure 4, for example, the node labelled by $Fo(John')$ has an address of $Tn(00)$, the predicate node has address $Tn(01)$ and the node decorated with $Fo(Upset')$ has address $Tn(011)$ and so on.

This method of defining treenode addresses is related to one of the principal descriptive mechanisms of Dynamic Syntax: the Logic of Finite Trees (LOFT, Blackburn and Meyer-Viol 1994). This modal logic provides a means of referring to arbitrary nodes in a tree using the following modal operators (amongst others): $\langle\downarrow\rangle$ the general daughter relation; $\langle\downarrow_0\rangle$ and $\langle\downarrow_1\rangle$ the argument and functor daughter relations, respectively; $\langle\downarrow_*\rangle$ the dominance relation (the reflexive, transitive closure of the daughter relation); and the inverses of these using the mother relation, $\uparrow$. Given one fixed treenode address, the modalities of LOFT allow the positions of other nodes to be given in relation to this. For example, given the rootnode $Tn(0)$, the argument daughter has the modality $\langle\uparrow_0\rangle Tn(0)$ and the functor daughter, $\langle\uparrow_1\rangle Tn(0)$, and so on.

The underspecified modalities $\langle\downarrow^*\rangle$ and $\langle\uparrow^*\rangle$ provide the means of accounting for dislocated expressions within Dynamic Syntax. When an expression is parsed, it need not be associated with a fixed position within a tree but will have an underspecified dominance relation with respect to some other node. This is represented from the dominated node as $\langle\uparrow^*\rangle Tn(a)$, where $Tn(a)$ is the address of the dominating node and the modality is defined as:

$$\langle\uparrow^*\rangle\alpha \rightarrow \langle\uparrow\rangle\alpha \vee \langle\uparrow\rangle\langle\uparrow^*\rangle\alpha$$

This initial underspecification of tree position must be resolved during the course of a parse and so is associated with a requirement to establish a proper treenode address, shown as $?\exists\mathbf{x}.Tn(\mathbf{x})$.

Positional underspecification is principally used to account for long distance dependencies in terms of initially unfixed nodes whose position in an emergent tree structure is fixed at a later stage in the parsing process. Although this paper is not concerned with left dislocation, it will be useful for the later discussion to show how simple left dislocation structures are analysed within the theory. A construction rule of *ADJUNCTION (read 'star adjunction') introduces a left peripheral unfixed node, defining a transition from an incomplete tree rooted in $?Ty(t)$ with only a single node to a tree that contains in addition a node characterised as dominated by a tree node a with requirements to identify the address of the unfixed node and to construct a type e decoration. This is shown schematically in terms of the transition in Figure 5.

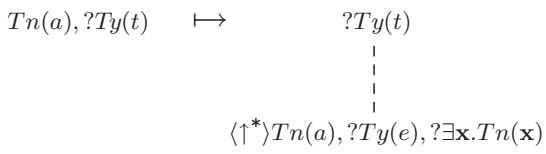


Figure 5. Introducing an unfixed node

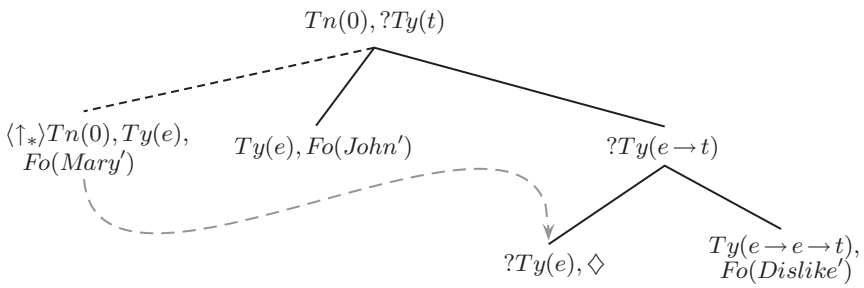


Figure 6. Parsing Mary, John dislikes

Analysing the string *Mary, John dislikes* in these terms is illustrated in Figure 2 with an initially projected unfixed node and the pointer at the object position. At the point in the parse at which all words in the string have been processed, there remains outstanding an unfixed node and a requirement to construct a node of type e. In this environment, a process of MERGE may take place which identifies the unfixed treenode with the node currently under construction.[17] MERGE is defined as a process that unifies the descriptions (sets of labels) of two nodes, the unfixed node and the current node. The process is therefore successful just in case no contradictory decorations result from the combination of the descriptions of the two nodes.[18] MERGE (indicated by a dashed curved line) applied to Figure 6 satisfies the outstanding requirements on the fixed and unfixed nodes: the unfixed node provides the necessary type and formula decorations, while the fixed node provides the appropriate treenode address for the unfixed tree. Ultimately, completion of the tree yields a $Ty(t)$ Formula value, $Dislike'(Mary')(John')$ decorating the topnode, with all requirements fulfilled.

In Dynamic Syntax, the interaction of computational, lexical and pragmatic processes determines the interpretation of a string. A wellformed string is one for

[17] Note that this process is not the same, technically or conceptually, as the process of the same name in the Minimalist Program (Chomsky 1995).

[18] Well-formed treenode descriptions are thus rather like the categories of Generalised Phrase Structure Grammar which are defined as partial functions from attributes to values (Gazdar et al. 1985).

which at least one logical form can be constructed from the words in sequence within the context of a given class of computational and pragmatic actions with no requirements outstanding. In consequence, the imposition of requirements and their subsequent satisfaction are central to explanations to be given to syntactic phenomena.

2.2. Representing the Content of Noun Phrases

In section 1, it was argued (following others) that the interpretation *there be* clauses (and other clauses involving the copula) depends on the properties of any postcopular noun phrase, in particular its definiteness. These sections sketches the analysis of indefinites, pronouns and definites within Dynamic Syntax which all project expressions of type e. This is made possible[19] by the use of the epsilon calculus of Hilbert and Bernays (1939) where indefinite noun phrases, for example, project epsilon terms, expressions that denote arbitrary witnesses for the set denoted by the common noun (see also Egli and von Heusinger 1995, Kempson et al. 2001, Meyer-Viol 1995, von Heusinger 2004). Despite being of type e, the tree structures that represent the content of such quantified terms is complex, containing two nodes of type e, that of the top node and one embedded within the structure that hosts the variable bound by the quantifier. A quantified term thus consists of a triple: a quantifier, a variable, and a restrictor containing an instance of the variable determined by the content of the common noun. Formulae of the type of common nouns ($Ty(cn)$) consist of an ordered pair of the distinguished variable and an open proposition in which the variable occurs free. So the content of *happy student* is $Fo(x, Student'(x) \wedge Happy'(x))$.

Although it will not be a direct concern of this paper, scope relations are determined through scope statements collected at the relevant propositional node. This is shown as an ordering relation between variables introduced by indefinites and universals and the 'index of evaluation' S_i.[20] Figure 7 shows the structure projected on parsing the indefinite noun phrase *a student*, in the string *A student sings* (with the scope of the indefinite shown as dependent on the index of evaluation).

Interacting with tree growth processes of the sort sketched so far is the context-dependent processing of anaphoric expressions. This phenomenon of content underspecification, which is taken here in a representationalist spirit (see Kempson et al. 1998, Kempson et al. 2001: ch. 1 for arguments), involves the lexical projection of a placeholder for some formula value, a METAVARIABLE,[21] that needs to be replaced by some selected term during the construction process. Such replacement is associated with a substitution process that is pragmatic, and system-external, restricted only in so far as locality considerations distinguishing individual

[19] At least with respect to definite, indefinite and universally quantified noun phrases.

[20] See Kempson et al. 2001: ch. 7 and Cann et al. 2005b: ch. 3 for details.

[21] Such expressions are called 'metavariables' because they range over all formulae of the object language, including variables. They are not themselves part of the object language, but placeholders for expressions that are.

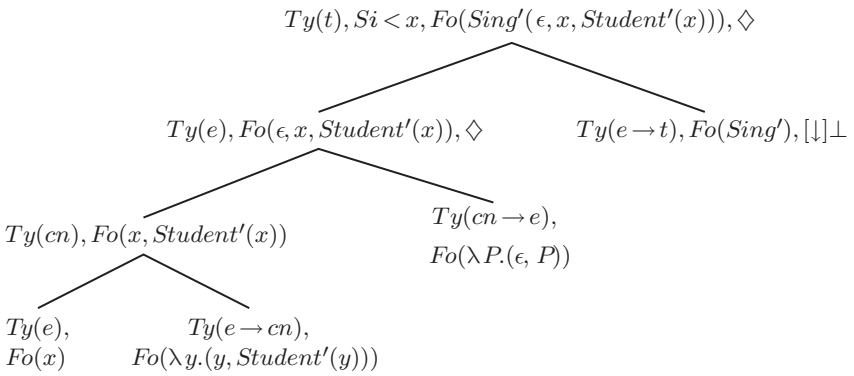


Figure 7. Parsing a student sings

anaphoric expressions preclude certain formulae as putative values of the projected metavariable (i.e. analogues of the Binding Principles, Chomsky 1981, etc.).

(18) Q: Who upset Mary?
Ans: John upset her.

In processing the pronoun in (18), the object node is first decorated with a metavariable **U**, with an associated requirement, $?\exists \mathbf{x}.Fo(\mathbf{x})$ to find a contentful value for the formula label. Construed in the context provided, substitution will determine that the formula **U** is replaced by $Mary$:[22]

(19)

her	IF	$?Ty(e)$
	THEN	$\texttt{put}(Fo(\mathbf{U}), Ty(e), ?\exists \mathbf{x}.Fo(\mathbf{x}), [\downarrow]\bot)$
	ELSE	ABORT

Note the modality $[\downarrow]\bot$ in (19) which is also projected by contentive expressions such as *John* and *upset* above. This is the 'bottom restriction' which requires that no properties hold of any node below the node so annotated and thus prevents further elaboration of that node. This means that pronouns behave, in English, like contentive expressions in that they must decorate a 'terminal node' on a tree. This has an effect in preventing dislocated expressions from being associated with a position labelled with a pronoun by the process of MERGE and thus being able to be associated with some dislocated expression. So we find that the use of resumptive pronouns with topic constructions and WH questions is marginal or excluded.[23]

[22] A more detailed specification of *her* would include a first subentry that caused the update sequence of actions to abort in an environment in which the node to be decorated was a subject node, but I ignore this complexity here.

[23] See Cann et al. 2005a for some discussion of resumptive pronouns in topic and relative clause constructions.

(20) a. ??Many types of beans, I like them, but much meat, I don't like it.
b. *Who did you see them?

As already noted, metavariables may be replaced by other formula values through a pragmatic process of substitution. This I leave largely undefined in this paper (although the principles of Relevance Theory are assumed, see Sperber and Wilson 1986/1995), but pronouns also come with restrictions on the content of the expressions that may act as antecedents. Thus, *her* requires to be identified with a referent that is female. We may, following Kempson et al. (2001) display such restrictions as annotations on a metavariable, yielding such formula representations for pronouns like *her* as $Fo(\mathbf{U}_{\mathrm{Female}'(\mathbf{U})})$. The function of such 'presuppositions' is to act as a constraint on the process of SUBSTITUTION: the property associated with a metavariable guides the hearer towards a relevant choice of term as substituend. The substitution of *Mary* rather than (say) *Bill* for the metavariable in (18) is thus supported by the fact that Mary is assumed generally to be a name for a female while Bill is not. The fact that the pronoun *her* could be used to refer to Bill (or some other male) in a different context[24] (e.g. because Bill is dressed as a woman) does not undermine the *use* of the pronoun to identify a relevant term (e.g. by identifying a term picking out something that is dressed as a woman). The property of being female would not, in such circumstances, cash out truth conditionally as a property of whatever term is substituted for the metavariable: the presupposition is a constraint on a pragmatic process, not an assertion that some property holds of some particular term.

Definite noun phrases are treated analogously to pronouns in Dynamic Syntax in projecting underspecified content which requires to be enriched. However, the content of such expressions is not projected from the lexicon, as part of the actions associated with parsing *the*, but from the information contained in the common noun phrase associated with the definite article. Thus, the formula projected by a phrase like *the man* may be represented as $Fo(\mathbf{U}_{\mathrm{Man}'(\mathbf{U})})$, restricting substitution of the metavariable **U** to terms that denote things that have the property of being a man. The question, however, is how a compositional account of definite noun phrases can be given that ensures that the right content is associated with a definite noun phrase. To achieve this, we need the concept of LINK structures.

We have so far seen how individual trees can be built up following information provided by both general rules and lexical instructions. However, the more general perspective is to model how multiple structures are built up in context. One of the innovative aspects of DS is that it allows for the building of structures in tandem, constructing first one partial structure, and then another which uses the first as its context. This process is displayed in particular by relative clauses. The characteristic property of such 'linked' structures is that they share a common term, making

[24] Not in the current context because of the Principle B restriction on substituting a co-argument, see Kempson et al. 2001.

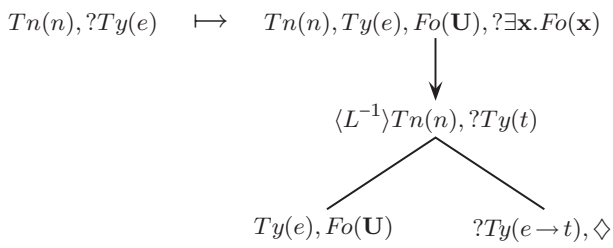


Figure 8. Parsing The

their clearest application in the characterisation of relative clauses. They may, however, also be used to model definites and their associated presuppositions.

The definite article, like a pronoun, is analysed as projecting a metavariable,[25] but additionally induces the construction of a propositional structure linked to the node so decorated. The propositional tree is partially constructed with a copy of the metavariable in the first argument position and a requirement to find a predicate.[26] The effect of parsing *the* is shown in Figure 8 where the LINK modality is indicated by the thick black arrow. The appropriate set of actions is given in (21) which uses the modal operators $\langle L\rangle$ and $\langle L^{-1}\rangle$ to signify the LINK relation and its inverse.[27]

(21) *the*

IF	$?Ty(e)$
THEN	$\texttt{put}(Ty(e), Fo(\mathbf{U}), ?\exists\mathbf{x}.Fo(\mathbf{x}))$
	$\texttt{make}(\langle L\rangle); \texttt{go}(\langle L\rangle); \texttt{put}(?Ty(t))$
	$\texttt{make}(\langle\downarrow_0\rangle); \texttt{go}(\langle\uparrow_0\rangle); \texttt{put}(Ty(e), Fo(\mathbf{U}));$
	$\texttt{go}(\langle\uparrow_0\rangle); \texttt{make}(\langle\downarrow_1\rangle); \texttt{go}(\langle\downarrow_1\rangle); \texttt{put}(?Ty(e \rightarrow t)))$
ELSE	ABORT

Kempson et al. (2001) utilise a type *cn* for common nouns and not a predicate type. This is necessary in the system (for reasons to do with the introduction of fresh variables into the nominal structure), but obscures the fact that common nouns express properties like verbs, even though their syntax is very different. To account for the common properties I take common nouns to be parsable in common noun ($?Ty(cn)$) and predicate ($?Ty(e \rightarrow t)$) contexts. The parse of a definite expression like *the fool* proceeds as illustrated in Figure 9 with the definite providing a LINK structure.

As noted above, SUBSTITUTION is a pragmatic, system-external process that substitutes an appropriate $Formula$ value for a metavariable from the context, so satisfying the requirement to find such a value. However, substitution (or any other construction rule) may not intervene in the course of tree transitions induced by the

[25] A reflection of its diachronic development from a demonstrative pronoun.

[26] I omit the mechanism needed to restrict the predicates to common nouns for simplicity.

[27] For more details of the LINK mechanism and its interpretation see Kempson et al. 2001: ch. 4, Kempson 2003, Cann et al. 2005b: ch. 4.

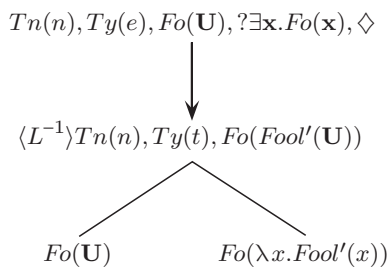


Figure 9. Parsing The fool

lexical actions associated with parsing some word. Since the lexical actions associated with *the* force the pointer into the LINK structure, substitution cannot occur with definites until after the processing of the structure provided by the common noun phrase, once the LINK structure has been compiled and the pointer has moved back to the type *e* node. At this point, the information provided by the common noun phrase is available to be used as a constraint on the substitution operation, as required.

The effect of the metavariable is thus to force some inferential effort to satisfy the associated requirement to find a formula value. This process involves the identification of some relevant term constructed from the local context which may be some name, actual or arbitrary, or an epsilon term constructed from information already provided within the discourse. Consider the small text in (22).

(22) Bill's coming to Jane's party. She detests the fool.

Here, the first sentence provides the context for interpreting the definite in the second. So we have (something like) $Come'(To\text{-}J\text{-}party')(Bill')$ as the formula value for the former. Parsing the definite NP in the latter requires the identification of some contextually salient term that also satisfies the property of being a fool. Given the choice of *she* as the subject, identified as Jane as the only potential female referent, the only possible term to substitute for the definite metavariable is $Fo(Bill')$. The second clause is thus given the formula value in (23).[28]

(23) $Detest'(Bill'_{\rightsquigarrow Fool'(Bill')})(Jane')$

The information projected by the common noun *fool* is used to identify an appropriate substituend, by constraining the set of terms that may be considered for substitution of the metavariable. In this case, there is only one possible candidate (in a richer context there might not be), but there remains the question of how the LINK structure induced by the definite article ultimately contributes to the interpretation

[28]Note that to indicate constraints of the sort associated with definites the content of a phrase like *the fool* will be shown as $Fo(\mathbf{U}_{\rightsquigarrow Fool'(\mathbf{U})})$, the symbol $\rightsquigarrow$ indicating the LINK relation.

of the whole proposition. In other words, what is the precise interpretation of formulae like (23)? Kempson (2003) proposes a general rule of LINK evaluation for non-restrictive relative clauses that simply conjoins the propositional formula provided by the LINKed tree to that of the principal propositional structure. The details are not important here, but the rule provides a sentence like *She detests the fool* in the above context with the formula value in (24).

(24) $Detest'(Bill')(Jane') \wedge Fool'(Bill')$

This interpretation of the definite provides a condition on the substituend that cashes out in this case as an entailment. The concept of definiteness invoked here is thus essentially Russellian, since the failure to establish the existence of something that has the property expressed by the common noun will yield a formula that is false on normal model-theoretic assumptions. However, because of the pragmatic nature of substitution and the assumption that contextual matters may affect how a propositional structure, whether LINKed or not, is to be interpreted, any existential presupposition and the information actually conveyed by a definite expression is pragmatically mediated and so 'presupposition failure' is most likely to lead to a negotiation of what is being referred to by the definite noun phrase or to a modification of the property expressed by the common noun. Hence, although *That woman works as a male nurse* ought logically to lead to a contradiction that x is and is not a woman, pragmatic inference over the *representation* of the proposition expressed by this sentence will lead to a manipulation in context of either the information provided by *that woman* (such as that x is dressed as a woman) or *works as a male nurse* (such as that x is a substitute worker for a male nurse) to avoid the contradiction and resolve the apparent presupposition failure. In such cases, the rule for interpreting LINK structures is not invoked, the information provided merely being used to select an appropriate substituend, a situation that is in accord with the optionality of all transitions in DS except those induced by lexical actions. This does not involve a loss of compositionality or monotonicity. The *structure* induced by parsing the common noun phrase remains part of the representation of the string even though its *content* does not contribute to the truth conditions of the projected proposition. This analysis of definite noun phrases as LINK structures thus provides a strategy for parsing such expressions that is compositional and monotonic, at least in terms of information content if not in terms of direct contribution to truth conditional content. The fact that some term has to be identified from context to substitute for the metavariable projected by a definite noun phrase induces the 'existence presupposition' of such phrases, even in cases where the descriptive content of the common noun phrase is not met.

2.3. Expletives in Dynamic Syntax

The analysis of copula constructions developed in the next section utilises underspecification of both formula value and position within a tree and takes as its

starting point the analysis of expletive expressions in Cann (2001)[29] which I now present.

As already stated, pronouns in English share the property of contentive expressions that they decorate a terminal node in a tree, guaranteed by the 'bottom restriction' $[\downarrow]\bot$. However, there are pronouns that are systematically associated with material that occurs elsewhere in a string. Amongst these are the expletive pronouns *it* and *there* in English whose expletive properties can be characterised as a failure to project the bottom restriction, thus permitting development of the tree from a parse of words later in the string. The function of an expletive use of a pronoun, accordingly, is to keep the parsing process alive: it first provides a metavariable as an interim value to some type requirement associated with one node and then moves the pointer on to another node. Because the pointer is moved on as part of the actions determined by it, no substitution can take place and an open formula requirement necessarily remains on the node decorated by the metavariable.

Consider the pronoun, *it* in extraposition constructions such as (25).

(25) It appears that Bill drinks too much beer.

This example may be analysed as involving the annotation by the pronoun of a propositional node in subject position with a metavariable **U** and associated requirement, $?\exists\mathbf{x}.Fo(\mathbf{x})$, to find a contentful formula value, as given by the lexical actions in (26).[30]

(26) it_{expl}

IF	$?Ty(t)$	
THEN	IF	$\langle\uparrow\rangle\bot$
	THEN	ABORT
	ELSE	$\texttt{put}(Fo(\mathbf{U}), Ty(t), ?\exists\mathbf{x}.Fo(\mathbf{x}));\ \texttt{go}(\langle\uparrow\rangle\langle\downarrow_1\rangle)$
ELSE	ABORT	

In parsing (25), the tree unfolds with requirements for nodes of types t and $t \rightarrow t$, a permissible instantiation of INTRODUCTION. The word *it* is then parsed and the pointer moves to the predicate node ($\langle\uparrow\rangle\langle\downarrow_1\rangle$ 'up then down to the functor daughter'), preventing pragmatic substitution of the metavariable.[31] After parsing the verb (which projects a formula value $\lambda p.Appear'(p)$ of type $t \rightarrow t$), the tree

[29] See also Cann et al. 2002 for a slightly different version.

[30] The initial condition prevents the word from decorating the topmost propositional node, thus disallowing strings such as **It Bill drinks too much beer*.

[31] The evidence that one of the effects of parsing *it* is to move on the pointer comes from two sources. Firstly, extraposition cannot be to the left (i) which indicates that the pointer does not remain at the subject node as would be necessary for an operation of MERGE to take place. Secondly, expletive *it* cannot be anaphoric to some other expression in context, but requires the use of *so* in these cases (ii), indicating that it is *so* that is the truly anaphoric expression in these instances and not *it*. Both of these facts point to a situation in which substitution is directly prevented from occurring immediately after the pronoun has been parsed.

i. *That I am wrong, it seems.

ii. A: I heard that the Principal has resigned.
B: It seems *(so).

constructed so far cannot be completed because the subject node still carries an open requirement which needs to be satisfied.

In order to complete the parse of the current string, therefore, some means has to exist for developing the subject node further to provide the requisite propositional formula. To do this, we may invoke a general construction rule that licenses unfixed nodes at the right periphery. This rule, LATE *ADJUNCTION, takes as input a type-complete propositional tree and constructs an unfixed node of arbitrary type. Unlike the version of *ADJUNCTION above, LATE *ADJUNCTION projects an unfixed node with a requirement for the same type as the node from it is projected. Since no further direct development of the fixed node is possible, this version of *ADJUNCTION thus defines directly the structural context to which Merge applies, i.e. the unfixed node and the fixed node from which it is projected.

Applying the rule to the tree induced by parsing *it appears* permits the construction of an unfixed propositional node that allows the parsing of the string final clause. This unfixed tree carries a requirement that a fixed position is to be found within the propositional tree currently under construction, just as with left dislocation sketched in section 2.1, and must, therefore, MERGE with some node in this structure. As illustrated in Figure 10 (where the dashed line indicates an unfixed relation and the dashed arrow indicates the MERGE process, as above), the only node with which the unfixed node can merge coherently is that decorated by the metavariable. This is so, because only the subject node lacks the bottom restriction and only its formula value is consistent with that decorating the unfixed propositional tree.[32] Merging the unfixed tree with the

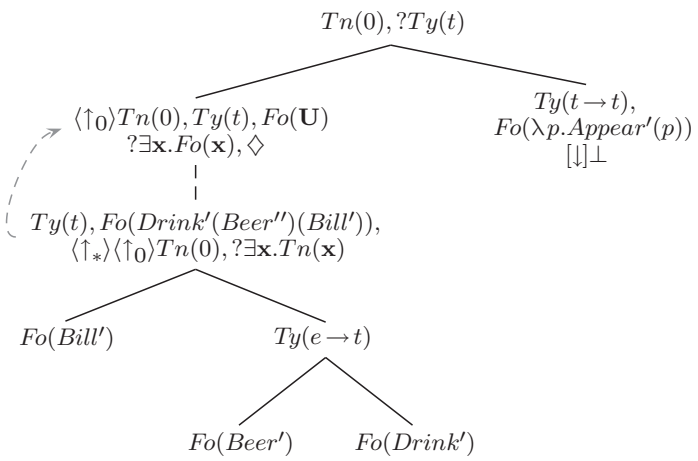


Figure 10. Parsing It appears that Bill drinks too much beer

[32] In these and later trees, type information is left off nodes which are not under discussion, for ease of reading.

subject node, yields a completed propositional with a final formula for (25) as $Fo(Appear'(Drink'(Beer')(Bill')))$.

Note that if *it* were to project a bottom restriction, no merge could take place as the effect is to 'grow' a tree under the node decorated by the metavariable. This is precisely the characterisation needed for expletive expressions: they satisfy a type requirement, allowing further parsing to take place, but are replaced later in the parse by possibly complex structures which supply the semantic information needed.

3. INTERPRETING *BE*

In section 1, I argued for the hypothesis that *be* uniformly projects a semantically underspecified one-place predicate whose content is determined by context through pragmatic enrichment or syntactic update. As we saw in the last section, underspecified content when associated with a pronoun is represented by a metavariable of type *e* whose actual content is determined either by a pragmatic process of SUBSTITUTION or, if the pronoun is expletive, through an update provided by the parse of later material (i.e. through LATE*ADJUNCTION). This is exactly what is needed to analyse the copula, except that the metavariable associated with it is of predicate $(Ty(e \rightarrow t))$ type. The lexical entries for the various forms of *be* thus all contain an instruction to annotate a predicate node with the appropriate type label and a metavariable, **BE**[33] together with an associated requirement to find some contentful predicate to act as substituend.

It is not the case that just any predicate can associate with *be*, however, but only stative predicates that are associated with non-verbal expressions.

(27) a. *Kim knows the answer and Lou is, too.
b. *Kim is know the answer.

Maienborn (this volume) argues for a differentiation between Davidsonian states (or D-states) and states that she refers to as K-states following Kim (1969, 1976)'s notion of temporally bounded property exemplifications. She suggests that such states are not eventualities but form a separate class of abstract object (in the sense of Asher 1993) somewhere between world bound facts and spatio-temporally defined eventualities. I adopt the hypothesis here (without discussion) that copula clauses denote some sort of state that differs from the classic Davidsonian notion and is only associated with the denotata of non-verbal expressions. This requires the lexical definition of the copula to project an annotation to ensure that any predicate that substitutes for the metavariable projected by *be* is restricted to K-states

[33]This could be shown as **U** or **V**, but I use the different form for mnemonic purposes: **BE** is a metavariable over one-place predicates of a particular sort, see below.

by an index on the metavariable: $\mathbf{BE}_{S_K}$.[34] The lexical entry for *is* is therefore as shown in (28).

(28) *is*

IF	$?Ty(e \rightarrow t)$
THEN	$\mathtt{go}(\langle\uparrow_1\rangle); \mathtt{put}(Tns(PRES)); \mathtt{go}(\langle\downarrow_1\rangle);$
	$\mathtt{put}(Ty(e \rightarrow t), Fo(\mathbf{BE}_{S_K}), ?\exists\mathbf{x}.Fo(\mathbf{x}))$
ELSE	ABORT

3.1. Ellipsis and the Existential Focus Construction

The analysis of *be* as a predicate underspecified for content allows us to tackle the bewildering variety of copular constructions in English in a uniform manner, the burden of explanation shifting from considerations of the core 'meaning' of *be* as denoting existence or identity to an account of inference in context that derives the correct interpretations of sentences. Assuming that the copula does project underspecified content, the value of the metavariable, $\mathbf{BE}_{S_K}$, that it projects must be established. This, like all other values for metavariables, may be freely identified in context which gives us a way to account for certain types of ellipsis involving the copula, as illustrated in (29).[35]

(29) a. John's really happy, John is.
b. A. Who was at the meeting?
B. Mary was.

Under the assumption that *be* projects a metavariable, the elliptical utterances in (29) will be well-formed because the preceding utterance includes an accessible (and relevant) one-place predicate which can substitute for the metavariable in the normal way. The situation resulting from parsing the second clause in (29b) is shown in Figure 11 up to the point of substitution. The resulting formula is, as required, $Fo(At'(Mary', (\epsilon, y, Meeting'(y))))$.[36]

[34]Note that this is not defined in terms of a LINK structure. In fact, the annotation would be best construed as a K-state variable, so that $\mathbf{BE}_{S_K}$ might be better interpreted as $\lambda x.\mathbf{BE}(\epsilon, e, S_K(e))(x)$. However, in the absence of a coherent theory of events within DS, I leave this possibility to one side.

[35]For more details about DS analyses of ellipsis in general, see Purver et al. 2006, Cann et al. to appear and Kempson et al. 2006.

[36]I do not in this paper pursue constraints on which predicates may be selected for substitution. Clearly, potential substituends must be recently articulated and easily accessible. They are not, however, restricted to primary predicates since (contrary to the claim by one of the referees of this paper) ellipsis on secondary predicates is perfectly acceptable in English, as shown by (i):

i. Mary came home from work tired. John was, too. (So they skipped the party.)

There is, however, a linearity effect. Preposed secondary predicates are often less acceptable than final ones (ii), but even these are not completely rejected by native speakers of English and (iii) is judged as more acceptable than (ii). Note that the parsing perspective of DS should enable an account of the difference in accessibility between the two positions. I do not, however, pursue this further here.

ii. ?* Exhausted but elated, John finished the marathon in just over three hours. Mary was too.
iii. % Drunk, John gatecrashed the party. Mary was, too (and it all went downhill from there).

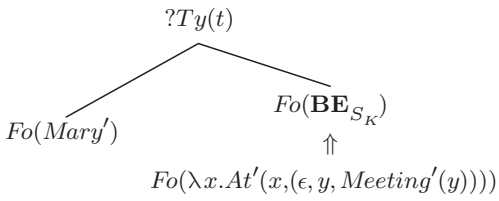


Figure 11. Parsing Mary was

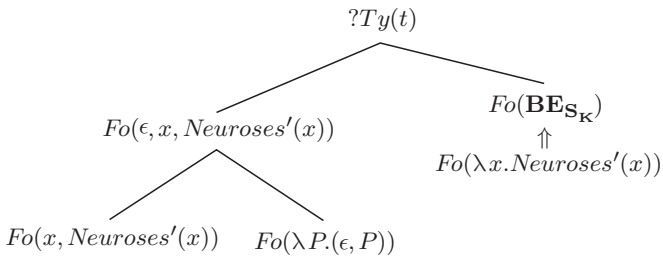


Figure 12. Parsing Neuroses (just) *ARE*

Interestingly enough, this analysis also directly accounts for the possible interpretation of *be* as existential in the existential focus constructions illustrated in (1h) repeated below:

(1) h. Neuroses just ARE.

In identifying the potential substituends for the predicate metavariable **BE**, the context also includes predicates derivable from the tree currently under construction. Thus, instead of identifying a predicate from the previous discourse, a hearer may construct one from the immediate context (the tree currently under construction) and substitute that for the predicate metavariable. In the tree constructed to parse (1h), the only available predicate is that derived from the common noun in the subject position, as illustrated in Figure 12. Making this substitution gives rise to the output formula in (30a) which, by the established equivalence in the epsilon calculus shown in (30b), gives rise to the existential statement in (30c).

(30) a. $Fo(Neuroses'(\epsilon, x, Neuroses'(x)))$
b. $F(\epsilon, x, F(x)) \leftrightarrow \exists x.F(x)$
c. $\exists x.Neuroses'(x)$

While more needs to be said about the existential focus construction, especially with respect to the possibility of quantified subjects and the interaction with tense,

it should be clear from this discussion that the treatment of *be* as projecting semantically underspecified content that may be pragmatically enriched provides a basis of a unified account of both ellipsis in copula clauses and existential focus readings, an unexpected result.[37]

3.2. Predicative Constructions

In the copula constructions discussed above, its underspecified semantics is pragmatically specified during the course of constructing the proposition conveyed by an utterance in context. However, there is a construction in which the appropriate predicate is supplied syntactically without the intervention of pragmatics. This is the basic predicative construction where a non-verbal predicate appears post verbally.

The lexical entry for *be* in (28) does not annotate the predicate node with a bottom restriction, giving it the properties of an expletive, thus permitting an application of LATE*ADJUNCTION to allow the parse of a postcopular predicate. The unfixed predicate tree may then MERGE with the predicate node decorated by **BE**, yielding the familiar predicate construction with postcopular adjectives, prepositional and other phrases that can be construed as predicates.[38]

As an example, consider the parse of *Kim is happy*. The first two words are parsed and annotate the subject and predicate nodes, respectively. The tree cannot be compiled, however, until the content of the copula is established. This may be through SUBSTITUTION as in the previous subsection, in which case the parse will fail as there will be no position in the tree for the adjective to decorate. Or the predicate node may be updated through an application of LATE*ADJUNCTION. This may apply to give an unfixed node decorated by a predicate requirement, $?Ty(e \rightarrow t)$ which permits the parse of any one-place predicate, in this case the simple adjective *happy*. The node decorated by the adjective then merges with the underspecified main predicate expression, satisfying both the requirement of the unfixed node to find a fixed position within the tree and the requirement that **BE** be replaced by some contentful concept. Since *happy* denotes a K-state, the merge is successful and yields a final formula value $Happy'(Kim')$. This process is illustrated in Figure 13.

Other predicates may be treated in the same way, under the (natural) assumption that such expressions may be of predicate type. So, a sentence like that in (31a) gets the formula value in (31b).

(31) a. Robert is on a train.

[37]Note further that the truth conditional content of *Neuroses (just) are* is the same as *There are neuroses* or even *Neuroses exist*, even though the felicity conditions for the use of these sentences differs considerably. In DS, different informational effects are not encoded as part of the content, but are derived from the process by which that content is constructed, see Kempson et al. 2006a for some discussion.

[38]This may also be the appropriate analysis for passives and progressives in English, but this topic will not be pursued here.

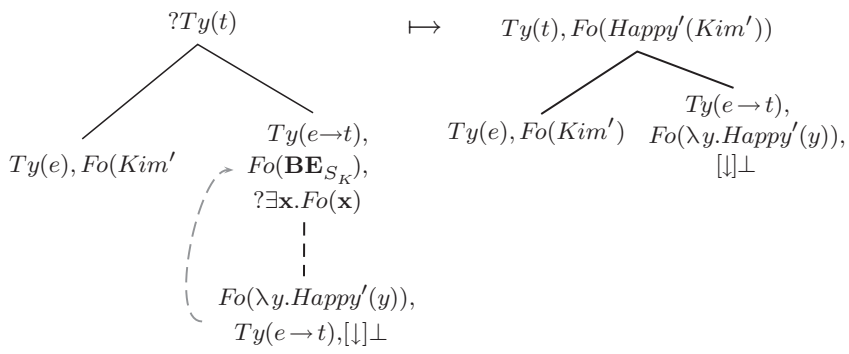


Figure 13. Parsing Kim is happy

b. $\lambda x.On'(x, (\epsilon, y, Train'(y)))(Robert')$.

For indefinite nominal predicates in English, the story is more complex and will not be discussed here (but see Cann et al. (2005): ch. 8 for some discussion). However, in all cases of predicative uses of *be* the content of the copula is directly provided by the parse of an appropriate predicate.[39]

4. TOWARDS AN ACCOUNT OF *THERE BE*

In this section, I use the analysis of the copula as projecting a semantically underspecified predicate to provide a sketch of an account of *there be* constructions in English. To begin we need some characterisation of the contribution of *there*. Clearly, in its adverbial use, the expression is a locative pronoun standing for a place where something is, used demonstratively as in (32a) or anaphorically as in (32b).

(32) a. Bill's keys are there.
b. Did you see Bill at the clubhouse? I meet him there all the time.

[39] One of the referees of this paper objects to the radical underspecification of the copula assumed here, particularly with respect to the account of predicative clauses. S/he suggests that predicative copular clauses share properties with depictives such as that in (i):

i. Jane arrived drunk.

and suggests the adoption of an analysis like that of Rothstein (2001) in which the predicate is an adjunct of the copula which is taken to denote a function that maps an individual onto the set of states of that individual being in a discourse given place, the underspecification of the copula then being with respect to what is to be taken as the discourse given place (literally or figuratively). This is an interesting idea which would be worth exploring (and may be handled by treating the notion that copular constructions denote K-states). However, it is unclear how this notion of the contribution of *be* would extend to non-predicative cases, particularly if grammaticalised uses are taken into account. Hence, I maintain the expletive treatment of this paper.

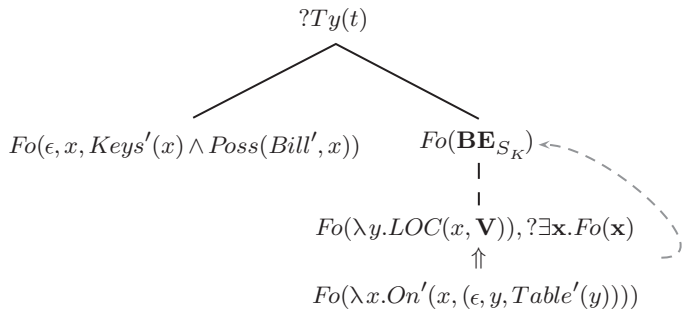


Figure 14. Parsing Bill's keys are there

Generally, *there* may be interpreted as projecting an underspecified locative relation involving an object and a location: LOC(**THING**, **PLACE**) (see Jackendoff 1983, etc.). In the predicative example in (32a) the expression will project a predicate version of this ($\lambda x.LOC(x, \mathbf{PLACE})$) which can be substituted by a specific locative predicate that locates the keys (such as, for example, being on the table), as illustrated in Figure 14, where the output propositional formula is (33).

(33) $Fo(On'((\epsilon, x, Keys'(x) \wedge POSS(Bill', x)), (\epsilon, y, Table'(y))))$

As a locative anaphor operating as an adjunct, the locativity of *there* may be treated not as projecting an underspecified locative predicate, but as an underspecified term, i.e. a metavariable, but with the locative content of the adverbial acting as a constraint on substitution in exactly the same way as we have seen with pronouns and definite noun phrases. In the case of a locative anaphor, the constraint restricts potential substituends to **PLACE**s, things that can act as locations: $\mathbf{U}_{\rightsquigarrow LOC(\mathbf{THING},\mathbf{U})}$. I do not discuss adjuncts in this paper, but adopt the general hypothesis of Marten (2002) that such expressions are analysed as optional arguments of type e. In interpreting (32b), therefore, the metavariable projected by *there* appears as an argument of the verb *meet* and is substituted with the content of *the clubhouse* with a presupposition that something (in this context, *I* or *Bill*) is at that place: $Fo(\epsilon, x, Clubhouse'(x)_{\rightsquigarrow LOC(John', \epsilon, x, Clubhouse'(x))})$. We thus get an interpretation in which John often meets Bill at the clubhouse (when John is at the clubhouse).[40]

What of the expletive uses of *there*? One hypothesis is that some remnant of the locative constraint remains with the expletive, but that the projected metavariable satisfies not the **PLACE** of the locative relation, but the **THING**:

[40] I do not provide a full analysis of this example, as the discussion would take me too far from the current topic, nor do I address the question of the variability in type associated with PPs by this hypothesis.

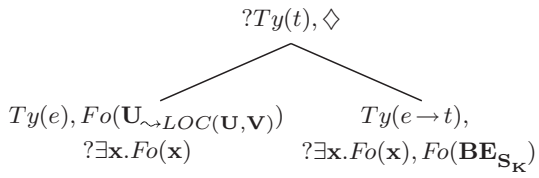


Figure 15. Parsing There's

$\mathbf{U}_{\rightsquigarrow LOC(\mathbf{U},\mathbf{PLACE})}$. In other words, part of the grammaticalisation of the locative proform into an expletive subject involves a shift in perspective from the place where something is to the thing itself. This shift has the effect of associating the expletive with the associate (the postcopular DP) rather than directly with any locative expression. *There* may thus be taken to project the information: $Fo(\mathbf{U}_{\rightsquigarrow LOC(\mathbf{U},\mathbf{V})})$.

Put together, parsing *there be* thus involves the projection of a radically underspecified propositional structure, where both subject and predicate are decorated by metavariables, as shown in Figure 15. The account I propose of the interpretation of clauses containing some form of this string then rests on how the content of these two nodes is established in context, given the other material provided by the string. The properties of the substituend of the other argument thus determine in part how the *there be* clause is to be interpreted.[41]

4.1. The Existential Construction

We begin with an analysis of the existential example in *There's a riot on Princes Street*. Figure 15 above shows the structure after parsing *there's* with metavariables in both subject and predicate position, requiring completion. The pointer is on the top node but completion cannot occur because neither daughter is complete and so the pointer moves onto the subject node and an application of LATE*ADJUNCTION may apply as shown in Figure 16.

This allows the parse of the postcopular indefinite noun phrase, *a riot*, which merges with the subject node to provide the content of the metavariable as illustrated in Figure 17.

At this point, the subject node is complete and the pointer moves to the predicate node which provides a means of analysing the coda, *on Princes Street*, as

[41] This approach might provide a means of incorporating the Perspective Structure in existential constructions of Borschev and Partee 1998, Partee and Borschev this volume.

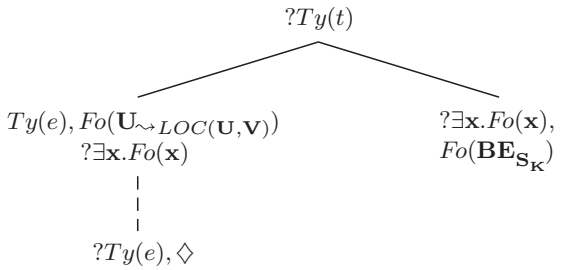


Figure 16. Parsing There's *after LATE*ADJUNCTION*

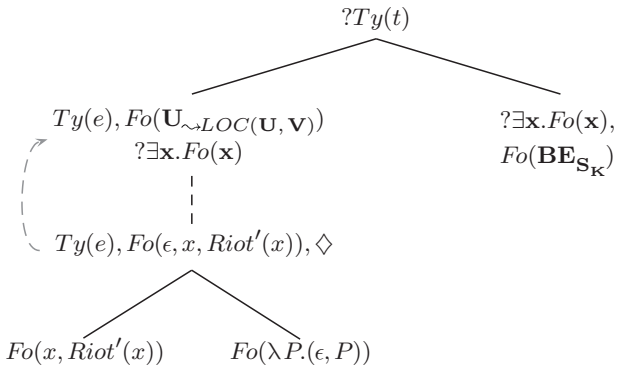


Figure 17. Parsing There's a riot

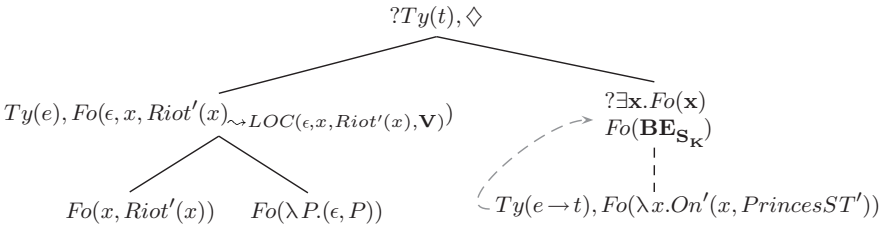


Figure 18. Parsing There's a riot on Princes Street

a straightforward prepositional predicate phrase. Just as with normal predicative constructions, this is achieved through an application of LATE *ADJUNCTION and MERGE, as shown in Figure 18,[42] which compiles to give the formula: $On'((\epsilon, x, Riot'(x))_{\rightsquigarrow LOC(\epsilon,x,Riot'(x),\mathbf{V})}, PrincesSt)$.

[42]The internal structure of the prepositional predicate is not shown.

There remains in this formula an uninstantiated metavariable, **V** which, although not associated with a formula requirement, needs to be instantiated for full interpretation to take place. Using the LINK evaluation rule, we may derive for Figure 18 the conjoined expression in (34a). Here, because of the generality of the locative relation, LOC, the metavariable and the shared subject term in the second conjunct, this subsumes the information provided by first conjunct and effectively derives the content in (34b).

(34) a. $On'((\epsilon, x, Riot'(x)), PrincesST') \wedge LOC(\epsilon, x, Riot'(x), \mathbf{V})$
b. $On'((\epsilon, x, Riot'(x)), PrincesST')$

The interpretation I derive for the existential construction is effectively equivalent to a small clause analysis, the content of the proposition being provided by the associate and the locative coda. However, the informational effect is different from an assertion of *A riot is (happening) on Princes Street*. This is because the process of interpreting *There is a riot on Princes Street* the hearer is initially presented with the information that some term needs to be identified that is associated with some locative presupposition. The content of this term is then presented by the associate which introduces a new variable, indicating new information. The coda then provides the required locative predicate, satisfying the initial presupposition.

4.2. Definite Associates

There is, therefore, no direct statement of existence in our account, the apparent focus on existence being given by the new information provided by the indefinite associate. Differences in interpretation can then be expected with a definite coda. As we have seen, the difference between definites and indefinites is that the former project metavariables whose content is supplied from context (and constrained by the content projected by the common noun phrase) while indefinites project full quantificational structure as epsilon terms. It is this difference in analysis which can be exploited in accounting for the different interpretations of *there be* clauses.

Consider, for example, the analysis of *There's the student (you wanted to see)*. The parsing of *there's* proceeds as above and LATE*ADJUNCTION provides a means of analysing the definite. Substitution applies at this point of the term identifying the student you wanted to see and the node Merges with the subject node as illustrated in Figure 19.

Before the tree can be completed, however, the content of the predicate metavariable needs to be established. In keeping with the assumptions of Dynamic Syntax, I adopt a general Relevance Theoretic perspective on pragmatic processes such as substitution whereby there is a tradeoff between processing cost and information gained. Since Optimal Relevance is determined as a trade-off between cognitive effort and informativeness (the more effort required to access an interpretation the more informative it should be, see Sperber and Wilson 1986/1995), a hearer will be constrained to take as substituend the most accessible formula that is

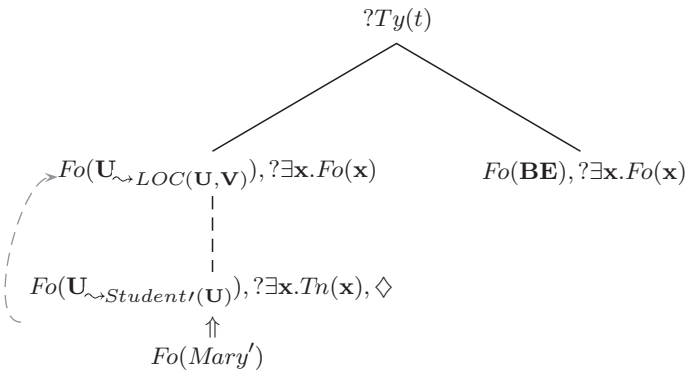


Figure 19. Parsing There's the student

likely to yield significant inferential effects. The pragmatic process of substitution occurs *within* the construction of a propositional representation, however, and so will tend to prefer substituends which are provided by the immediate discourse because the domain over which other inferences are to be carried out may not yet be complete. In term of Figure 19, this will ensure that the predicate substituend will be supplied by some local predicate as far as possible. There are two potential predicate substituends in Figure 19, both from the presuppositional structures.

(35) a. $\lambda y.Student'(y)$
b. $\lambda x.LOC(x, \mathbf{V})$

(35a) has been used to identify the substituend for the definite associate and so its informativeness is weak, leaving the locative predicate in (35b) as both highly accessible and potentially the most informative predicate to choose.

Making the appropriate substitution and compiling up the tree yields the formula value in (36a).[43] This leaves us with the need to identify the locative relation and the **PLACE**. Again, local substitution should be preferred, all things being equal. There is, however, very little information available with regard to potential substituends, except that there exists in the scope statement induced by the tense of the verb, the index of evaluation S_i which may, following Lewis, Montague, etc., be construed as a world–time pair and therefore something that may be a **PLACE**. Substituting this index for **V** in (36a) yields (36b) which enables the inference to (36c) which in turn leads to the inference that Mary is here, (36d), which I take to be the content of *There's the student (you wanted to see)* in a situation in which Mary is indeed the student you wanted to see.

[43]The definite constraint on substitution is not shown, having been 'discharged'.

(36) a. $LOC(Mary', \mathbf{V})$
b. $LOC(Mary', S_i)$
c. $\models At'(Mary', S_i)$
d. $\models Here'(Mary')$

Notice the importance of context here. The need to construe something informative to substitute for the predicate metavariable associated with the copula means that certain examples involving *there be* will be difficult to interpret except in rich contexts. For example, (37) is difficult to interpret in a null context.

(37) ??There's the student in the garden.

The explanation for this provided by the current pragmatic approach is that the predicate projected by the associate (*the student*) is not informative, having been used to identify some accessible individual. Additionally, a locative interpretation for $\mathbf{BE}_{S_K}$ is not obviously informative because the coda provides an explicit location for the referent of the associate. Hence, some other predicate must be construed from a wider context to deduce a relevant substituend for the predicate metavariable. In a null or restricted context, therefore, it is difficult if not impossible to identify an appropriate interpretation for the string in (37). But in a context in which (for example) there has been a prior utterance by the hearer of the question *Who's missing?*, the utterance of (37) provides an instantiation of the predicate $\lambda x.Missing'(x)$ derived from the question and being salient in the discourse. The actual content of (37) in such a context would be something like that in (38).

(38) $Missing'(Mary') \wedge In'(Mary', \epsilon, x, Garden'(x))$

Further evidence in favour of a pragmatic approach to the interpretation of such clauses comes from the fact that extra information contained in modifier constructions can sufficiently enrich the context so that an interpretation can be given (something often noted but rarely explored). Hence, the predicate modifier *again* in (37a) provides a context in which the relevant rabbit is persistently in the garden, while the modifier and relative clause in (39b) indicates that where the student is now is relevant to the hearer.

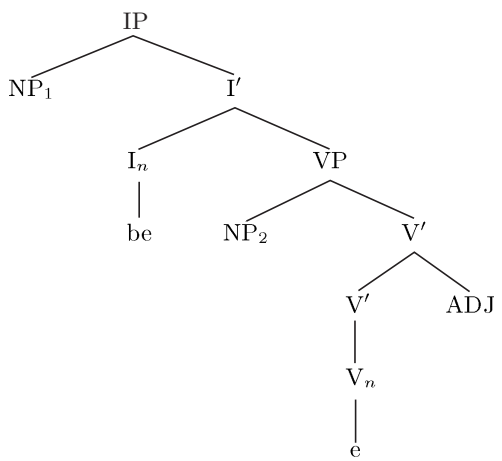
(39) a. There's the rabbit in the garden again.
b. There's the student you wanted to see in the corridor (just now).

Notice that the analysis presented here says nothing directly about definite associates having to be 'hearer new' (Ward and Birner 1995). As with indefinite associates, such an interpretation results from the *process* by which the interpretation of the string is ultimately derived. By uttering *there be*, the speaker induces the hearer to construct a skeletal propositional tree as a promissory note for following information. The associate (and any coda) provide the requisite updating of this structure and, by virtue of the fact that a nominal update of a propositional structure

is interpreted as some sort of focus (see Kempson et al. 2006a), the associate gets construed as new information, even though the definite form requires the hearer to process its content as old (given) information. Given a dynamic system, the discourse properties of these sentences do not have to be directly encoded, but derive from the parsing process itself.[44]

Another matter not directly addressed by this paper is why certain types of noun phrase are dispreferred as associates. What I hope should be clear from the analysis put forward here is that it is not the semantic properties of noun phrases or the quantifiers that they contain (such as intersectivity) that determine acceptability, but rather the way the content projected by noun phrases interacts with context. However, the current pragmatic approach fails to predict which determiners will be more acceptable in associate noun phrases than others. On the other hand, the syntactic analysis proposed here – whereby the parsing of the associate noun phrase is delayed until after the copula is parsed – supports the hypothesis put forward in Mikkelsen (2004) and Beaver et al. (2004) that those noun phrases that lack properties associated with canonical subjects are more likely to make better associates than those that have full canonical subject properties (such as topicality, agentivity, etc.) which are often dispreferred in such positions.

[44]One of my referees suggests that the analysis of copular constructions presented above may be usefully compared to more familiar theories of grammar. S/he constructs the tree below and suggests that there are a number of syntactic, semantic or pragmatic 'links' between the nodes on this tree. With respect to the theory presented in this paper (which differs slightly from the earlier version), these links would be specified as follows:
i. where *there* is in NP_1: there is a semantic link from NP_1 to NP_2 and where NP_2 is definite there is a pragmatic link from NP_1 to V_n
ii. where *there* is not in NP_1 or where NP_2 is indefinite, there is additionally a syntactic link from V_n (or I_n) to ADJ.



If this helps the reader understand my suggestions, then I am happy. But it should be stressed that the above is only a metaphor for the actual analysis provided here.

Although I do not here define the notion of *syntactic* subject in DS,[45] it should be clear that the associate in *there be* constructions is not parsed in the same way as a canonical subject, but is parsed after a fixed (semantic) subject position has been decorated in the unfolding propositional tree by the expletive *there*. Subjects (in English) are always parsed before any fixed node has been decorated by some other expression. This is what ensures canonical SVO order in English whilst allowing one left dislocated expression to precede the subject via *ADJUNCTION. Hence, although the associate ends up decorating the semantic subject node in a tree, it does so at a later stage than the expletive syntactic subject. Associates are thus syntactically differentiated from canonical subjects and whatever influences the acceptability of some noun phrase as a canonical syntactic subject, such as givenness, topicality and agentivity, is likely also to differentiate those noun phrases that are better as subjects from those that are better as associates. Hence, the syntactic process for parsing *there be* clauses proposed in this paper leads us to expect potential differences between noun phrases that typically appear as syntactic subjects from those that appear as associates. This is an interesting consequence of the current analysis that deserves further exploration.

5. CONCLUSION

In this paper, I have presented an analysis of the English copular verb, *be*, that treats it uniformly as a one-place predicate with underspecified content. Within the framework of Dynamic Syntax, this underspecification is represented as the projection of a metavariable whose actual value must be derived pragmatically from the context in which the copular clause is uttered. This context involves both external and local linguistic content and the latter determines to a large degree whether the copular clause is interpreted as predicative or existential. It is also shown how the pragmatic process of substitution, within an overall Relevance Theoretic framework, can explain how different interpretations are given to different *there* clauses and why certain combinations of expressions are difficult to interpret. The processes specified for the analyses of the different constructions are needed elsewhere in the grammar and so do not constitute an ad hoc set of assumptions to account for constructions involving the copula. The success of this style of analysis supports the dynamic view of utterance interpretation and the need to move away from static models of autonomous syntax.

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[45] For an attempt at this, see Cann 2005.

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ILEANA COMOROVSKI

CONSTITUENT QUESTIONS AND THE COPULA OF SPECIFICATION

Abstract. A cross-linguistic investigation of interrogative and declarative specificational copular clauses leads to the conclusion that specificational subjects must be non-rigid designators that are 'indirectly contextually anchored'. Indirect contextual anchoring is a relation between the denotation of an intensional noun phrase and the context of utterance, established with the help of a referential expression contained in the noun phrase. Based on complement selection facts, the paper argues that the specificational reading of copular clauses is induced by the copula of specification, for which a definition is provided.

1. HIGGINS'S (1973) CLASSIFICATION OF COPULAR CLAUSES*

This paper analyzes constituent questions of the form *wh-DP copula DP?* in the light of the taxonomy of copular clauses proposed by Higgins (1973). We illustrate below Higgins's classification, applied to clauses in which the copula is flanked by two noun phrases:

(1)	a. predicative:	Tom is a novelist.
	b. identity (equative):	The Morning Star is the Evening Star. Aurore Dupin is George Sand.
	c. specificational:	The winner of the election is Joe Smith. The guests are Jane and Tom.
	d. identificational:	That is Jane. That woman is Jane.

*An ancestor of this paper was presented at the 2002 Conference on non-lexical semantics in Paris, under the title 'Individual Concepts and the Interpretation of Interrogative Predicate Nominals': this was an occasion on which I got much helpful feed-back. Later versions have benefited from the questions and comments of audiences at ZAS Berlin, the University of Stuttgart, and the 2005 Mayfest at the University of Maryland. I am especially grateful for the discussions I had on these or other occasions with Agnes Bende-Farkas, Maria Bittner, Gilles Boyé, Claire Gardent, Ljudmila Geist, Norbert Hornstein, Natalja Kondrashova, Brenda Laca, and Line Mikkelsen. Section 3.1 owes much to questions from Hans Kamp. The paper has also benefited from some very useful observations made by a Springer reviewer. Last but not least, I wish to thank Klaus von Heusinger and Georges Rebuschi for stimulating discussion and for their detailed comments on the pre-final draft.

I. Comorovski and K. von Heusinger (eds.), Existence: Semantics and Syntax, 49–78.

While the distinction between classes (a) and (b) of copular clauses – predicational and identity copular clauses – is a classical one, categories (c) and (d) are introduced by Higgins. Higgins informally characterizes specificational copular clauses as having a subject that acts as the heading of a list, with the complement of the copula specifying the members of the list. Higgins emphasizes the fact that in specificational clauses the subject is not 'referential', but has an attributive-like reading. Identificational clauses constitute the least clearly characterized class of copular clauses. Their subject, which is either a demonstrative pronoun or a noun phrase introduced by a demonstrative determiner, is used deictically. The role of the complement of the copula appears to be twofold: to identify the referent of the subject and to attribute a property to it.

The focus of this paper is on copular clauses in the specificational class. English offers few clear-cut tests that help distinguish specificational clauses from the other types of clauses of the form *DP copula DP*. One test that appears to work fairly consistently is the tag-question test proposed by Mikkelsen (2004). Mikkelsen shows that a singular subject of a specificational clause requires the pronoun *it* in a tag question, even if the subject is [+human]. In contrast, a singular [+human] subject of a predicational or equative clause requires the pronouns *he* or *she* in a tag question:

(2) a. Susan is a violinist, isn't *she* / **it*?

b. Aurore Dupin is George Sand, isn't *she* / **it*?

c. The (female) winner is Susan, isn't it / *she?

Thus the tag-question test is useful in distinguishing specificational clauses from predicational and equative clauses of the form *DP be DP*, all of which allow [+human] subjects.

We will examine French copular questions introduced by *quel* ('what', 'which', 'who', 'what kind of' (liter.)) and Romanian copular questions introduced by *care* ('which', 'what'). Both interrogative words are descendants of Latin *qualis* ('what kind of'). We will show that French and Romanian copular constituent questions of the form *quel/care copula DP?* have morpho-syntactic and semantic properties that set them apart from other questions of the form *wh-DP copula DP?*. We will argue that French copular *quel*-questions and a subset of the Romanian copular *care*-questions are the wh-interrogative counterpart of declarative specificational copular clauses. Our claim is that among the copular wh-interrogatives, unlike among the copular declaratives of these two languages, there exist particular sentence forms for the members of the specificational class.

Our first goal is thus to adduce evidence for the existence of the specificational class of copular clauses. Our second goal is to provide a semantic analysis of the specificational reading. We will argue that the properties of the constituent questions under consideration are best analyzed by defining a copula of specification.

We then extend our lexical analysis of the specificational reading to declarative specificatonal clauses.

The paper is structured as follows: section 2 describes the morpho-syntax of French copular *quel*-questions. Section 3 states the semantic restrictions on the subject DP of these questions. It is suggested that French copular *quel*-questions are interrogative specificational clauses. Section 4 proposes a definition of the copula of specification, which is argued to be the source of the specificational reading of clauses of the form *DP copula DP*. Section 5 takes a brief look at Romanian copular *care*-questions and compares them to French *quel*-questions. Section 6 draws the conclusions of the paper.

2. FRENCH COPULAR *QUEL*-QUESTIONS

2.1. Bare 'Quel' as a Predicate Nominal of Copular Questions

Interrogative *quel* can occur as a determiner, as in (3), or it can constitute by itself an argument of a verb, as in (4):

(3) Quels contes de fées a-t-elle lus?
what stories of fairies has she read
'What fairy tales has she read?'

(4) Quelle est ta conclusion?
what is your conclusion
'What is your conclusion?'

The distribution of *quel* occurring without a following noun (hence 'bare *quel*') is different from the distribution of *quel N*. Bare *quel* occurs only as an argument of the verbs *être* ('be') and *devenir* ('become') in questions of the form *quel être/devenir DP*:[1]

(5) a. Quelle a *été* votre réaction?
what has been your reaction
'What has been your reaction?'

b. Quels *sont* les écrivains qui t'ont influencé?
who are the writers who you have-3pl. influenced
'Who are the writers who have influenced you?'

(6) *Quel est disponible?
who is available

[1] This was not the case in older stages of French, when bare *quel* had a much freer distribution.

(7) Quelle *deviendrait* ta situation actuelle dans ces conditions?
what would-become your situation present in these conditions
'What would your current situation become in these circumstances?'

(8) a. *Quel a *invité* Georges?
who has invited George

b. *Quel$_i$ as-tu *vu* $-_i$?
what/who have you seen

(*Quel* is in subject position in (8a) and it is related to an object gap in (8b))

Questions in which *quel* occurs as an argument of *devenir* are felt as literary and seem to be going out of use. In this paper, we will concentrate on *quel*-questions formed with the verb *être*. As illustrated by the grammaticality contrast between (5) and (6), *quel* occurs only in copular questions in which the verb *être* is followed by a noun phrase. Ruwet (1982: 223ff.) argues for the non-subject status of bare *quel* in questions such as (5).

A first argument for the subjecthood of the postcopular noun phrase is taken up by Ruwet from Barbaud (1974). Barbaud observed that in a *quel*-question, the postcopular noun phrase cannot be a noun phrase introduced by the indefinite article or a bare noun, as shown in (9b,c); significantly, indefinites and bare nouns can occur in French as predicate nominals, as illustrated in (10b,c):

(9) Quel est le directeur de la banque?
who is the director of the bank
'Who is the bank director?'

b. * un directeur de banque.
a director of bank (= 'a bank director')

c. * directeur de banque.
director of bank (= 'bank director')

(10) Barnabé est le directeur de la banque.
Barnabé is the director of the bank
'Barnabé is the bank director.'

b. un directeur de banque.
a director of bank
'Barnabé is a bank director.'

c. directeur de banque.
director of bank
'Barnabé is a bank director.'

The data in (9)–(10) lead to the conclusion that the DP that follows the copula in a *quel*-question is not the predicate nominal, but the subject of the question. Therefore the predicate nominal in a *quel*-question is *quel*.

Another argument that Ruwet presents in favor of the subjecthood of the postcopular noun phrase is based on right dislocation of predicate nominals in French. A dislocated predicate nominal is in an anaphoric relation with the resumptive clitic *le*, as illustrated below:

(11) La terre *l'*est, le centre de l'univers.
the earth it-Acc. is the center of the universe
'The earth is indeed the center of the universe.'

As Ruwet points out, it is possible to right dislocate the postcopular noun phrase of a *quel*-question:

(12) Quel est-il, le centre de l'univers?
what is it-Nom. the center of the universe
'What is the center of the universe?'

In (12), the postcopular DP is right dislocated in the way subjects are: the resumptive pronoun is the nominative pronoun *il*. Significantly, the postcopular DP cannot be right dislocated as predicate nominals are, with the clitic *le* as a resumptive pronoun:

(13) *Quel *l'*est, le centre de l'univers?
what it-Acc. is the center of the universe

The grammaticality contrast between (11) and (13) as well as the acceptability of (12) show that the postcopular DP in a *quel*-question is not the predicate nominal of the clause, but its subject.

Besides *être* and *devenir*, the host of bare *quel* can be a 'raising' verb; e.g. *sembler* ('seem'), *devoir* ('must'), *pouvoir* ('can'). If *quel* is hosted by a raising verb, the latter must immediately precede *être* (Ruwet 1972) or, in literary French, *devenir*:

(14) Quelle$_i$ pourrait/semble [$_{IP}$ $-_i$être la bonne réponse] ?
what could / seems be the good answer
'What could / seems to be the right answer?'

In (14), bare *quel* occurs in the subject position of a matrix clause whose VP is headed by a raising verb that embeds a copular clause. Sentences with this type of structure led Ruwet (1972) to argue for the subjecthood of bare *quel* in copular clauses; on this view, bare *quel* would be raised in (14) from the embedded subject position to the matrix subject position. In later work, Ruwet presents compelling evidence against a subject analysis of bare *quel* in copular clauses (Ruwet 1982);

we have reviewed some of this evidence above. In this later work, however, the analysis of (14) is left as an open issue.

Recent work on restructuring helps solve the problem left open by Ruwet. Cinque (2002) suggests that some of the French verbs that take infinitival complements are 'restructuring' verbs; his suggestion is based in part on the possibility of clitic climbing with these verbs. Among the verbs that are of interest to us are the 'raising' verb*s sembler, devoir, pouvoir*. Evidence that restructuring occurs with *sembler, devoir, pouvoir* comes from the fact that the proforms *en* ('of it/them') and *y* ('at/to it/them', 'there') can be optionally cliticized on these verbs when they are arguments of the embedded infinitive (= 'clitic climbing'). The resulting construction is generally felt as literary:

(15) a. Marie *en* semblait souffrir.
Marie of-it seemed to-suffer
'Marie seemed to suffer from/because of it.'

b. Marie *y* semblait être allée.
Mary there seemed be gone
'Mary seemed to have gone there.'

c. 'Notre père n'*y* semblait pas penser.'
our father not to-it seemed Neg. to-think
'Our father did not seem to think of it.'
(Boris Schreiber, *Un silence d'environ une demi-heure*, 1996, p. 700)

We regard the facts in (15) as evidence that restructuring does occur with 'raising' verbs in French, without, however, taking a particular stand on the analysis of restructuring. Appealing though it may be, the theory of restructuring proposed in Cinque (2004) assumes that restructuring verbs are functional verbs; they have no thematic structure (very much like auxiliaries). Cinque argues for a double status of some verbs: both functional and lexical. Among these is the Italian verb *sembrare* ('seem'), which allows clitic climbing (a fact indicative of restructuring) only if its dative argument is not present. Thus, according to Cinque, *sembrare* is a functional (hence restructuring) verb when it shows no argument structure, and a lexical verb when its dative argument is present. The French facts go against the view that restructuring verbs do not have argument structure, as evidenced by the examples below, accepted by most of my consultants:

(16) a. Cette loi *m*'en semble être la conséquence.
this law to-me of-it seems to-be the consequence
'This law seems to me to be a consequence of it.'

b. Marie *m*'y semblait être allée.
'Mary seemed to me to have gone there.'

In contrast to Cinque (2004), Wurmbrand (2004) suggests that there are two types of restructuring verbs: lexical and functional. The former induce restructuring

optionally and have full argument structure, assigning a thematic role to their subject. The latter have no argument structure; such is the case of raising verbs. We can see that some French raising verbs (e.g. *sembler*) do not fit neatly into Wurmbrand's classification of restructuring verbs either. Indeed, as a raising verb, *sembler* would fall into the class of functional restructuring verbs. On the other hand, *sembler* can appear with its dative argument in restructuring contexts; moreover, restructuring is optional with *sembler* (dispreferred in colloquial French), which would place this verb in the lexical restructuring class.

Although we will not pursue here an analysis of restructuring, we take the facts provided in (15)–(16) as sufficient evidence that French 'raising' verbs can be restructuring verbs, independently of whether their argument structure is overtly realized or not. Following Cinque (2004) and Wurmbrand (2001, 2004), among many others, we will treat restructuring constructions as monoclausal structures. Consequently, the data in (14) are no longer in conflict with Ruwet's (1982) evidence that bare *quel* is the predicate nominal of a *quel*-question: (14) can be analyzed as the result of a simple instance of wh-movement that has fronted *quel* from its postcopular position to the beginning of the clause.[2]

In sum, the data presented in this subsection lead to the conclusion that bare *quel* is not the subject, but the predicate nominal of *quel*-questions.

2.2. Bare 'Quel': Clitic or Incorporated Item?

Comorovski (2004) argues for the clitic status of bare *quel* and compares it to the by now well established clitic status of the French interrogative pronoun *que* ('what') (Bouchard and Hirschbühler 1987, Poletto and Pollock 2004).[3] Several tests show that bare *quel*, just like *que*, requires an immediately following verbal host (see Comorovski 2004).

It is, however, to be noted that the relation between bare *quel* and its verbal host is tighter than the relation between *que* and its verbal host. We will give three pieces of evidence for this generalization.

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[2]Note that examples parallel to (14) can be constructed in which the dative argument of *sembler* is present, whether clitic climbing has occurred (as in (i)) or not (as in (ii)):

(i) Quelles *t'en* semblent être les coséquences?
what to-you of-it seem be the consequences
'What seem to you to be the consequences of this?'

(ii) Quelle *te* semble être la différence?
what to-you seem be the difference
'What seems to you to be the difference?'

Given that (14) can be given an analysis consistent with the data in Ruwet (1982) only on the assumption that restructuring has occurred, we take the acceptability of (i)–(ii) as further evidence that the overt realization of the dative argument does not block restructuring.

[3]Comorovski (2004) brings evidence that bare *quel* is a pronoun and not an elliptical form of *quel N* (i.e. bare *quel* is not a noun phrase that contains an empty N).

First, as we have already seen, bare *quel* is an argument of a very small class of verbs, namely *être* and *devenir*. Both of these verbs are semantically 'light' verbs.

Second, bare *quel* is morpho-syntactically dependent on a limited class of verbs, discussed in the previous subsection: besides *être* and *devenir*, the host of bare *quel* can be a 'raising' verb, e.g. *sembler* ('seem'), *devoir* ('must'), *pouvoir* ('can').[4] But bare *quel* cannot be related to a gap in a complement clause, as seen in the unacceptable (17). In contrast, in the acceptable question in (18), the interrogative pronoun *que* is related to a gap in the complement clause of *penser* ('think'):

(17) a. * Quelle$_i$ penses-tu [que la différence est / soit –$_i$]?
what think you that the difference is / be-subj.3p.sg.

b. ?? Quelle$_i$ penses-tu [que soit la différence –$_i$]?
what think you that be-subj.3p.sg the difference

(18) Que$_i$ penses-tu [qu'il va choisir –$_i$]?
who think you that he goes choose
'What do you think that he will choose?'

A final piece of evidence for the tight relation between bare *quel* and the verb *être* is the placement of the noun *diable* ('devil') in constituent questions. The noun *diable* can generally occur immediately after interrogative pronouns; but *diable* cannot occur immediately after bare *quel* (Ruwet 1982), as seen in (19). Interestingly, as illustrated in (20), *diable* can occur immediately after *être*, as if *quel* + *être* formed together a unit with interrogative value:[5]

(19) *Quelle *diable* est la question?
what devil is the question

(20) Quelle est *diable* la question?
what is devil the question
'What the hell is the question?'

In contrast, a question introduced by an interrogative word other than *quel* is unacceptable if *diable* occurs immediately after the verb:

[4] Bare *quel* can also be adjacent to an element cliticised on one of these verbs, as seen in (i):

(i) Quelle *en* est la conclusion ?
what of-this is the conclusion
'What is the conclusion of this?'

[5] The contrast between (20) and (21) was brought to my attention by Anne Abeillé. The sequence *Quel est diable DP*? is attested on Internet sites. However, a minority of the speakers I consulted did not accept (21).

(21) a. Qui *diable* est leur chef?
who devil is their boss
'Who the hell is their boss?'

b. *Qui est *diable* leur chef?[6]
who is devil their boss

The position of *diable* shows that *quel* is more tightly linked to *être* than *que* is to its host: indeed, *diable* can immediately follow *que* (Ruwet 1982):

(22) Que *diable* fais-tu là?
what devil do you there
'What the hell are you doing there?'

The three properties of bare *quel* illustrated above indicate that the relation between bare *quel* and *être* resembles to some extent incorporation: (a) in incorporating languages, incorporated nominals are internal arguments of a limited class of verb stems. In contrast, cross-linguistically (and in French in particular), clitics (in the appropriate case form) can be internal arguments of any verb; (b) incorporated nominlas are generally adjacent to the verbal host; so are clitics, but note that this is not the case of the interrogative clitic *que* when followed by *diable.*

However, unlike prototypical cases of incorporated nominals (e.g. in West Greenlandic Eskimo, as described by Bittner 1994 and van Geenhoven 1998), (a) bare *quel* appears with its gender and number inflections; but note that the inflected forms of *quel* arise by agreement with the subject DP; significantly, they do not represent an inherent gender/number marking of an object nominal; (b) the position of the gap that bare *quel* is associated with is arguably a case-marked position, since it can host strong pronouns in the Dative/Accusative case, as illustrated below:

(23) Le gagnant, c'est *toi*.
the winner it/that is you$_{\text{Dat./Acc.}}$
'The winner, it's you.'

However, the fact that the pronoun in (23) is in its strong Dative/Accusative form does not automatically lead to the conclusion that the position occupied by the pronoun is case-marked. The source of the Dative/Accusative case in constructions such as (23) is a matter of debate. Here we will only note that French personal pronouns can show up in their strong Dative/Accusative form in various positions that have no obvious case-assigner (e.g. in the peripheral left and right dislocated positions, or in elliptical sentences formed of just a pronoun). Moreover, in some incorporating languages, e.g. Hungarian, bare incorporated nominlas appear in the Accusative case (Bende-Farkas 2001). We conclude that the case and number/gender facts do not represent conclusive evidence for a clitic as opposed to an incorporation analysis of bare *quel*.

[6]For some speakers, (21b) becomes acceptable if *diable* is preceded and followed by a robust intonation break (*Qui est, diable, leur chef?*).

To decide on the nature of the relation between bare *quel* and *être*, we have to consider the overall picture of French morpho-syntax: are there any other constructions in French potentially analyzable as instances of incorporation? One possible case would be that of the relation between the copula and a bare noun that immediately follows it, as in (10c) above and (24) below:

(24) Ils sont étudiants.
'They are students.'

The noun *étudiants* is not preceded by a determiner; moreover, the modification of a postcopular bare noun is not possible.[7] On the other hand, *étudiants* is in a position which, as we have seen, can host the strong form of Dative/Accusative pronouns; furthermore, *étudiants* agrees with the subject, just like bare *quel*.

We conclude that incorporation is a phenomenon that may be marginally present in French. In contrast, pronominal clitics are widespread in French. We take this to be one consideration for analyzing bare *quel* as a clitic. There are, moreover, cross-linguistic reasons for not analyzing the sequence *quel* + *être* as the result of incorporation: if *quel* were an incorporated item, *quel* + *être* ought to be treated as a complex interrogative verb. Since interrogative verbs are cross-linguistically very rare (cf. Idiatov and van der Auwera 2004), it seems to us preferable not to analyze the *quel* + *être* sequence as an interrogative verb if there is a plausible competing analysis. Another reason for not adopting an incorporation analysis for the sequence *quel* + *être* is the fact that bare *quel* can appear also in complex predicates containing a 'raising' verb.

We will therefore analyze bare *quel* as an interrogative clitic, despite the fact that the relation between bare *quel* and its verbal host is tighter that the relation between the interrogative clitic *que* and its verbal host. As a clitic, bare *quel* is syntactically visible and consequently it moves independently of *être*. Below is the syntactic analysis of questions of the form *Quel être DP?* (25a) represents the derivation of a *quel*-question in which the subject is a pronoun, and therefore the question is formed by subject-clitic inversion; (25b) represents the derivation of a *quel*-question in which the subject is a full-fledged DP and therefore the question is formed by stylistic inversion (i.e. inversion of a non-pronominal subject):

(25) a. D-structure: $[_{CP[+wh]}\ [_{C'}$e $[_{IP}$ elle$[_{I'}\ [_{VP}$ être$[_{Nom}$ quelle]]]]]]
S-structure (subject-clitic inversion):
$[_{CP[+wh]}$ quelle$_i[_{C'}$est $[_{IP}$ elle $[_{I'}\ t_V\ [_{VP}\ t_V\ t_i$]]]]]

b. D-structure: $[_{CP[+wh]}\ [_{C'}$e $[_{IP}$ son adresse $[_{I'}\ [_{VP}$ être $[_{Nom}$quelle]]]]]]
S-structure (stylistic inversion):
$[_{CP[+wh]}$ quelle$_i$ $[_{C'}$ e $[_{IP}$ – $[_{I'}$ est $[_{VP}\ t_V\ t_i$son adresse]]]]]

[7]The excluded type of modification is by a relative clause or by a phrase (AP or PP) that can be used predicatively. Thus our generalization correctly rules in sentences such as *Jean est étudiant en droit* ('John is a law student'), since the PP *en droit* ('in law') cannot function predicatively (**Cet étudiant est en droit* - lit. *'This student is in law').

Since *quel* is a dependent morpheme, a morphophonemic rule attaches it to the left of *être*.

The stand we have taken on the morpho-syntax of bare *quel* has immediate consequences for the semantic analysis of *quel*-questions. If *quel* is not an incorporated nominal, *quel* + *être* cannot be treated as a complex interrogative verb with a possibly non-compositional semantics. We will therefore have to put forth a compositional semantics for the VP formed of the clitic *quel* and the verb *être*. This will be done in section 4.

3. SEMANTIC RESTRICTIONS ON THE DISTRIBUTION OF BARE 'QUEL'

Bare *quel* can only co-occur with subject noun phrases that meet certain semantic conditions:

I. a definite subject cannot be:

(i) a rigid designator, as observed by Comorovski (2004);
(ii) an 'incomplete definite description'.

II. the subject cannot be a quantifying DP.

We will consider restrictions I and II in turn and then we will take a look at *quel*-questions with indefinite subjects.

3.1. Non-rigidity

The examples under (26) illustrate the ban on rigid designators as subjects of *quel*-questions.

(26) a. Quelle est *la température*?
what is the temperature

b. Quelle est *l'adresse de Brigitte*?
what is the address of Brigitte
'What is Brigitte's address?'

c. Quel est *le train suivant*?
what is the train next
'What is the next train?'

d. Quel est *le romancier bolivien le plus réputé*?
who is the novelist Bolivian the most known
'Who is the best known Bolivian novelist?'

e. *Quel est-*il* ? (OK if *il* is anaphoric)
who is he

f. *Quel êtes-*vous*?
who are you

g. *Quel est *ça* / *ceci*?
what is this / this (one)

h. *Quel est *Jacques*?
who is Jacques

Sentences (26a–d) have non-rigid designators as subjects. The subject noun phrases of the ungrammatical (26g–j) are all rigid designators.

Note that question (26g) is unacceptable only if the pronoun *il* ('he') is used deictically. If used anaphorically, personal pronouns can co-occur with bare *quel*, as seen in (27) below; in their anaphoric use, personal pronouns are not rigid designators:

(27) – Il m'a posé une drôle de question et puis il m'a donné lui-même la réponse.
'He asked me a funny question and then he gave me the answer himself.'

– Ah oui? Et quelle était-*elle*?
oh yes and what was she
'Really? And what was it?'

Is non-rigidity the characterizing property of definite subjects of *quel*-questions? A crucial piece of evidence comes from *quel*-questions whose subjects are 'incomplete definite descriptions', i.e. singular definite noun phrases whose descriptive content is not rich enough to uniquely identify the referent of the noun phrase, as in the example below:

(28) La table est couverte de livres.
The table is covered with books. (Strawson 1950)

Definite descriptions such as *the table* in (28) above can satisfy the uniqueness condition associated with singular definites only if a restricted context is taken into consideration.

Significantly, incomplete definite descriptions cannot appear in *quel*-questions, as illustrated below:

(29) *Quelle est la rue / la rivière?
what is the street / the river

The unacceptability of (29) is in striking contrast with the acceptability of (26a–d) and of (28). The fact that the *quel*-questions (26a–d) and the statement (28) are acceptable shows that: (i) there is no general ban on definite descriptions as subjects of *quel*-questions and (ii) there is no general ban on the use of incomplete definite descriptions. It follows that the unacceptability of (29), in which an incomplete

definite description occurs as the subject of a *quel*-question, is related to the semantics of *quel*-questions.

If we apply Mikkelsen's (2004) tag-question test, we see that definite descriptions whose uniqueness requirement is met with the help of the context of utterance cannot function as subjects of specificational clauses, as seen from (30) below:

(30) The woman in green is Alice, isn't *she* / **it*?

Thus, we have found one class of noun phrases that cannot be subjects of either *quel*-questions or specificational clauses.

Since incomplete definite descriptions rely on the context of utterance to satisfy uniqueness, it is tempting to think they are always referential. However, it has been claimed in the philosophical literature that this is not necessarily the case and that attributive definite descriptions can also be incomplete.[8] Going against this claim is Recanati's (2004) discussion of examples such as the sentence (31) below, uttered by a detective in front of a mutilated body:

(31) The murderer is insane.

In the imagined context, the detective does not know the identity of the murderer. We refer the reader to Recanati's implementation of the view that the incomplete definite description 'the murderer' is used referentially in this context. Recanati's generalization is that only referential definite descriptions can be incomplete. This is also the view adopted in the present paper.

In sum, definite descriptions that cannot occur as subjects of *quel*-questions are noun phrases used referentially. On the view that a definite description used referentially is rigid (e.g. Kaplan 1978), the restriction on the subject of *quel*-questions emerges as a ban on rigid designators.

Definite descriptions that are not used referentially are not exempt from the uniqueness requirement, which is the core characteristic of definites (see, e.g., Abbott 1999, 2004, Birner and Ward 1994). To function as the subject of a *quel*-question or of a specificational copular clause, the uniqueness of a singular definite subject must be guaranteed by linguistic, context-independent means. We consider them in turn:

(i) uniqueness can be ensured by a **modifier**. Among the modifiers able to enforce uniqueness are: (a) ordinal numerals (e.g. 'third'); (b) adjectives such as 'next',

[8] We use the terms 'referential' and 'attributive' in Donnellan's (1966) sense: a definite description is used referentially iff the speaker 'uses the description to enable his audience to pick out whom or what he is talking about'; a definite description is used attributively iff the speaker 'states something about whoever or whatever is the so-and-so'. According to Donnellan (1966), the referential/attributive distinction is a semantic one, a view that has been largely debated since. Given that the issue of the nature of the distinction is not essential to our central concern, we will not take here a position on this long-debated issue (see, for instance, Kaplan's 1978 implementation of the view that the distinction is semantic and Kripke 1977, Neale 1990, and Dekker 1998 for pragmatic approaches to the referential/attributive distinction).

'last', 'only'; see the example (26c) above, which contains the adjective *prochain* ('next', 'following'). Question (26c) presupposes the existence of a sequence of trains, of which the answer must pick the unique *next* train; (c) superlatives, as in the example (26d) above, which presupposes the existence of a collection of Bolivian novelist, of which the answer must pick the unique individual who is the *best-known* of the Bolivian novelists. These three types of modifiers occur only with nouns that denote a given, presupposed set. The modifier indicates that a unique individual is picked from this set. In the *quel*-questions whose subject contains one of these modifiers, *quel* is therefore discourse-linked, in the sense that it ranges over an already given set (cf. Pesetsky 1987). We will call this type of D-linking *weak discourse-linking*, to distinguish it from the cases where a wh-phrase ranges over a set whose constitution is known by both speaker and hearer (Comorovski 1996: 11f.); we will call the latter type of D-linking *strong discourse-linking*.

(ii) uniqueness can be enforced by a **functional N**, as in (26b) above and (32) below:

(32) Quelle est la capitale de la Moldavie?
'What is the capital of Moldavia?'

It can be objected that in example (26b) the subject contains a noun (*adresse*) that is not functional, but just relational, since in principle a person can have more than one address. But certainly, most people have one main address (= their residence), so given this background knowledge, 'address of' is an expression perceived as denoting a function.

If the subject of a *quel*-question contains a functional N, the question is acceptable only if the subject is [−human] and/or strongly D-linked: subject DPs that are [+human] and not strongly D-linked are ruled out:[9]

(33) a. *Quelle est la reine de la Belique?
who is the queen of the Belgium
(O.K. if *quelle* is strongly D-linked, e.g. the question is asked at a party attended by royalties.)

b. *Quelle est la mère de Jacques?
who is the mother of Jack
(O.K. if *quelle* is strongly D-linked, e.g. the question is asked at a party attended by several women.)

[9] If the subject DP is [+human] and not strongly D-linked, *qui* ('who') will be used in the place of *quel*:

(i) *Qui* est la reine de la Belgique?
who is the queen of the Belgium
'Who is the queen of Belgium?'

(ii) *Qui* est la mère de Jacques?
who is the mother of Jack
'Who is Jack's mother?'

Note that in (26b) and (32), where the subject is [−human], *quelle* is not even weakly D-linked: (26b) does not presuppose a given collection of addresses, of which the answer has to pick a unique one; (32) does not presuppose a given collection of capitals or of cities, of which the answer has to pick a unique one.

We will include in class (ii) also examples such as (26a), which contain a measure N. A noun such as *temperature* is functional, in that it applies to a spatio-temporal location and yields as a value the temperature at that location.[10]

(iii) *Quel*-questions with **propositional answers**. For the definite subjects in this class of *quel*-questions, we will have to consider the form of the possible answers to the question. The subjects of these questions do not require an explicit indicator of uniqueness. Why should this be so? We suggest that this fact follows from the way propositions are counted. A complex proposition (e.g. a conjunction of propositions) can be regarded as a single proposition, so the issue of uniqueness does not arise in a clear way. Take, for instance, the question in (34) below. Answer A1 expresses one simple proposition. Answer A2 expresses one complex proposition. In both cases, the singular definite subject of the question is associated in the answer with a value that is a single (abstract) entity:

(34) Quelle a été la conclusion de la réunion d'hier?
'What was the conclusion of yesterday's meeting?'
A1: That everybody should pay a small entrance fee.
A2: That everybody should pay a small entrance fee and that several roles in the play should be given to student actors.

An examination of the examples in (26a–d), (32), and (34) shows that, although the subject noun phrase of a *quel*-question cannot be directly referring, it is always linked to the context of utterance by a referential expression it contains. We will call this relation *indirect contextual anchoring*. The expression contained in the subject that mediates the relation between the denotation of the subject and the context of utterance can be a referential 'possessor' DP, as in (26b), (32), and (34), or a (modified) noun that refers to a given set, as *train* in (26c) and *romancier bolivien* in (26d) (both of which are *quel*-questions with subjects that belong to class (i)).

The range of referential elements which link the denotation of the subject to the context of utterance shows that this context must be conceived of in a broad way: the relevant type of context can be larger than the immediate physical context.

We will now tackle the issue of *quel*-questions with complex demonstratives[11] as subjects:

[10] There is a partial overlap between definites that can be subjects of *quel*-questions and Löbner's (1985) 'semantic definites'. Due to the content of their descriptive part, which is a functional expression, semantic definites denote unambiguously, independently of the context of utterance.

[11] Complex demonstratives are noun phrases which, besides a demonstrative determiner, contain a noun and possibly also complements and/or modifiers of the noun.

(35) a. Quelle est *cette rue*?
what is this street
'What street is this?'

b. (?) Quel est *cet homme* ? (fully OK if *cet homme* is anaphoric)
who is this man

The rigidity of complex demonstratives has been an issue of debate. For instance, King (2001) argues that complex demonstratives are not rigid designators, since they can enter into scopal relations with various scope-taking elements; for instance, they can be referentially dependent on quantifying noun phrases that outscope them. Note, however, that all of King's examples contain the demonstrative determiner 'that'. We believe that no examples can be constructed with the demonstrative determiner 'this'. Note also that King's arguments are based on types of data that seem to be English-specific, since they cannot be reproduced on French or Romanian. We will therefore adopt the traditional (= Kaplanian) and still prevailing point of view on complex demonstratives: they involve direct reference and are therefore rigid designators.

The descriptive generalization about questions (35a–b) appears to be the following: younger speakers from the Paris area find (35b) unacceptable and (35a) very formal. The other speakers I consulted find at least (35b) to be literary. This is in sharp contrast with every speaker's judgment of (26a–d), sentences which are found fully acceptable and quite natural. This variation in judgments is indicative of a language change that is in progress.[12] In view of this conclusion, I will call *quel*-questions with uncontroversially non-rigid subjects 'core cases of *quel*-questions'.

One question that arises is why there is a difference with respect to speakers' judgments between *quel*-questions with incomplete definite descriptions as subjects, which are uniformly judged as unacceptable (e.g. (29) above), and *quel*-questions with complex demonstratives as subjects, which, as we have seen, are not judged alike by all speakers of French. It appears that the referentiality of the subject noun phrase leads to variable acceptability in the latter class of *quel*-questions and to unacceptability in the former. We have seen that *quel*-questions with complex demonstrative subjects seem to be slowly exiting contemporary French; we suggest that the rigidity of complex demonstratives is the reason for this language change, which narrows the difference in the way the two types of *quel*-questons are judged. A diachronic study of *quel*-questions could, of course, reinforce our hypothesis, but is beyond the scope of this article.

Mikkelsen (2004) applies the tag-question test to copular clauses that have a complex demonstrative as a subject, and the result shows such clauses not to be specificational:

(36) That woman is Susan, isn't she / *it?

[12]The split in judgments with respect to the feature [±human] that is illustrated in (35a–b) can be explained by the fact that *quel* is in competition with *qui* ('who') when it ranges over humans, whereas no similar competition arises when *quel* ranges over non-humans.

If the vacillating *quel*-questions with complex demonstratives as subjects are put aside, *quel*-questions bear a striking resemblance to specificational copular clauses, whose subjects are never referential, as observed by Higgins (1973).

We will next take a look at the second restriction on the subject of *quel*-questions: the subject cannot be a quantifying noun phrase.

3.2. Restriction on quantifying noun phrases

The restriction on quantifying subjects in *quel*-questions is illustrated below:

(37) *Quels sont [$_{DP}$ la plupart des effets de cette loi]?
what are the majority of-the effects of this law

At first blush, this restriction has as counterexamples *quel*-questions whose subject is introduced by a universal quantifier, such as the question in (38a):

(38) a. Quel est [$_{DP}$ chacun des effets de cette loi]?
what is every-one of-the effects of this law
'What is every consequence of this law?'

b. A1 : The consequences of this law are the following: ...
A2 : One consequence of this law is that ..., another consequence of this law is that ..., etc.

c. *Every consequence of this law is the following: ...

As seen in (38b), the question in (38a) has two possible types of answers: in the answer type illustrated by (38b-A1), the subject is a plural definite description; (38b-A2) is a pair-list answer. The new fact presented by the data in (38) is the possibility of the answer type illustrated by A1. The answer A1 is semantically equivalent to the pair-list answer A2. We can regard A1 as an abbreviation of the pair-list answer A2.

Question (38a) cannot be answered by a sentence whose subject is introduced by a universal quantifier. We take the impossibility of such an answer as evidence that the universally quantified subject of the question receives a special interpretation: the subject DP introduces a plural discourse referent. This discourse referent is picked up by the plural definite subject in the answer A1.[13]

[13] Similar cases of discourse anaphora have been discussed in Kamp and Reyle (1993: 309ff.). Kamp and Reyle analyze the following example:

(i) Susan has found every book which Bill needs. They are on his desk.

In (i), the universally quantified noun phrase *every book which Bill needs* introduces a non-atomic discourse referent that is picked up by the plural pronoun *they*. Kamp and Reyle propose a rule they call 'abstraction' to account for such cases of discourse anaphora. Here is a French example that parallels Kamp and Reyle's: *J'ai donné un bonbon à chaque enfant dans la classe. Ils étaient bien contents.* ('I gave a piece of candy to every child in the classroom. They were very happy.')

Note that the possibility of a pair list answer to (38a) is not inconsistent with the claim that the subject of (38a) is not interpreted as a universally quantified DP, but rather as denoting a sum individual. Indeed, as shown by Krifka (1992), single constituent questions with definite plural subjects can have pair list answers.

It is of interest that French speakers feel that the question in (38a) is an emphatic way of asking (39) below, which has a plural definite description as a subject; (39) is judged as the neutral and natural way of expressing the same interrogation as (38):

(39) Quels sont [$_{DP}$ les effets de cette loi]?
'What are the consequences of this law?'

We conclude that (38a) is not a counterexample to our generalization concerning the impossibility of quantifying subject DPs in *quel*-questions.

3.3. Indefinite subjects of 'quel'-questions

So far, we have said nothing about indefinite subjects of *quel*-questions. A generalization made by Barbaud (1974) (cited in Ruwet 1982) concerning the subject of a *quel*-question is that it cannot be indefinite, as seen below:

(40) a. *Quelle est une amie de Brigitte?
who is a friend of Brigitte

b. *Quel est un roman de Balzac?
what is a novel by Balzac

Ruwet (1982: 237, n.22) notices that Barbaud's generalization concerning the impossibility of indefinite subjects is not without exceptions:

(41) Quel serait, à ton avis, un bon directeur de banque?
what would-be at your opinion a good director of bank
'In your opinion, what would be the qualities of a good bank director?'

Question (41) is a generic sentence and asks for the qualities of a good bank director, not for his/her identity. In older stages of French, bare *quel* could range over properties, preserving thus as one of its interpretations the interpretation of its Latin ancestor *qualis*. In contemporary French, this interpretation of bare *quel* has gone out of use; sentence (40) is judged as quite literary.[14] The question in (41) is a predicational copular sentence, unlike the other *quel*-questions that we have examined. We will not be concerned here with predicational *quel*-questions.

As noted in Kampers-Manhe et al. (2004), the impossibility of inverted indefinite subjects in French constituent questions was observed since the early studies in

[14] In contemporary French, determiner *quel* can range over properties in a limited class of copular questions, which, they too, are judged as very literary (see Comorovski 2004 for examples).

French generative grammar (see references in Kampers-Manhe et al. 2004: section 4). Drijkoningen and Kampers-Manhe (2001) make the interesting observation that indefinite subjects cannot occur in French constituent questions, irrespective of whether the subject is inverted or not (e.g. the ungrammatical **Où trois chats dorment-ils?*, where the indefinite subject is not inverted). An exception is presented by generic constituent questions, which do allow indefinite subjects, with or without inversion (see Kampers-Manhe et al. 2004: section 4 and references cited there).

Thus Barbaud's (1974) restriction on indefinite subjects in *quel*-questions appears as part of a general ban on indefinite subjects in non-generic constituent questions. Drijkoningen and Kampers-Manhe (2001) advance the following condition: 'do not pose questions about entities that you introduce in the discourse while posing the question'. As Drijkoningen and Kampers-Manhe note, the restriction they propose holds only of constituent questions, not also of yes/no questions. Their principle correctly blocks the occurrence of indefinite subjects in *quel*-questions.

The goal of Drijkoningen and Kampers-Manhe's principle is to constrain the distribution of indefinite subjects. The fact that it is subjects that are at stake plausibly points to the relevance of information structure: the subject often plays a privileged role with respect to the information structure of a sentence, functioning as the sentence topic. The notion of topichood indirectly creeps into Drijkoningen and Kampers-Manhe's principle via their use of the preposition 'about': the questions that the principle rules out are questions *about* new entities. The use of 'about' is relevant because aboutness has often played a central role in the definition of topichood (e.g. Portner and Yabushita 1998).

Notice that if the linear order of elements in a constituent question confers topic status to a non-subject, the subject of the question can be indefinite. This is the case in the question below, in which the direct object is sentence-initial, preceding the interrogative pronoun, and thus becoming the topic of the question:

(42) Mon nouveau poème, quand quelqu'un le lira-t-il?
my new poem when somebody him will-read he
'My new poem, when will somebody read it?'

According to Drijkoningen and Kampers-Manhe's principle, a discourse referent must be introduced before any additional information is requested *about* it. Indefinite subjects are allowed in generic constituent questions precisely because the indefinite subject of a generic sentence does not introduce a discourse referent, since it is under the scope of the generic operator. Given that the indefinite subject of a generic constituent question is not a candidate for topichood, this type of sentence must have another element as a topic; we suggest that the topic of a generic constituent question with an indefinite subject is the set of Ns over which

the generic operator ranges (see Krifka 2001 for some thoughts on topic selection in constituent questions).

In section 3.1, we have come to the conclusion that the subject of a copular *quel*-question must be indirectly contextually anchored. As we will see in section 4, indefinite subjects that are indirectly contextually anchored can function as sentence topics. But since such a subject introduces a new discourse referent, a constituent question cannot ask information 'about' it. Thus, even though an indefinite that is indirectly contextually anchored can function as the topic of a declarative sentence, it cannot function as the topic of a constituent question. As there is no plausible candidate for topichood in non-generic copular *quel*-questions with indefinite subjects, and as any question must be *about* something, *quel*-questions with indefinite subjects are ruled out on the ground of having no topic.

Interestingly, if the verb in a *quel*-question is in the conditional mood, it is possible to construct non-generic *quel*-questions whose subject is indefinite; moreover, unlike the generic question in (41) above, such questions ask for the identity of the individual denoted by the subject, and not for the qualities of this individual:

(43) a. Quel serait (selon toi) un bon livre sur l'histoire du Japon?
'What would be (in your opinion) a good book on the history of Japan?'

b. Quel serait (pour vous) un argument de poids pour faire cet investissement?
'What would be (for you) a strong argument for making this investment?'

As opposed to the unacceptable (40a,b), the questions in (43) contain expressions that scope over the subject position: these expressions are *serait* ('would be') in (43a,b), the optional *selon toi* ('according to you') in (43a), and the optional *pour vous* ('for you', 'according to you') in (43b). The form *serait*, which is the conditional mood of the copula, indicates that the speaker is interested in the hearer's opinion about what a true answer to the question is. While we will not attempt here to see how this interpretation arises, we note that the wide scope expressions in (43) create a context equivalent to the context created by an expression of point of view such as 'in your opinion' or 'from your point of view'.

The point of view context plays a crucial role in making acceptable *quel*-questions with indefinite subjects. We will discuss this role at the end of section 4.

3.4. Conclusion

We have seen that direct reference is ruled out as a property of the subject noun phrase of a *quel*-question: the subject of a *quel*-question cannot be a standard

rigid designator or a referential definite description. However, the subject of a *quel*-question must be linked to the context of utterance via a referential linguistic expression it contains; we have called this type of relation *indirect contextual anchoring*.

4. THE COPULA OF SPECIFICATION

4.1. Specificational Subjects

Where else can the subject pattern of *quel*-questions be found? In specificational copular clauses. Here is Higgins's (1973) informal characterization of these clauses: the subject of a specificational copular clause acts as the heading of a list; it therefore has descriptive content. The subject is not referential, but attributive-like ('superscriptional'). The postcopular noun phrase is referential and specifies the members of the list. Below are two examples of simple declarative specificational sentences:

(44) a. The captain of the ship is Joe Smith.

b. The candidates were Alice, Tom, and Frank.

Higgins sums up his descriptive generalizations in a table that is partly reproduced below:

Table 1. Higgins (1973: 264)

Constituent type	**Referential**	**Superscriptional**
Deictic	+	−
Proper name	+	−
Definite NP	+	+
Indefinite NP	? −	? −

The subjects of declarative specificational sentences obey the same restrictions as the subject of *quel*-questions. That specificational subjects cannot be quantifying noun phrase is already obvious from Higgins's informal characterization of specificational clauses. As we see in Table 1, specificational subjects can be definite descriptions. They cannot be definite descriptions used referentially, as pointed out by Higgins and evidence by Mikkelsen's (2004) tag-question test:

(45) The woman in green is Alice, isn't she / *it ? (= (30))

Definite specificational subjects, even though not referential themselves, are indirectly contextually anchored, just like the subjects of *quel*-questions.[15] Thus the

[15]The following sentence from *The New Yorker* (March 22, 2004), reproduced in Mikkelsen (2004: 221), appears at first blush as a counterexample to our generalization concerning the indirect contextual anchoring of specificational subjects:

tag-question test shows the copular clauses in (46) to be specificational, unlike the copular clause in (45), which contains a referential subject:

(46) a. The next candidate is Alice, isn't *she / it?

b. Your best friend is Alice, isn't * she / it?

We can see from Table 1 that Higgins (1973) was unsure about whether indefinites can or not function as specificational subjects. Mikkelsen (2004) clearly shows that they can. The indefinites in her examples turn out to meet the indirect contextual anchoring condition:

(47) a. *One person who might help you* is Mary. (Higgins 1973: 270)

b. *Another speaker at the conference* was the *Times* columnist Nicholas Kristof [...]
(*The New Yorker*, Oct. 27 2003, p. 86, quoted in Mikkelsen 2004: 173)

The indirect contextual anchoring of the subject of (47a) is ensured by the pronoun *you*; the subject of (47b) is indirectly contextually anchored due to the referential definite description *the conference*.

Table 1 also indicates that specificational subjects cannot be proper names and deictic expressions, by which Higgins (1973) understood demonstrative pronouns and noun phrases introduced by a demonstrative determiner. Thus standard rigid designators cannot function as specificational subjects. Given the similarity between Higgins's generalizations about specificational subjects and our generalizations about the subject of copular *quel*-questions, we conclude that copular *quel*-questions are specificational clauses.

We suggest that specificational subjects are of type $\langle s, e \rangle$.[16] However, this generalization does not take into account the indirect contextual anchoring that characterizes specificational subjects, be they definite or indefinite. Thus, even though

(i) After Adams and Thomas Jefferson, during the republic's first two centuries, [*the only person ever to win a Presidential election while serving as Vice-President*] was Martin Van Buren, in 1836.

The uniqueness condition is met by the definite specificational subject due to the presence of *only* inside the definite DP. The indirect contextual anchoring is ensured by an expression located outside the specificational subject, namely by the temporal PP *in 1836*. Since this PP is not a complement of the copula; the only way to associate it interpretively with the rest of the sentence is as a modifier of the VP contained in the specificational subject, namely the VP *win a Presidential election while serving as Vice-President*. Given that the temporal PP occurs as an after thought, following an intonation break, its syntactic relation with the rest of the sentence is an intricate issue that will not be tackled here. What is of relevance to us is that the contextual anchoring of a specificational subject can be done not only by a nominal contained in the subject, but also by an expression outside the subject, which anchors it in time.

[16]The proposal that specificational subjects are of an intensional type has been independently made by Comorovski (2005) and Romero (2005). Comorovski bases her proposal on the analysis of Romanian copular *care*-questions, while Romero's arguments come from the interpretation of concealed questions (i.e. noun phrases interpreted as questions).

we can maintain the type ⟨s, e⟩ for these DPs, something additional needs to be said about the way they relate to the context of utterance. We will therefore give a semantic–pragmatic characterization of specificational subjects: semantically, they are of type ⟨s, e⟩ (functions from indices to individuals). They must also fulfill a pragmatic condition, which reflects their indirect contextual anchoring: they are linked to the context of utterance by a referential expression they contain.

The issue of rigidity (hence of semantic type) arises in the case of specific indefinites, much in the same way that it arises in the case of referential definite descriptions. Yeom (1998) suggests that a specific indefinite functions as a rigid designator in the belief (= information state) of the agent who 'has an individual in mind'. Thus, both referential definite descriptions and specific indefinites are characterized by direct reference; the basic distinction between them is the cognitive asymmetry presented by specific indefinites, whose interpretation is dependent on the information states of the participants in the conversation.

If the specific/non-specific distinction is at least in part a matter of semantic type, then the analysis of specificational subjects proposed in this paper predicts that specific indefinites cannot function as specificational subjects on the ground of their (particular form of) rigidity; this prediction is borne out, as seen below:

(48) *A certain guest was Tom Culver.

Note that given the cognitive asymmetry mentioned above in connection with the interpretation of specific indefinites, it goes without saying that a speaker will not ask for the identity of the individual denoted by a specific indefinite, since the hearer is bound not to know it. Thus *quel*-questions with specific indefinite subjects are excluded, since they are inconsistent with the purpose of the interrogative speech act.

Given the two defining characteristics of specificational subjects (type ⟨s, e⟩ and indirect contextual anchoring), we can see why these subjects were considered by Higgins (1973) 'attributive-like': they are not referential, but denote an intensional object, as has sometimes been proposed for attributive definite descriptions. For instance, Kaplan (1978) suggests that, unlike referential definite descriptions, which in his view are rigid, attributive definite descriptions denote a (possibly) new individual in each world. We can also see why definite specificational subjects have never been labeled as attributive definite descriptions, but only characterized as 'attributive-like'. First, we can notice that in declarative specificational clauses, the individual denoted by the subject DP at the current index is known by the speaker and referred to by the DP complement of the copula; in contrast, the speaker cannot identify the individual denoted by an attributive definite description. And second, as demonstrated by the existence of *quel*-questions, the speaker is not indifferent to the identity of the individual denoted by a specificational subject at the current index; if the speaker were indifferent, he would not use an interrogative sentence-form.

4.2. The Definition of the Copula of Specification

Given the generalizations in the previous subsection, it becomes clear that the definition of the copula of specification must take into account two factors: the intensionality of the subject position and the indirect contextual anchoring of the subject noun phrase. The relevance of both intension and context of utterance leads us to use the semantics proposed in Kaplan (1977, 1989) for the interpretation of sentences containing indexical expressions. Kaplan's semantics makes it possible for the definition of the copula of specification to be stated relative to two parameters: an index (world–time pair $\langle w, t \rangle$) and the context of utterance, noted c. The former is necessary given the fact that the subject of a specificational clause is an individual concept; the latter makes possible the representation of the indirect contextual anchoring of the subject noun phrase. We thus arrive at the following definition for the copula of specification:

(49) $[\![\text{copula}_{sp}]\!]^{M,w,t,c,g} = [\![\lambda x \lambda u[{}^{\vee}u = x]]\!]^{M,\ w,\ t,\ c,\ g}$
Condition: $[\![{}^{\vee}u]\!]^{M,w(c),\ t(c),\ c,\ g} \in c$
(where *x* is a variable over individuals and *u* is a variable over individual concepts)

According to the definition in (49), the copula of specification denotes a relation between an individual and an individual concept, such that the individual is the value of the individual concept at the current world and time. Given the condition in (49), the assignment function *g* must pick as a value for the variable *u* an individual concept that has as a value at the world and time of the context of utterance (noted by 'w(c)' and 't(c)' respectively) an individual that is an element of the context of utterance. We remind the reader that we conceive of the context of utterance as being larger than the immediate physical context.

Our definition adequately represents the two characteristics of the specificational copula: the fact that its external argument denotes an individual concept and the fact that, due to its indirect contextual anchoring, the denotation of this argument at the world and time of the context of utterance is an element of the context of utterance.

The definition in (49) concerns French, English, and Romanian, the languages examined in this paper. What these languages have in common is that the copula can never be dropped in finite clauses; we therefore suggest that this definition can be extended to other languages of this sort.

Strong support for the existence of a copula of specification comes from languages that have two copulas: one for standard predication and one for clauses with specifcational interpretation (for instance, specificational pseudo-clefts). This is the case of Modern Hebrew, which, as discussed in Heller (2002), has two pronominal copulas, one of which occurs only in clauses with specificational interpretation.

The specificational reading is present also in languages in which the copula can or must be dropped; this is, for instance, the case of Russian, where the copula

cannot appear in present tense specificational clauses. We in no way suggest that the lexical approach proposed in this paper extends to copula-drop languages. See Geist (this volume) for an analysis of specificational clauses in Russian.

4.3. 'Quel'-Questions and the Copula of Specification

Let us briefly consider again the particular form of specificational clauses represented by *quel*-questions. Since a rigid designator cannot be the subject of a copular question introduced by bare *quel*, it follows that the sequence *quel* + *être*, with its special morpho-syntactic properties, creates an intensional context for the subject argument. We suggest that the copula which is part of the sequence *quel* + *être* is the copula of specification and that bare *quel* can only be selected by the copula of specification.[17]

In section 3.3, we observed that *quel*-questions with an indefinite subject require an expression of point of view. In a *quel*-question, the speaker asks for the value at the actual index of the individual concept denoted by the subject. If the subject of a *quel*-question is indefinite, the speaker must explicitly indicate that he wants to know the hearer's opinion about what this value is. Note that it is overtly indicated in the questions in (50), repeated below for convenience, that the speaker does not expect objective information from the hearer, but subjective one.

(50) a. Quel serait (selon toi) un bon livre sur l'histoire du Japon?
'What would be (in your opinion) a good book on the history of Japan?'

b. Quel serait (pour vous) un argument de poids pour faire cet investissement?
'What would be (for you) a strong argument for making this investment?'

AQ: We have changed the number sequence. Please check.

Why should the hearer's opinion be essential in case the subject of a *quel*-question is indefinite, but not in case the subject is definite? We suggest that this difference is related to the issue of topichood in questions (which was discussed in section 3.3). If the subject of a question is definite, it can be the topic of the question: the question can be used to ask something 'about' it. If the subject is indefinite, the question cannot ask something 'about' it. What then do the questions in (50) ask something about? We suggest that the topic of the questions in (50) is the hearer's stance, explicitly mentioned in these questions. The questions (50a,b) ask for the hearer's point of view about what the true answer is.

Our hypothesis about the information structure of a *quel*-question with an indefinite subject seems to us comparable to a hypothesis that has been put forth about

[17] As we have seen, the verb *devenir* ('become') can also select bare *quel*, but only in literary French; this selection relation appears to be going out of the language.

the topic of certain statements, namely statements that were considered in the functionalist literature as topicless or 'all new information' statements, as the one seen below

(51) A child is crying.

It has been suggested by Jäger (2001) that such statements do in fact have a topic, namely the event argument of the verb, which can be left implicit.

Topichood is, of course, an issue that arises also in the case of declarative specificational sentences with indefinite subjects. According to Mikkelsen (2004), the subject of a specificational sentence is also its topic, whether it is definite or indefinite. We refer the reader to Mikkelsen (2004: chapter 3) for a detailed discussion of the issue of topichood in specificational sentences with indefinite subjects.

5. ROMANIAN COPULAR *CARE*-QUESTIONS

Romanian *care* occurring without a following N ('bare *care*') can be discourse-linked or not: if it is D-linked, it is the exact correspondent of English 'which' and has the entire distributional range of a DP. If it is not D-linked, it occurs only in questions of the form *Care copula DP?*. Below are two examples of questions introduced by non-D-linked *care*:

(52) a. Care e capitala Moldovei?
CARE is capital-the of-Moldavia
'What is the capital of Moldavia?'

b. Care e adresa lui Ion?
CARE is address-the of John
'What is John's address?'

The restricted distribution of non-D-linked bare *care* parallels the restricted distribution of bare *quel*: both lexical items occur only in questions of the form *Wh-DP-copula-DP?*.

If *care* is weakly D-linked or non-D-linked, we find in Romanian copular *care*-questions almost the same semantic restrictions on the subject that we have found in French *quel*-questions:

I. a definite subject cannot be:

(i) a rigid designator (including complex demonstratives);
(ii) an incomplete definite descriptions.

II. the subject cannot be a quantifying DP. With respect to this condition, Romanian, unlike French, presents no 'exceptions' (cf. the French universally quantified subjects).

Uniqueness of the individual denoted by a singular definite subject DP is enforced by the same means as in French. Illustrations of these generalizations, as well as arguments for the non-subject status of *care*, are presented in Comorovski (2005) (to appear).

Romanian *care*-questions behave much like French *quel*-questions with respect to the possibility of having an indefinite subject: an indefinite DP can function as the subject of the question only if it is under the scope of an expression of point of view. This fact is illustrated by the contrast between (53) and (54). In the unacceptable *care*-question in (53), there is no expression able to create a point of view context. In contrast, the acceptable (54) contains the copula in the conditional mood: just like in French, the use of the conditional form of the copula can indicate that the speaker is interested in the opinion of the hearer as to what the true answer to the question is.[18] The question (54) optionally contains the expression of point of view *după tine* ('according to you'), which scopes over the subject:

(53) *Care e un roman de Sadoveanu?
what/which is a novel by Sadoveanu

(54) Care *ar fi (după tine)* un cadou potrivit pentru Margareta?
'What would be (in your opinion) an appropriate gift for Margaret?'

Based on the facts presented above, Comorovski (2005) concludes that Romanian copular *care*-questions introduced by non-D-linked or weakly D-linked *care* are specificational clauses. Since non-D-linked *care* occurs only in copular questions, it follows that non-D-linked *care*, just like French *quel*, is selected only by the copula of specification.

6. CONCLUSIONS

In sum, a cross-linguistic investigation of interrogative and declarative specificational clauses has enabled us to isolate two characteristics of specificational subjects: their non-rigidity and the fact that they are 'indirectly contextually anchored'. Indirect contextual anchoring is a relation between intensional noun phrases and the larger context of utterance, established with the help of a referential expression contained in the noun phrase.

We have argued that the specificational reading of copular clauses has its source in the copula of specification, which was defined in section 4.2. An examination of French and Romanian copular constituent questions has brought to the fore some complement selection facts that we take as strong evidence in favor of a lexical approach to the specificational reading of copular clauses. As we have seen, *quel* is selected in (spoken) contemporary French only by the copula. Moreover,

[18] Comorovski (to appear) gives more details on the role of the conditional mood in Romanian *care*-questions with indefinite subjects.

Romanian non-D-linked *care* occurs only as a complement of the copula. Since French *quel*-questions and Romanian *care*-questions present the semantic characteristics of specificational clauses, we conclude that *quel* and non-D-linked *care* are selected only by one verb, namely the copula of specification.

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LJUDMILA GEIST

PREDICATION AND EQUATION IN COPULAR SENTENCES: RUSSIAN VS. ENGLISH

It is a disgrace to the human race that it has chosen to employ the same word "is" for these two entirely different ideas (predication and identity)

– a disgrace which a symbolic logic language of course remedies.

(Russell 1919: 172)

Abstract. The paper explores the mapping between the syntax and semantics of copular sentences in Russian in comparison to English. It argues for a single underlying semantics of the copula in predicational, equative and specificational sentences in both languages. The paper derives the invariant semantics for the three types of copular sentence and explores how this invariant semantics is mapped to the syntactic structure in the two languages. Predicational sentences are assumed to be the basic type of copular sentence. The difference in interpretation between predicational, equative and specificational copular sentences is explained with the help of the *ident* type-shift, which enters the semantic composition of equative and specificational sentences at different places.

1. INTRODUCTION*

Copular sentences are a source of embarrassment for syntacticians and semanticists alike. The long standing question concerns their ambiguity: copular sentences may express either identity or predication.

In a predicational sentence like (1), the property expressed by the predicate noun phrase *a teacher* (XP2) is predicated of *Mary* (XP1). The expression *by profession* is added to indicate that sentence (1) in the table below is interpreted as a predicational sentence.

By contrast, equative sentences like (2) assert that the referent of the expression *Mark Twain* and the referent of the expression *Samuel Clemens* are identical. Semantically, both NPs are arguments of type e.

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Table 1. Three types of copular sentence

Types	*Examples*	*XP1*	*XP2*
(1) **Predicational**	John is a teacher (by profession).	e	$\langle e, t\rangle$
(2) **Equative**	Mark Twain is Samuel Clemens.	e	e
(3) **Specificational**	The murderer is John.	?	e

Key: the labels *XP1*, *XP2* refer to the actual linear order of the noun phrases at issue – independently of their syntactic category (NP vs. DP), their possible syntactic function (subject vs. predicate nominal), and the semantic type shown in the last two columns.

It has been assumed that the copula in a predicational sentence takes a predicate of type $\langle e, t\rangle$ and applies it to its argument of type e, see (1). Given that in an equative sentence, see (2), both noun phrases are arguments of type e, they do not match the argument structure of the predicational copula. In addition, equatives express an identity relation that is not available in predicationals. The problem which arises is how the identity relation enters the semantic interpretation in an equative sentence.

In addition to these basic types of copular sentence, some authors assume a further type which is called 'specificational' (see (3)) because it specifies the "value" of the description given in the pre-copular phrase XP1. In our example, the XP *the murderer* restricts the variable for which the noun phrase *John* specifies a value. In (3), XP2 is clearly referential; the denotational status of XP1, however, is controversial.

These three types of copular sentence raise the following questions:

- What is the basis on which the distinction between predication, identity, and specification rests?
- What does the copula *be* contribute to each of these interpretations?
- Are these types of copular sentence interrelated in a way that would suggest that one type, say the predicational, can be considered basic and the other types are to be derived from it?
- If so, how are equative and specificational sentences to be derived from their predicational source in a compositional way?

English is a language in which, at least superficially, equative, predicational, and specificational copular sentences resemble one another in surface morpho-syntax. Insights into the above questions concerning the ambiguity of English copular sentences can be gained by comparing them with a language which appears to use radically different morpho-syntactic means for expressing predication and equation. We will consider Russian, a language with a rich morphology, but without articles. With respect to copular sentences, Russian displays the following peculiarities:

a) *Defective paradigm*: The copula verb *byt'* in modern Russian has no form for present tense, but only a past and a future form.[1]
b) *Overt equation marker*: Equative sentences require the addition of a morphological element, a pronoun, and have a complex syntactic structure.
c) *Case alternation*: In predicational sentences, post- copular noun phrases (XP2) can occur in the Nominative or in the Instrumental case, as can the initial noun phrase (XP1) in specificational sentences.

In what follows, we will examine the Russian equivalents of the three types of copular sentence shown in Table 1. The main issues we want to tackle are these:

– Is there a common semantic basis from which predication, equation, and specification possibly emerge?
– If so, how could we handle this in a compositional manner in both languages?

The paper argues for a single underlying semantics of the copula in predicational, equative, and specificational sentences. The different types of copular constructions can be accounted for if we assume that non-overt type-shift operations suggested by Partee (1986, 1987) and Chierchia (1984) are at work in semantics. We will argue in favor of the view that – despite being morphologically non-overt – such type-shifting operations can be justified on a structural basis. The way to do this is to examine the Russian counterparts of the three types of copular sentence in Table 1 and exploit the morpho-syntactic distinctions they show to re-analyze the less transparent English data. We will attempt to find out how these differences can be derived from language specific parameters.

2. PREDICATIONAL SENTENCES

The typical examples of predicational sentences are those shown in (4), i.e. where the post-copular expression describes a property of the subject referent. For example, in (4a) the property of being a teacher by profession is assigned to John.

[1] The inherited present tense form *est*', which was originally the 3 Person Singular form of *byt'*, has lost other forms and can be used for all Persons and Number. This archaic form is sometimes used in definitions and if tense is focused, cf.

(i) Astrologija est' nauka.
astrology is science
'Astrology is a science.'
(ii) On byl est' i budet tvoim otcom
he was is and will-be your father
'He was and will always be your father.'

As an anonymous reviewer points out, there is a further, frequently used, copular verb in modern Russian: *javljat'sja*. *Javljat'sja* has no precise counterpart in English, but can be approximately translated in English as *'be'*. Unlike *byt'*, *javljat'sja* has an overt form in present tense. However, contrary to *byt'*, the copula *javljat'sja* has a very restricted distribution as it can only combine with predicative NPs which denote some quality, and never with NPs denoting just professions or nationality.

The indicator *by profession* serves as a marker for the predicative status of XP2. Besides predicative noun phrases, APs and PPs can occur in the post-copular position. (4b) presents *being tall* as a characteristic of Nina. In (4c), the subject referent is assigned the property of being located in the garden.

(4) a. John is a teacher by profession.
b. Nina is tall.
c. She is in the garden.

In a predicational sentence, the copula serves as a link between the subject term and the predicative phrase. Following Partee (1987), we will assume the following (still incomplete)[2] lexical entry for the predicational copula:

(5) $be_{Pred} : \lambda P\ \lambda x\ [P(x)]$

According to Partee (1987), the function of the copula is to indicate that the property denoted by its complement *P* holds of its external argument x. The *be* of predication selects for a predicative complement of type $\langle e, t\rangle$ but doesn't impose any restrictions on the syntactic nature of it. Different $\langle e, t\rangle$ expressions like NPs, APs and PPs, but under some conditions also DPs, can occur in the complement position of the copula. In this paper we will concentrate on predicational sentences with noun phrases (NPs and DPs).

The predicative use of noun phrases can clearly be distinguished from the referential use by considering the selection of *wh*-pronouns in questions. On standard assumptions, the use of the pronoun *what* instead of *who*, even if ranging over human beings, is a diagnostic for an NP in predicative use. In clear-cut predicational questions like (6), *what* cannot be replaced by *who*, cf. Williams (1983: 426).

(6) What/*Who is she by profession?
What/*Who is she like?

(7) What did John become? A doctor.
What did John talk to? A doctor.

Higgins (1973) suggests that even if related to human individuals, *what* asks for a property, hence the answer *a doctor* in (7) is a non-referential noun phrase.

Partee (1987:119) mentions an additional diagnostic for the predicative use of noun phrases, namely occurrence in the complement position of *consider*. The verb *consider* takes $\langle e, t\rangle$-type complements that are APs or indefinite NPs.

(8) Mary considers John intelligent / a genius.

As can be seen in (9), definite noun phrases can also occur in the predicative position and hence serve as predicates.

[2] We neglect, throughout the paper, tense and aspect markings of the copula verb.

(9) I consider Chris the best dancer.

Since definites primarily occur in argument positions, the predicative interpretation of definites should be assumed to be derived. The details of such a derivation will be discussed later in this section.

Now, consider predicational sentences in Russian as in (10a/b). Russian does not make the *who/what* distinction with respect to referential vs. predicate noun phrase: the *wh*-pronoun for properties related to humans is always *kto* 'who', see (10b).

(10) a. Ivan vysokij / v sadu / lučšij tancor.
Ivan tall$_{\text{Sg.Masc.Nom}}$ / in garden/ best dancer$_{\text{Sg.Masc.Nom}}$
'Ivan is tall/in the garden / the best dancer'.

b. Kto Ivan po professii? Učitel'.
who$_{\text{Nom}}$ Ivan by profession? teacher$_{\text{Sg.Masc.Nom}}$
'Who is Ivan by profession? A teacher'.

Predicate noun phrases can occur in the complement position of *sčitat'* 'consider'.

(11) Maša sčitaet Ivana intelligentnym/ geniem / lučšim tancorom.
Mary considers Ivan intelligent$_{\text{Ins}}$ / genius$_{\text{Ins}}$ / best dancer$_{\text{Ins.}}$
'Mary considers John intelligent / a genius / the best dancer'.

Russian predicational sentences display a peculiarity which distinguishes them from the other types of copular sentence. In Russian, the case of the predicate XP2 can alternate, provided the copula is non-zero, that is, in the past or in the future form. While in copular sentences with a zero copula the predicate NP always occurs in the Nominative, see (10a/b), in those with an overt copula, the predicate NP can occur in the Nominative or in the Instrumental, cf. (12):

(12) Ivan byl xorošim učitelem / xorošij učitel'.
Ivan was [good teacher]$_{\text{Ins}}$ / [good teacher]$_{\text{Nom}}$
'Ivan was a good teacher'.

This case variation encodes a semantic difference, which can be briefly described in approximately the following way: the predicate occurs in the Instrumental if the situation described is temporally bounded, while the Nominative occurs otherwise. In this paper we will not go into the details of case variation, for various formal proposals see Geist (1999, 2006), Matushansky (2000), Pereltsvaig (2001), and classic literature on this topic by Nichols (1981) and Wierzbicka (1980).

In both English and Russian predicational sentences, XP1 has a referential meaning, whereas XP2 is clearly non-referential, i.e. an $\langle e, t\rangle$-type. Although we will analyze properties intentionally, we will (mis)represent them as type $\langle e, t\rangle$ for ease of exposition.

At this point I would like to briefly introduce some assumptions about the syntax and semantics of noun phrases, which will be important for the analysis I advocate.

I follow Partee (1987) in assuming that noun phrases can have interpretations of different types. In copular sentences we will consider at least two interpretations of noun phrases: an e- type and an $\langle e, t\rangle$-type interpretation.[3] The $\langle e, t\rangle$-type is the semantic type of predicate noun phrases. A predicate NP as in (13a) is semantically represented as a one-place predicate with an unsaturated referential argument x as in (13b).

(13) a. a teacher / učitel'

b. $[_{\text{NP}}$ a teacher / učitel'$]$: λx $[\text{TEACHER}(\text{x})]_{\langle e,t\rangle}$

An NP with such a denotation can occur in the predicate position in a copular sentence.

While the referential argument x of a predicate noun phrase remains unbound, the referential argument of a referentially-used noun phrase like *the president of the club* in *The president of the club came in* is bound. For the binding of the referential argument we will make use of the *iota*-operator as suggested in Partee (1987:117). I follow Zamparelli (2000) in assuming that this operator is the semantic instantiation of some functional head. Following Abney (1987) I will call this functional head D and the maximal projection DP.

(14) a. the president of the club

b. $[_{\text{DP}}\ [_{\text{D}}$ the $[_{\text{NP}}$ president of the club$]]]_e$: ιx $[\text{PRESIDENT-OF-CLUB}(\text{x})]$

In English, the functional head D can be identified by a strong determiner, cf. Langobardi (1994) and Zamparelli (2000) among others. According to Zamparelli, determiners in predicate noun phrases like *a* in *He is a teacher* are weak, that is they cannot bind the referential argument of the NP, but rather behave like adjectives, and are thus not located in D. In general, determiners can be assumed to be ambiguous since they can be interpreted in D or within the NP.

In a nutshell, I assume that only referential NPs are DPs. The functional head D contains a binding operator for the referential argument of the embedded NP. The referential binding causes the referential interpretation of the embedded NP. Proper names and pronouns, which are inherently referential, are entities of the DP-level.[4]

(15) a. Mary

b. $[_{\text{DP}}$mary$]_e$: **mary**

[3] In addition to these two types, Partee (1987) proposes the quantificational type $\langle\langle e, t\rangle, t\rangle$. I will disregard this third type and will analyze noun phrases in argument positions generally as e-type.

[4] In what follows, we will use "NP" to refer to nominals that do not contain the functional D-layer, and "DP" to refer to nominals that do contain such a layer. The term *noun phrase* or XP will be used if we want to let the status of a noun phrase remain unspecified.

Again, we assume not only a semantic but also a syntactic difference between referentially and predicatively used noun phrases. The semantic interpretation of a noun phrase is reflected in its syntactic structure.

Returning to Russian, Russian is a language without articles and hence there is no syntactic need to assume the DP layer. But because of the strong correspondence between syntactic and semantic categories assumed in this paper, the DP layer as a layer for referentially-used noun phrases can be assumed in Russian for semantic reasons (cf. Steube and Späth 1998, but see Zlatic 1997 for a different analysis for noun phrases in another articleless language, Serbian). Since Russian is a language lacking articles, the operator in D has no overt counterpart, i.e. D remains syntactically empty.

(16) $[_{DP}\ [_{D}\ \emptyset\ [_{NP}$ prezident kluba$]]]_{e}$: ιx [PRESIDENT-OF-CLUB(x)]

As we have seen above, definite descriptions can occur in the complement position of *consider/sčitat'* and hence can be interpreted as denoting a property. Additionally, the question test in English in (17a/b) shows that the definite description *the president of the club* can correspond both to the interrogative pronoun *who* and to the interrogative pronoun *what* in questions. In the answer to a question with *who*, the definite DP is interpreted as denoting an individual, while in the answer to a question with *what*, it is interpreted as denoting a property.

(17) a. *Who* is John? John is *the president of the club*.

b. *What* is John? John is *the president of the club*.

Depending on the interpretation of the DP *the president of the club*, the copular sentence has a predicational or an equative reading. To account for the predicative use of definite DPs in predicational sentences, we follow Partee (1987) in using the operator *ident* defined in (18).

(18) *ident*: $\lambda y\ \lambda x\ [y = x]$ or equivalently[5] $\lambda y\ \lambda x\ [x = y]$

This operator maps any element y onto the property of being identical to y. The application of *ident* to the definite description *prezident kluba/the president of the club* yields the representation in (19).

(19) $[_{predDP}$ prezident kluba / the president of the club]:
$\lambda x\ [\iota y$ [PRESIDENT-OF-CLUB(y)] $= x]$

The shifted DP denotes the property of being identical to the president of the club.

Theoretically, predicates can be created by the *ident*-operator from all *e*-type expressions, even from deictically used personal pronouns. However, such

[5] Since the identity relation is a symmetric relation, the variables x_i and y in the formula can stay in either order.

pronouns cannot occur in the predicative complement position of *consider* either in English or in Russian.

(20) a. *I consider Mary her / she.

b. *Ja sčitala Mašu ej.
I considered Mary_{Acc} $\text{she}_{\text{Ins.}}$

They are also excluded in the predicative position of predicational sentences. To force the predicational interpretation of a copular sentence, we use a predicational question with *what* to ask for a property. As can be seen in (21), the copular sentence with a deictically used personal pronoun in the predicative position is not an appropriate answer to such a question:

(21) *What* is Mary? #Mary is *her*/*she*.

Personal pronouns like *he* or *she* specify their referents immediately by pointing at them. Pronouns lack descriptive content. As Mikkelsen (2003:166ff.) points out, this characteristic of pronouns seems to prevent them from occurring in predicative positions. In contrast, definite descriptions, which can be used as denoting properties like *the president of the club*, introduce their referent via their descriptive content, which restricts their denotation.

Having presented our main assumptions concerning the internal structure of noun phrases, we return to the structure of predicational sentences. To illustrate how the derivation works, we consider a predicational sentence, (22a) with the underspecified syntactic structure in (22b) and the semantics of syntactic constituents in (22c).

(22) a. John is a teacher.

b. $[_{S}\ [_{DP}$ John] [is [$_{NP}$ a teacher]]]
↓ ↓ ↓

c. (**john**) $\lambda P\ \lambda x\ [P(x)]$ $\lambda y\ [\text{TEACHER}(y)]$

Combining the predicate NP *a teacher* with the copula, we get the expression in (23a), which denotes the property of being a teacher. (23b) is derived by replacing the variable x with the subject argument **john** via λ conversion.

(23) a. [is a teacher]: $[\lambda P\ \lambda x\ [P(x)]]\ (\lambda y\ [\text{TEACHER}(y)])$
$\equiv \lambda x\ [\text{TEACHER}(x)]$

b. $[_{S}$ John is a teacher]: $[\lambda x\ [\text{TEACHER}(x)]]$ (**john**) $\equiv$ [TEACHER(**john**)]

The result corresponds to the paraphrase: "John has the property of being a teacher".

We now turn to an examination of equative sentences.

3. EQUATIVE SENTENCES

3.1. Equatives in English

Equative sentences as in (24a) resemble predicational sentences as in (24b) in consisting of two noun phrases and the copula verb. But the similarity between predicational and equative sentences is merely superficial.[6]

(24) a. Cicero is Tully.

b. Cicero is an orator and philosopher.

The interpretation of the equative sentence differs radically from that of the predicational sentence. While the predicational sentence in (24b) ascribes the property to the referent of XP1, the equative sentence (24a) asserts that XP1 and XP2 have the same referent. There is much controversy in the syntactic and semantic literature about how to account for the fact that copular sentences with the same verb *be* can render both the predication and the identity relation. The main question is how the identity relation enters the semantic interpretation in equative sentences. At least two ways of dealing with this problem have been discussed in the literature.

One possibility is to trace back the distinction *predication* vs. *identity* to the copula verb itself, as Higgins (1973), Sharvit (1999), and Schlenker (1998, 2001) do, following the philosophical tradition since Frege and Russell. They posit two verbs *be*, a "*be* of identity" and a distinct "*be* of predication". While the *be* of predication, selects a predicative complement $\langle e, t\rangle$ and an argumental e, the *be* of identity takes two arguments of type e, and, hence, has a different argument structure, see (25a). After instantiating the variable x by *Tully* in (25b) and y by *Cicero* in (25c), we get the resulting semantic or logical form shown in (25d).

(25) a. be_{Ident}: $\lambda x\ \lambda y\ [y = x]$[7]

b. [is Tully]: $[\lambda x\ \lambda y\ [y = x]]\ (\mathbf{tully}) \equiv \lambda y\ [y = \mathbf{tully}]$

c. $[_s$ Cicero is Tully]: $[\lambda y\ [y = \text{tully}]]\ (\mathbf{cicero})$

b. $\equiv [\mathbf{cicero} = \mathbf{tully}]$

Another possibility is to locate the source of the ambiguity in the arguments. Williams (1983) and Partee (1986, 1998) offer such an alternative account by assuming a single *be* of predication plus some type-shifting operations on arguments. To account for equative sentences with two e-type noun phrases, Partee uses the operator *ident*, which shifts the type of the post-copular referential DP to the corresponding predicative reading, see (26a) in our notation. Applied to *Tully* in (26b), *ident* converts it into the property of being (identical to) *Tully*. Note that the

[6] As an anonymous reviewer points out, the second noun phrase in an equative sentence cannot be an indefinite, whereas it can be an indefinite in a predicational sentence.

[7] The predicate "=" "identical with" means simply "has the same denotation as".

ident operation locates the identity relation in the type-shifted meaning of XP2, not in the copula; this is what allows us to dispense with a separate *be* of identity.

(26) a. *ident*: $\lambda x\ \lambda y\ [y = x]$

b. *ident*(**tully**): $\lambda y\ [y = \mathbf{tully}]$

The predicational copula in (27a) can take the predicate (26b) as its complement. The derivation of the sentence S is given in (27b/c).

(27) a. be_{Pred}: $\lambda P\ \lambda x\ [P(x)]$

b. [is Tully]: $[\lambda P\ \lambda x\ [P(x)]]\ (\lambda y\ [y = \mathbf{tully}])$
$\equiv \lambda x\ [\mathbf{tully} = x]$

c. [$_s$ Cicero is Tully]: $[\lambda y\ [y = \mathbf{tully}]]\ (\mathbf{cicero})$
$\equiv \mathbf{cicero} = \mathbf{tully}$

The *ident* type-shift allows identity sentences to be semantically interpreted as predicational. This analysis has the desirable result of avoiding an ambiguity with respect to the copula verb. However, as Partee herself notes, one would like to have further evidence for such an analysis. In English equative sentences, there is no explicit counterpart of the *ident*-operator and hence no independent evidence showing that XP2 is a predicate and not an argument. In other words: we cannot confirm the assumption that the identity relation enters the semantic interpretation of the sentence *Cicero is Tully* via the nominal complement and not via the copula verb.

The analysis in (27) suggests that XP2 is used as a predicate. If this is correct, we expect the shifted noun phrase (*ident* (**tully**)) to be allowed in predicational small clauses governed by the verb *consider*. However, *Tully* is in fact barred from this position, whereas a true predicative NP like *a talented politician* is allowed (cf. Rothstein 2001:245 for a similar observation):

(28) a. *They considered Cicero Tully.

b. They considered Cicero a talented politician.

Obviously, the ungrammaticality of (28a) is due to the fact that XP2 – *Tully* – by its very nature as a proper name cannot serve as a predicate. However, given the analysis in (27), it should be convertible to a predicate but – as (28a) shows – it is not, at least in certain cases. Rothstein (2001:237) notes that the insertion of the copula in the small clause in sentences like (28a) improves their acceptability.

(29) They considered Cicero to be Tully.

If the *ident*-operator were to apply to the referential XP2 and convert it into a predicate, a predicational small clause would emerge. In predicational small clauses the copula makes no semantic contribution to the sentence and it can be omitted as was

shown above. Given that, it is not clear why the copula cannot be omitted in (29). From this we may conclude that the analysis suggested in (27) is in need of some sort of adjustment. In order to overcome the flaws of this analysis while maintaining its advantage of assuming only one copula, we suggest having the *ident*- operator apply not to XP2 but to the copula verb. The idea is this: we combine the formula for *ident* in (30a) and be_{Pred} in (30b) via Functional Composition[8], yielding (30c).

(30) a. *ident*: $\lambda u\ \lambda y\ [y = u]$

b. be_{Pred}: $\lambda P\ \lambda x\ [P(x)]$

c. be_{Ident}: $[\lambda P\ \lambda x\ [P(x)]]\ \text{o}\ [\lambda u\ \lambda y\ [y = u]]$
$\equiv \lambda u\ [\lambda P\ \lambda x\ [P(x)](\lambda y\ [y = u])]$
$\equiv \lambda u\ [\lambda x\ [\lambda y\ [y = u](x)]]$
$\equiv \lambda u\ \lambda x\ [x = u]$

The shifted copula is the copula of identity. The semantic derivation of the whole sentence proceeds in the same way as the derivation shown in (25). The advantage of the type-shift analysis suggested in (30) over the "two copula account" is that we still have only one predicational copula in the lexicon from which we can derive the "*be* of identity", which is a desirable result.

3.2. Equatives in Russian

In Russian, equative sentences differ from predicational sentences syntactically. They require the occurrence of a constant form of the demonstrative pronoun *ėto* 'this$_{\text{Sg.Neut}}$'. In predicational sentences, however, *ėto* is excluded, cf.

(31) Mark Twain – *(ėto) Samuel Clemens. (equative)
Mark T.$_{\text{Nom}}$ this Samuel C.$_{\text{Nom}}$
'Mark Twain is Samuel Clemens'.

(32) Mark Twain (–*ėto) pisatel' po professii. (predicational)
Mark T. this writer$_{\text{Nom}}$ by profession
'Mark Twain is a writer by profession'.

The demonstrative pronoun seems to be needed to express that the two noun phrases have the same referent. Another difference between predicationals and equatives in Russian is the following: in equative sentences, there is no case alternation, XP2 occurs in the Nominative only. In order to warrant that XP2 in the Instrumental is

[8]Functional Composition unifies two functions, yielding a complex function. Many different uses of Functional Composition in grammar have been explored in a great number of works within Categorical Grammar, such as Steedman (1985) and Dowty (1988), among others. Functional Composition has been used in word formation for the combination of affixes with stems, cf. among others, Bierwisch (1989), and in the analysis of verb cluster formations, cf. Di Sciullo and Williams (1987), Jacobson (1990), Bierwisch (1990), among others.

excluded from *ėto*-sentences (and not because of lacking an overt copula), we have to use an overt form of the *byt'* copula.

(33) a. Ciceron – ėto byl Tullij.
Cicero$_{Nom}$ this$_{Neut}$ was$_{Masc}$ Tully$_{Nom}$

b. *Ciceron – ėto byl Tulliem.
Cicero$_{Nom}$ this$_{Neut}$ was$_{Masc}$ Tully$_{Ins}$

There is strong evidence that in (33), XP2 is the underlying subject: the copula agrees with XP2 and not with *ėto*, which remains Singular Neuter Nominative.

Now, what does *ėto* contribute to the syntax and semantics of the equative sentence? Why is it obligatory?

Błaszczak and Geist (2000a/b) have shown that *ėto*-sentences are not simplex sentences like predicationals but, rather, they exhibit a cleft-like structure. They consist of two parts, see (34) below, the *ėto*- clause and the dislocated XP1. XP1 is separated from *ėto*-clause by an intonation break, indicated by the dash in (34).

(34) [$_S$ [$_{DP}$ XP1] – [$_{IP}$ *ėto* cop XP2]]

We adopt the view suggested by Junghanns (1997) that demontrative *ėto* has the status of a base-generated internal topic. The pronoun *ėto* connects XP1, which serves as an external topic, with the clause. The semantic relation holding between XP1 and *ėto* will be discussed below.

Syntactically, *ėto*-sentences are similar to left dislocations. However, in contrast to typical left dislocation constructions, the dislocated noun phrase in Russian equatives is resumed not by a personal pronoun but by an uninflected demonstrative. The demonstrative pronoun *ėto* 'this' in equative sentences has a constant morphological form independent of Gender and Number of the dislocated XP1, i.e. *ėto* remains uninflected. As can be shown in (35) the uninflected *ėto* cannot be used to pick out a human referent of the dislocated DP, only the inflected form of *ėto* (*ėti* 'this$_{Pl}$') can, but it sounds archaic. Personal pronouns are more common as resumptives in left dislocation constructions in Russian.

(35) Devočki, oni /*ėto /ėti obyčno lučše
girls they$_{Pers.3.Pl}$/this$_{Dem.Sg.Neut}$ /this$_{Dem.Pl}$ usually better
učatsja čem mal'čiki.
learn than boys.
'Girls are usually better in school than boys.'

To account for the fact that the inflected *ėto* can be used as an anaphor for referential DPs we assume that the inflected *ėto* is itself a DP and can be semantically represented as an *e*-type variable x_i restricted to range over human and non-human individuals, cf. (36a).[9] The anaphoric relation of *ėto* to some antecedent-DP is indicated via indexation.

[9]The pronoun *ėto* has many different interpretations. It can be related to concrete individuals but also to abstract individuals and propositions, cf. Junghanns (1997) among others. In this paper only the former use of *ėto* is considered.

(36) $[_{DP}\dot{e}to_i]$: x_i (type e)

However, in equative sentences, another type of *ėto*, the uninflected *ėto*, is used. Since the uninflected *ėto* cannot trigger the agreement of the copula and does not agree with the dislocated DP in Gender and Number, we assume that it is predicative. We can predicativize *ėto* by means of the operator *ident* as is illustrated in (37a). The result is a predicate expression of type $\langle e, t\rangle$, cf. (37b):

(37) a. *ident* $(x_i) = \lambda y\ [x_i = y]$

b. $[_{predDP}\dot{e}to_i]$: $\lambda y\ [x_i = y]$ (type $\langle e, t\rangle$)

As is shown in (37b) the predicate *ėto* is not just semantically but also syntactically more complex than the argument *ėto*. Syntactically, the argument *ėto* corresponds to a DP, whereas the predicate *ėto* to a predDP. The head of predDP contains the *ident*-operator. We now have all the ingredients to derive an equative sentence. We begin with the IP in (38a). The semantics of the constituents is given in (38b).

(38) a. Eto Tullij.

b. $[_{IP}[_{predDP}\ \dot{e}to_i]\quad [\varnothing cop\quad [_{DP}\text{Tullij}]]]$

$\downarrow \qquad \downarrow \qquad \downarrow$

$\lambda y\ [x_i = y]\quad \lambda y\ \lambda P\ [P(y)]\quad (\mathbf{tully})$

We follow Williams (1983) and Partee (1986) in assuming that the external argument and the complement of the copula can occur in either order: the argument can precede or follow the predicate. In *ėto*-sentences, the predicate *ėto* precedes the argument-DP. The predicational copula applies the pronominal predicate *ėto* to the individual **tully** denoted by *Tullij*. The compositional result for the *ėto*-clause is the representation in (39):

(39) $[_{IP}$ Ėto Tullij$]$: $[x_i = \mathbf{tully}]$ (type t)

The interpretation of (39) can be paraphrased as "some individual x is identical to Tully". In order to interpret the sentence, the variable x has to be identified via the co-indexing-relation with its antecedent, the DP Cicero, cf. (40).

(40) Ciceron – eto Tullij

$\downarrow \qquad \downarrow$

$\mathbf{cicero}_i \qquad x_i = \mathbf{tully}$

Due to co-indexing, the individual variable x takes the constant **cicero** as its value. If we instantiate the predicate variable x by **cicero** we get [**cicero** = **tully**] which is logically equivalent to the representation we derived in (27c) for the corresponding equative sentence in English.

The analysis proposed here works under the assumption that the *ident* operator applies to *ėto*. Then, naturally, the question can be asked, what prevents the application of *ident* to *Cicero*, that is, to XP1 in equative sentences?[10] To this question, a possible answer is as follows: From the semantic point of view, nothing prevents XP1 in sentences like (33) from becoming a predicate via *ident* since *ident* can freely apply to expressions of type *e*. But if XP1 becomes a predicate via *ident*, the sentence would have to be interpreted according to the following scheme: The property of being identical to the referent of XP1 holds for the referent of XP2. However, this is not the right interpretational scheme for equative sentences. Indeed, this is rather the way specificational sentences are interpreted. That is, the application of *ident* to XP1 would change the equative sentence into a specificational one; cf. section 4. What my analysis of copular sentences suggests is the following: the pragmatic content of the sentence poses restrictions on the application of type-shift operators, and the place where these type-shift operators are applied has consequences for the interpretation of the sentence.

To summarize: our analysis suggests that equative sentences in Russian are syntactically but also semantically more complex than hitherto assumed. Equation in Russian is mediated by inverted predication, employing the pronominal predicate *ėto*. Comparing equatives in Russian and English, we notice that the identity relation enters the semantic interpretation at different places: in English, it is the copula which is shifted via *ident*; in Russian equatives, the operator *ident* is applied to the demonstrative pronoun *ėto*.

The following question arises: what is the reason for such a different syntax–semantics mapping for equation in English and Russian. Why does Russian employ an additional pronominal element to convey equative semantics? Why does English differ from Russian in this respect?

The situation we face is this: in Russian, the copula verb *byt'* lacks an overt present form which – in a way to be explored in a separate study – somehow prevents type-shifting operations from applying. But a type-shift is needed to form a predication structure from two unrelated referential DPs, here: *Cicero* and *Tully*. This need for the type-shift seems to be the reason for the use of the additional pronominal item in Russian equatives. The pronoun forms a predicate that relates the two DPs. In English, an overt copula is available in all tenses, so there is no obstacle preventing application of the type-shifting operator.[11]

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[10] Thanks to an anonymous reviewer for pointing this out.

[11] An anonymous reviewer points out that in earlier stages of Russian, the archaic present form copula *est'* was used in equative sentences instead of *ėto*. He/she quotes a statement from Lenin:

(i) Kommunizm **est'** sovetskaja vlast' pljus ėlektrifikacija vsej strany.
communism is Soviet power plus electrification of-whole country
'Communism is Soviet power plus the electrification of the whole country.'

The reviewer states that, later, people misquoted this quotation as *Kommunizm* ***ėto*** *sovetstkaja vlast' pljus ėlektrifikacija vsej strany*. This datum illustrates the diachronic change from verbal copula in

The use of pronouns in equative sentences seems to be a widespread phenomenon among the languages of the world. A situation similar to that in Russian obtains in Polish where the demonstrative pronoun *to* is used. But languages which are genetically not related to Russian, such as Scottish Gaelic (Adger and Ramchand 2001), Standard Arabic and Modern Hebrew also employ a pronoun in equative sentences. Unlike Russian, these languages employ a personal and not a demonstrative pronoun, cf. an example from Modern Hebrew:

(41) dani *(hu) mar yosef. (Rothstein 2001:207)
dani $\text{Pron}_{\text{Masc.Sg}}$ mr yosef
Dani is Mr Yosef.

As argued by Rothstein (2001), the personal pronoun *hu* is necessary to trigger the type-shift of a DP to allow equative sentences to be formed. Interestingly, in Modern Hebrew, the copula stem lacks a present form, as in Russian. However, the pronominal elements in Russian and Hebrew differ in distribution and categorical status and hence cannot be treated in exactly the same way.

In the next section, we will examine specificational copular sentences, for short: specificationals.

4. SPECIFICATIONALS

In this section we will focus on sentences like (42):

(42) a. The president of the club is John.
b. The murderer was Raskolnikov.
c. My teacher is Mary.

Such copular sentences were called *specificational* by Higgins (1973) because, intuitively, XP2 specifies the "value" of the description given by XP1. In our example (42a), *the president of the club* (=XP1) restricts the variable for which XP2 specifies the referent of *John* as a value.

One of the peculiar aspects of specificational sentences that has been pointed out by many people is their fixed focus-background structure (cf. Heycock and Kroch 2001:148). Specificational sentences invariably come with a focused post-copular DP (=XP2) and an XP1 which provides the background, and hence cannot be stressed.[12]

present tense, which gradually got lost, to a pronominal copula with the same function of maintaining the identity relation between two referents.

[12]Sentences like *The TEACHER was JOHN* with two focused phrases or *The TEACHER was John* with the main focus on XP1 are not interpreted specificationally. They occur in contexts different to those of specificationals and also differ structurally (see Heycock and Kroch 2002, Mikkelsen 2002a, 2003 for details).

In specificational sentences like those in (42), XP2 is clearly referential. However, the denotational status of XP1 is controversial. In some accounts, XP1 is analyzed as a predicative NP and the sentence is considered an inverse predicational sentence (e.g. Heggie 1988). If XP1 is analyzed as referential, then the sentence can be classed as equative, as assumed by Heycock and Kroch (1999). Partee (1998) observes that cross-linguistically, both possibilities are available.

In Italian, as noted by Moro (1997:28), specificationals display a different agreement pattern from English. This can be seen when XP1 and XP2 do not match in Number. In English, the copula invariably agrees with XP1 in both predicational and specificational sentences, see (43). In Italian, however, in predicationals the copula agrees with XP1, while in specificationals, it agrees with XP2, cf. (44). Syntactically, XP2 can thus be assumed to be the subject, and XP1 to be the predicate.

(43) English

a. The pictures of the wall *was / were the cause of the riot.

b. The cause of the riot was / *were the pictures of the wall

(44) Italian

a. Le foto del muro*fu/ furono la causa della rivolta
the pictures of the wall was / were the cause of the riot

b. La causa della rivolta *fu / furono le foto del muro
the cause of the riot was / were the pictures of the wall

The inverted agreement pattern can be regarded as strong evidence for a predicate fronting analysis in Italian. In English, instead, XP1 is the syntactic subject of specificational sentences and hence is not a predicate. Thus, Heycock and Kroch (1998, 1999) argue for subsuming English specificationals under equatives.

If the analyses of specificationals as (inverted) predicational in Italian and as equative in English are correct, the problem that arises is that the pragmatics of "specification" is expressed in different languages by different semantic structures: in one language "specification" gives rise to the semantics of (inverse) predication, and in another language to the semantics of equation. This is an unexpected and undesirable consequence, which we want to overcome, if possible.

In what follows, we will derive the invariable semantics of specificational sentences based on Russian examples and then compare the syntax–semantics mapping in Russian and English. We will show how language specific differences in the syntax–semantics mapping can be traced back to independently attested differences between the two languages.

4.1. Specificational Sentences in Russian

Consider the following specificational sentences:

(45) a. Ubijca staruxi – (*ėto) Raskol'nikov.
murderer$_{Nom}$ of-old-lady this Raskolnikov
'The murderer of the old lady is Raskolnikov'.

b. Pričinoj avarii *byla /byli neispravnye tormoza.
reason$_{Sg.Fem.Ins}$ of-accident was$_{Sg.Fem}$/were$_{Pl}$ broken brakes$_{Pl}$
'The reason for the accident was broken brakes'.

c. Edinstvennyj, kto stal na našu storonu, *byl /byla Varvara
only-person$_{Masc.Nom}$ who came to our side was$_{Fem}$/was$_{Masc}$ Barbara$_{Fem}$
'The only person who defended us was Barbara'.
(Padučeva and Uspenskij 1997:178)

To characterize these sentences, we will compare them with equative and predicational sentences, which we introduced in the previous sections.

1) Comparing the specificational sentence in (45a) with equatives, we observe that the predicate proform *ėto* is excluded in the specificational sentence. This fact suggests very strongly that, at least syntactically, Russian specificationals do not belong to the equative type, and therefore XP1 and XP2 cannot both be referential.
2) As (45) shows, XP1 can occur in the Nominative or in the Instrumental. Since the case alternation Nominative vs. Instrumental is only possible with predicative noun phrases, the case alternation on XP1 can be seen as a crucial argument in favor of assigning it predicate status (cf. Padučeva and Uspenskij 1997, Partee 1998). In contrast to predicationals, the predicate noun phrase is in the initial position in specificationals.
3) Concerning the agreement marking of the copula, Russian, as shown in (45b/c), patterns with Italian; that is, it displays an inverted agreement pattern, hence XP2 serves as the syntactic subject.
4) Personal pronouns cannot occur in the initial position of specificational sentences or, more precisely, if such a pronoun is placed in the initial position of a copular sentence with a proper name occurring in the post-copular position, the sentence is interpreted as an equative and, in Russian, the pronoun *ėto* has to be inserted.

(46) My – *(ėto) Marija i Ivan.
we this Maria and Ivan
'We are Mary and Ivan'.

The inability of personal pronouns to occur as XP1 in specificational sentences can be considered to be a direct consequence of their inability to occur in the predicative position (cf. section 2).

From these observations we can conclude that specificationals are related to predicationals and can be syntactically analyzed as predicate inversions. However, a frequent objection to the analysis of specificationals as inverted predicationals in other languages is that not all predicate expressions occurring in the predicative position in predicational sentences can also occur in the initial position of specificational sentences (Heycock and Kroch 1999:379). Although predicate expressions like APs and NPs can occur in predicational sentences in Russian, they are excluded from the initial position of specificationals. Only descriptions like *prezident kluba* 'the president of the club' and *ubijca* 'the murderer' in (43c/d) are felicitous in both sentence types:[13]

(47)

	Predicational	*Specificational*
a.	Ivan – dobryj. Ivan good-natured 'Good-natured is Ivan'.	#Dobryj Ivan. good-natured Ivan 'Ivan is good-natured'.
b.	Ivan byl učitelem po professii. Ivan was teacher by profession. 'Ivan was a teacher by profession'.	#Učitel' po professii – Ivan. teacher by profession Ivan 'A teacher by profession is Ivan'.
c.	Ivan byl prezidentom kluba. Ivan was $\text{president}_{\text{Ins}}$ club_{Gen} 'Ivan was the president of the club'.	Prezidentom kluba byl Ivan. $\text{President}_{\text{Ins}}$ club_{Gen} was Ivan 'The president of the club was I'.
d.	Raskol'nikov byl ubijcej. Raskolnikov was the-murderer 'Raskolnikov is the murderer'.	Ubijcej byl Raskol'nikov. the-murderer was Raskolnikov 'The murderer is Raskolnikov'.

I will call predicates that can only occur in predicational sentences 'core predicates', since predicate interpretation is the most natural interpretation for such expressions. If specificational sentences are inverted predicational sentences, it is not clear why core predicates such as APs and NPs are excluded in specificationals.

I think that the prohibition against the occurrence of core predicates in the initial position in specificational sentences is due to information structure, more precisely, due to one dimension of it – the so-called topic-comment-structure.[14] The topic is

[13] An anonymous reviewer points out that topicalized APs are acceptable in the initial position of copular sentences in Russian, as in (i), and in its English counterpart, as in (ii).

(i) [$_{\text{AP}}$ Krasivoj] Mèri ne byla.
beautiful$_{\text{Ins}}$ Mary NEG was

(ii) [$_{\text{AP}}$ Beautiful], Mary was not.

In these sentences, the inverted predicate contains "new information" and receives a contrastive focus accent. However, as opposed to the sentences above, in specificational sentences, the pre-copular phrase contains "old information", that is, information that belongs to the background and is not contrastively focused. Thus, because of their special information structure, the sentences in (i) and (ii) do not belong to the specificational class. Furthermore, sentences with predicate inversion as in (i) and (ii) also differ structurally from specificational sentences, see Mikkelsen (2002a, 2003).

[14] I follow Molnár (1991, 1993) in assuming the topic-comment structure as one of the three levels of information structure besides the focus-background structure and theme–rheme structure.

defined as the entity which the predication is pragmatically about (Reinhart 1982, Molnár 1991:41–43, 1993, among others). At least in Russian and English, the topic is normally associated with the sentence initial position. The part of the sentence without the topic is the comment.

Now, consider the topic-comment-structure in predicational sentences in comparison to specificational sentences. The predicational sentence (48a) is about Raskol'nikov, hence this expression is the topic. The specificational sentence (48b) is about the murderer or more correctly, about somebody who is the murderer, hence *ubica* 'the murderer' serves as topic.

(48) a. Raskol'nikov – ubijca.
'Raskolnikov is the murderer'

b. Ubijca – Raskol'nikov.
'The murderer is Raskolnikov'.

To verify our intuitive hypothesis concerning the topics in the above sentences, we use a topic-marking construction introduced by *čto kasaetsja X* 'as for X' (cf. Reinhart 1982:10, among others):

(49) a. Čto kasaetsja Raskol'nikova, ja dumaju, čto on ubijca.
what concerns Raskolnikov$_{Gen}$ I think that he murderer
'As for Raskolnikov, I think that he is the murderer'.

b. Čto kasaetsja ubijcy, ja dumaju, čto ėto Raskol'nikov.
what concerns murderer$_{Gen}$ I think that it Raskolnikov
'As for the murderer, I think that it is Raskolnikov'.

Native speakers agree that (49a) is a paraphrase of (48a) and not of (48b), whereas (49b) is a paraphrase of (48b) and not of (48a). According to this test, in the predicational sentence (48a) the topic is *Raskolnikov*, in the specificational sentence (48b) the topic is *ubijca*.

Interestingly, core predicates like *učitel' po professii* 'teacher by profession' cannot occur at all in this topic-marking construction, as is shown in (50).

(50) #Čto kasaetsja učitelja po professii, ja dumaju čto ėto Ivan.
what concerns teacher$_{Gen}$ by profession, I think that it Ivan
'As for a teacher by profession, I think that it is Ivan'.

This suggests that the choice of a noun phrase as the topic expression of a given sentence is sensitive to the semantic properties of this noun phrase. The crucial factor for the infelicity of (50) seems to be that the NP following *čto kasaetsja* must be interpreted as being referential or as presupposing a referent, but fails to yield this interpretation. The observation that topics are sensitive to existential presupposition is not new; it goes back to Strawson (1964), who states that topic noun phrase expressions carry existential presuppositions. Reinhart (1982:11)

makes similar assumptions. She proposes that a noun phrase can be interpreted as topic only if it is referential. Existential presupposition or referentiality can be considered a topichood condition for noun phrases. Now we have to check if the topics in the predicational and specificational sentences in (48) satisfy this topichood condition.

In the predicational sentence (48a) the topic *Raskolnikov* is referential and hence satisfies the topichood requirement proposed by Reinhart. In the specificational sentence (48b), we analyze *the murderer* as an expression of type *e* shifted to a predicate via the *ident*-operator. In the predicational sentence (48a) the topic *Raskolnikov* is referential and hence satisfies the topichood requirement proposed by Reinhart. In the specificational sentence (48b), we analyze *the murderer* as an expression of type *e* shifted to a predicate via the *ident*-operator. The logical form of such a predicate DP can be represented analogously to the predicate DP *prezident kluba* / *the president of the club*, which was analyzed in section 2, as shown here in (51):

(51) $[_{\text{predDP}}\ \text{ubijca}]: \lambda x\ [\iota y\ [\textsc{murderer}(y)] = x]$

This is the property-type denotation for a noun phrase based on its *e*-type denotation. The predDP presupposes the existence of an individual fitting the descriptive content of the DP. Such a predDP fulfils the topic requirement assumed by Strawson.

Core predicate expressions like *učitel' po professii* 'a teacher by profession', and *dobryj* 'good-natured', are predicates without (existentially presupposed) referents, they do not fulfil the topic requirement and as a consequence they cannot occur in specificational sentences. However, there is no topic requirement on the predicative position of a predicational copular sentences, that is why core predicate expressions are felicitous in this position.

What is important in my analysis is that it is not the copula itself that restricts the realization of the predicative complement in specificational sentences. The copula takes a predicate of type $\langle e, t\rangle$ as complement in both predicational and specificational sentences, and does not impose any restrictions on the syntactic or semantic nature of this complement. The restriction on the realization of the predicate complement in specificational sentences comes from the pragmatics. In a nutshell, assuming that XP1 in Russian specificationals is a topic, we can explain why core predicate expressions like APs and NPs as in (47a/b) are barred from initial position in such sentences (cf. also footnote 14).

We are now in a position to analyze the specificational sentence (52a). Since in this paper we concentrate on the semantic structure of copular sentences, for the sake of simplicity we use underspecified syntactic structures, leaving out indicators of movement and/or traces. According to our discussion of examples (45), in specificational sentences in Russian, XP2 is the syntactic subject and XP1 is a predicate of a special sort. The semantics of syntactic constituents is given in (52c).

(52) a. Ubijca – Raskol'nikov

b. $[_{S}\ [_{predDP}\ \text{ubijca}]_{\langle e,t\rangle}$ $[\varnothing cop$ $[_{DP}\ \text{Raskol'nikov}]_{e}]]$

$\downarrow$ $\downarrow$ $\downarrow$

c. $\lambda x[\iota y\ [\text{MURDERER}(y)] = x]$ $\lambda x\ \lambda P\ [P(x)]$ $(\mathbf{rask})$

The copula simply "instructs" us to predicate its $\langle e,t\rangle$ argument of its e-type argument. In this case, the combination of the subject DP with the copula yields (53a). Having instantiated the predicate variable P we get (53b).

(53) a. [$\varnothing cop$ Raskol'nikov]: $\lambda P\ [P(\mathbf{rask})]$
"the property that holds of Raskolnikov"

b. $[_{S}$ ubijca $\varnothing cop$ Raskol'nikov]: $\iota y\ [\text{MURDERER}(y)] = \mathbf{rask}$

The result shown in (53b) can be paraphrased as "the property of being the murderer holds of Raskolnikov". This result suggests that specificationals in a way combine features of both equative and predicational sentences.

4.2. Some Speculations on Specificational Sentences in English

Heycock and Kroch (1999) argue that English specificationals have to be treated as equatives. Under such an analysis, the mapping between syntax and semantics could be schematically represented as in (54): both NPs are referential, and the copula maintains the identity relation.

(54) a. The murderer was Raskolnikov.

$\downarrow$ $\downarrow$ $\downarrow$

b. $\iota x\ [\text{MURDERER}(x)]$ $=$ $\mathbf{rask}$

Heycock and Kroch (1999) show evidence in favor of XP1 being referential. Both noun phrases in specificational sentences may be modified by non-restrictive relative clauses as shown in (55).

(55) The duty nurse, who is very efficient, is Rina, who I am very fond of.

(Heycock and Kroch 1999:374)

Such data point to the referential status of XP1 in specificational sentences and provide an argument in favor of the analysis of specificational sentences as equative. However, the analysis of specificational sentences as equatives faces a problem. As Mikkelsen (2002b, 2003) notes, the interpretation of XP1 in specificationals differs from the interpretation of XP1 in equatives. The difference becomes obvious in a pronominalization test using tags suggested by Mikkelsen. It is well-known that the pronoun in the tag is always anaphorically related to the subject of the clause. In the equative sentence (56a), the personal pronoun *he* can refer back to the subject

Samuel Clemens. But in the tag of the specificational sentence in (56b), the Singular Neuter *it* has to be used instead.

(56) a. Samuel Clemens is Mark Twain, isn't he/*it?

b. The murderer of the old lady is Raskolnikov, isn't *he/it?

If specificationals were equatives, the failure of the personal pronoun in (56b) to pick out the referent of XP1 would be unexpected.

Note that *it* in subject position of the tag governs agreement of the verb, hence *it* cannot be a predicate of type $\langle e,t \rangle$. Since the semantic type of an anaphor must match that of its antecedent, the antecedent of *it*, here *the murderer*, cannot be an $\langle e,t \rangle$-predicate either. In addition, the agreement facts in specificationals in (43) where the copula invariably agrees with the XP1 also suggest that XP1 is the syntactic subject and hence has argumental status.

The referential status of *it* and its antecedent *the murderer* in (56b) can be accounted for straightforwardly by the approach suggested by Chierchia (1984). *It* can be anaphorically related to entities that are analyzed as "nominalized properties" in the sense of Chierchia. Compare the following sentences:

(57) a. Blue is a nice colour, isn't it?

b. To be home is nice, isn't it?

The antecedent of *it* in these examples is a nominalized AP and an infinitival VP respectively. They serve as subjects of predication and hence are arguments, just as their anaphor *it* in the tag is. Chierchia (1984) proposes to analyze property expressions with argumental status as entities of a special type; that is, as "nominalized properties". Although Chierchia suggests the symbol π for representing the semantic type of primitive properties, we will (mis)represent "nominalized properties" here as entities of type e for simplicity.

Chierchia assumes two operators: *nom* for nominalization and *pred* for predicativization, respectively, see (58). The operator *nom* maps $\langle e,t \rangle$-type properties onto their entity-correlates of type e. This is the operation which, in Chierchia's analysis, is involved in nominalization, e.g. for conversion of the property denoted by the adjective *blue* in *The coat is blue* into the "nominalized property" as denoted by the common noun *blue* in (57a). The operator *pred* applies to an entity which is the entity-correlate of a property, such as the infinitive in (57b), thus making it into a corresponding property as in *John is home* as suggested by Chierchia. The operators *nom* and *pred* are inverse to each other.

(58) *nom* (P): $^{\cap}$P (type e)
pred (x): $^{\cup}$x (type $\langle e, t \rangle$)

We will now make use of *pred* for the analysis of XP1 in English specificational sentences. We assume that the semantic representation of *it* in (57) is a

designated variable x_i of type *e* which is restricted to range over entity-correlates of properties.

To derive a specificational sentence such as (56b) *The murderer is Raskolnikov* compositionally, we will start with the sentence *It is Raskolnikov*, where the subject XP1 is pronominalized. First, we have to specify the semantics of the copula. The copula in such a sentence has to combine two arguments of type *e*: a nominalized property and an individual. To adjust the predicational copula, which always takes an $\langle e, t\rangle$ predicate and an *e* argument, we have to change its argument structure. The copula of specification must have the argument structure as represented in (59).

(59) be_{Spec}: $\lambda z\ \lambda y\ [^{\cup}z\ (y)]$
(where z ranges over entity-correlates of properties, and y over individuals)

The specificational copula can be derived from the predicational one by additional operations. The predicational copula can be combined with a type-shifter, as in (60a), that transforms the property *P* in the argument structure of the copula into a nominalized property. The Functional Composition of the two functions in (60b) yields the representation for the copula.

(60) a. type-shifter: $\lambda z\ [^{\cup}z]$

b. $\lambda P\ \lambda y\ [P(y)]\ \text{o}\ \lambda z\ [^{\cup}z] \equiv \lambda z\ \lambda y\ [^{\cup}z(y)]$

The function of the specificational *be* is to apply the nominalized property z to an individual y. Assuming that the complement and the subject of the copula can occur in either order (cf. Partee 1986, Williams 1983), we change the order of the variables. – I have rephrased the two paragraphs following formula (60).

We now have all the ingredients to derive a specificational sentence in a compositional way:

(61) a. It is Raskolnikov.

b. $[_{S}[_{XP}\ \text{it}]$ $\quad$ $[\text{is}$ $\quad$ $[_{DP}\ \text{Raskolnikov}]]\ ]$

$\downarrow \qquad \downarrow \qquad \downarrow$

$x_i \quad \lambda y\ \lambda z\ [^{\cup}z(y)] \quad (\mathbf{rask})$

The semantics of the whole sentence is derived below.

(62) a. [is Raskolnikov]: $[\lambda y\ \lambda z\ [^{\cup}z(y)]]\ (\mathbf{rask}) \equiv \lambda z\ [^{\cup}z(\mathbf{rask})]$

b. $[_{S}$ it is Raskolnikov]: $[\lambda z\ [^{\cup}z(\mathbf{rask})]]\ (x_i) \equiv {}^{\cup}x_i(\mathbf{rask})$

The result achieved in (62b) can be paraphrased thus: "the contextually specified property x holds of Raskolnikov".

Let us return to the specificational sentence *The murderer is Raskolnikov*. As the pronoun *it* and the XP1 *the murderer* can be anaphorically related, as shown in (56b) above, we can assume that *the murderer* has the same referential status as

the pronoun; that is, it denotes a nominalized property. But for the XP *the murderer* such an interpretation is not basic but is derived. For the semantic derivation, we would suggest the following device:

a) we predicativize the individual *the murderer* via *ident*-type-shift, thus obtaining the property "being identical to the murderer", cf. (63a);
b) this property, in turn, can be nominalized by the nominalization operator $^{\cap}$; the result is the entity-correlate of the property "being the murderer" in (63b);
c) now we can compose the shifted meaning of XP1 with the meaning of the constituent [copula + XP2] from (62a) repeated in (63c); the result is given in the last line of (63d).

(63) a. *ident* $(\iota x\ [\text{MURDERER}(x)]) \equiv \lambda y\ [\iota x\ [\text{MURDERER}(x)] = y]$

b. *nom* $(\lambda y\ [\iota x\ [\text{MURDERER}(x)] = y])$
$\equiv {}^{\cap}\lambda y\ [\iota x\ [\text{MURDERER}(x)] = y]$

c. [be Raskolnikov]: $\lambda z\ [{}^{\cup}z(\mathbf{rask})]$

d. $[\lambda z\ [{}^{\cup}z(\mathbf{rask})]]\ ({}^{\cap}\lambda y\ [\iota x\ [\text{MURDERER}(x)] = y])$
$\equiv [[{}^{\cup\cap}\lambda y\ [\iota x\ [\text{MURDERER}(x)] = y]]\ (\mathbf{rask})$
$\equiv [\lambda y\ [\iota x\ [\text{MURDERER}(x)] = y]]\ (\mathbf{rask})$
$\equiv \iota x\ [\text{MURDERER}(x)] = \mathbf{rask}$

Interestingly, the result we receive in (63d) amounts to the same as the one we obtained for Russian in (53b) above. What distinguishes the two languages is the semantics of the constituents. While in Russian, the XP1 position is filled by a predicate, which denotes a property, XP1 is of an argumental type in English; that is, it denotes a nominalized property.

The differences between Russian and English regarding the syntax–semantics mapping in specificational sentences are attributable to language specific grammatical restrictions. In English, the property of being the topic and belonging to the background coincides with the property of (preferably) being the subject. English does not allow a predicate in subject position. As Partee (1998) notes, in Russian, because of the relatively free word order it has at its disposal, the topic and syntactic subject need not be the same element. This has consequences for the syntax–semantics mapping in specificational sentences.

5. CONCLUDING REMARKS

In this paper we have explored the mapping between the syntax and semantics of copular sentences in Russian in comparison to English. We argued for a single underlying semantics of the copula in predicational, equative und specificational sentences in both languages. The difference in interpretation between types of copular sentence can be explained by the *ident*-type-shift, which enters the semantic composition at different places in the sentence. In equative sentences, the *ident*-operator applies to the element that combines two DPs. In English, this

element is the predicational copula. Since in Russian, the copula in the present tense is zero, the *ident*-operator applies to the demonstrative pronoun *ėto*. As for specificational sentences in English and Russian, the *ident*-operator applies to the first referential DP, turning it into a predicate. Since in English, unlike in Russian, XP1 has argumental status, some additional type-shift operators have to be assumed in the semantic composition of English specificational sentences. The additional operations are the following: the change of the argument structure of the predicational copula which, in specificational sentences, takes a nominalized property and applies it to an argument, and the nominalization of the XP1. The paper derives the invariant semantics for predicational, equative, and specificational sentences and explores how this invariant semantics is mapped to the syntactic structure in the two languages. The differences in mapping can be traced back to independent differences in the morpho-syntax of the two languages.

The paper contributes to the general understanding of conditions and domains for application of type-shift operators. Originally, the type-shift operators such as *ident* were assumed to account for different interpretations of noun phrases. In this paper, we extended the domain of application for the type-shifter *ident* to verbs. In English, we assume that in equative and specificational sentences, the predicational copula has to be shifted. Interestingly, the contrast between the type-shifted copulas and the predicational (i.e. basic) copula shows up in small clauses. The verb *consider* can take predicational, equative, and specificational small clauses as its complement. While in the predicational small clause of *consider* in (64a), the copula of predication can be omitted, the shifted copula of identity and the shifted copula of specification in (64b/c) cannot be.

(64) a. They considered Cicero (to be) a talented politician. *predicational be*

b. They considered Cicero *(to be) Tully. *equational be*

c. They considered the best politician *(to be) Cicero. *specificational be*

These data, which are already known in the literature, suggest that type-shift operators can only apply to overt elements in the sentence. This can explain why in Russian, a language with a zero present form copula, an additional overt element, the pronoun *ėto*, is employed in equative sentences. The *ident*-type-shift can apply to this pronoun to convey equative semantics. However, we have for the moment no explanation for why it is a demonstrative pronoun that appears in Russian instead of a verbal copula.

In further research, other types of copular sentence will have to be explored and used as a test for the type-driven analysis suggested in this paper. The conditions and restrictions for the application of type-shifters also merit further explorations.

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CLAUDIA MAIENBORN

ON DAVIDSONIAN AND KIMIAN STATES

Abstract. Davidsonian event semantics has an impressive track record as a framework for natural language analysis. In recent years it has become popular to assume that not only action verbs but predicates of all sorts have an additional event argument. Yet, this hypothesis is not without controversy in particular with respect to the particularly challenging case of statives. Maienborn (2003, 2005b) argues that there is a need for distinguishing two kinds of states. While verbs such as *sit, stand, sleep* refer to eventualities in the sense of Davidson (= Davidsonian states), the states denoted by such stative verbs like *know, weigh*, and *own*, as well as any combination of copula plus predicate are of a different ontological type (= Kimian states). Against this background, the present study assesses the two main arguments that have been raised in favour of a Davidsonian approach for statives. These are the combination with certain manner adverbials and Parsons' (2000) so-called time travel argument. It will be argued that the manner data which, at first sight, seem to provide evidence for a Davidsonian approach to statives are better analysed as non-compositional reinterpretations triggered by the lack of a regular Davidsonian event argument. As for Parsons's time travel argument, it turns out that the original version does not supply the kind of support for the Davidsonian approach that Parsons supposed. However, properly adapted, the time travel argument may provide additional evidence for the need of reifying the denotatum of statives, as suggested by the assumption of Kimian states.

1. INTRODUCTION*

Hidden event arguments, as introduced by Davidson (1967), have proven to be of great benefit in explaining numerous combinatorial and inferential properties of natural language expressions. Probably the greatest benefit of the Davidsonian approach is its straightforward account of adverbial modification. If verbs introduce an event argument, as Davidson suggested, then adverbial modifiers can be analysed as simple first-order predicates that add information about this event.

The question that naturally arises, though, is whether Davidson's proposal, which was originally confined to action verbs, can be extended to other types of verbal predicates. While this seems to be uncontroversial for process verbs, the critical case is that of statives. Following Higginbotham (1985, 2000) and particularly Parsons (1990, 2000), scholars working in what has been called the *neo-Davidsonian paradigm* assume that arbitrary verbal predicates – which, crucially, include

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statives – have an underlying Davidsonian event argument.[1] This is illustrated by the following quotations from Higginbotham (1985) and Chierchia (1995).

> The position E corresponds to the 'hidden' argument place for events, originally suggested by Donald Davidson (1967). There seem to be strong arguments in favour of, and little to be said against, extending Davidson's idea to verbs other than verbs of change or action. Under this extension, statives will also have E-positions. Higginbotham (1985: 10)

> A basic assumption I am making is that every VP, whatever its internal structure and aspectual characteristics, has an extra argument position for eventualities, in the spirit of Davidson's proposal. [...] In a way, having this extra argument slot is part of what makes something a VP, whatever its inner structure. Chierchia (1995: 204)

Despite its popularity, the claim that statives have a hidden event argument is seldom defended explicitly. Parsons (1990, 2000) is among the few advocates of the neo-Davidsonian approach who have subjected this assumption to some scrutiny.[2] While Parsons himself does not consider previous evidence for an event-based analysis of statives to be particularly compelling, he does consider his so-called *time travel argument* (as developed in Parsons 2000) to make a strong case for such an analysis.[3]

The aim of the present study is to assess Parsons' arguments for this analysis of stative expressions against the background of the theory developed in Maienborn (2003, 2005b), which rejects the Davidsonian approach for copula sentences. In that work, I argue for a distinction between two kinds of states: While *Davidsonian states* denoted by verbs such as *sit, stand, sleep* are eventualities in the sense of Davidson, the states denoted by such stative verbs like *know, weigh*, and *own*, as well as any combination of copula plus predicate do not qualify as Davidsonian eventualities but are instead what I call *Kimian states*. As I will show, Parsons' time travel argument turns out to support this distinction.

The paper is organised as follows. Section 2 provides a summary of my account of Davidsonian and Kimian states as two ontologically distinct categories whose members natural language expressions refer to. Section 3 discusses certain cases of manner modification which, at first sight, seem to provide evidence for a Davidsonian approach to statives but which are, in fact, better analysed as non-compositional reinterpretations triggered by the *lack* of a regular Davidsonian event argument. Section 4 is devoted to Parsons' time travel argument. While the original version does not supply the kind of support for the Davidsonian approach

[1] Throughout this paper, I will use the term "event" as a synonym for Bach's (1986) notion "eventuality", i.e., as a cover term for events proper (accomplishments and achievements in Vendler's 1967 terms), processes (Vendler's activities) and certain (viz. Davidsonian; see below) states.

[2] Other relevant studies include Dölling (1999, 2003) and, recently, Mittwoch (2005). See also Montmarquet (1980: 251), who notes that "all of Davidson's arguments for events serve equally well to provide proper ontological credentials for states", and that "states are like Davidsonian events in being unrepeatable particulars; they differ only in not being changes."

[3] Parsons (2000: 88): "Based on the considerations reviewed above, it would appear that the underlying state analysis is not compelling for any kind of the constructions reviewed here and is not even plausible for some (e.g. for nouns). There are a few outstanding problems that the underlying state analysis might solve, [...] but for the most part the weight of evidence seems to go the other way. In the next section we look at some new evidence."

that Parsons supposed, I will propose a time travel variant showing that statives indeed call for a reification of their denotatum, as suggested by the assumption of Kimian states. Finally, section 5 explores some of the consequences of the Kimian approach advocated here and of its Davidsonian rivals.

2. TWO KINDS OF STATES

The theory developed in Maienborn (2003, 2005b) is based on the observation that there is a fundamental split within the class of non-dynamic expressions. State verbs such as *sit, stand, lie, wait, gleam*, and *sleep* meet all of the criteria for Davidsonian eventualities.[4] In contrast, stative verbs like *know, weigh, own*, and *resemble* do not meet any of them. In particular, copular constructions, as we will see, behave uniformly like stative verbs regardless of whether the predicate denotes a temporary property (so-called "stage-level predicates") or a more or less permanent property (so-called "individual-level predicates").[5] The following subsection reviews the crucial eventuality tests and illustrates the distinct behaviour of the two classes of state expressions with respect to these tests.

2.1. The Davidsonian Approach

On the received view, Davidsonian eventualities are spatiotemporal entities, whose properties are summarised in the more or less standard working hypothesis given in (1).

(1) *Davidsonian eventualities*:
Eventualities are particular spatiotemporal entities with functionally integrated participants.

Several ontological properties follow from this definition:

(2) *Ontological properties of eventualities*:

a. Eventualities are perceptible.

b. Eventualities can be located in space and time.

c. Eventualities can vary in the way that they are realised.

[4] Verbs like *sleep* and *wait* are sometimes analysed as expressing dynamic eventualities, i.e., processes. Following, e.g., Dowty (1979) and Krifka (1989), I assume that the crucial difference between (conceptualisations of) processes and states is related to their subinterval properties: while processes have a lower bound on the size of subintervals that are of the same type (e.g. *breath, run, glitter*) states have no such lower bound – i.e., they also hold at atomic times. By this criterion *sleep, wait, gleam*, etc. (likewise *sit, stand, hang*, etc.) clearly belong to the category of state expressions. See Maienborn (2003, 2005b) for a collection of linguistic diagnostics that help distinguish state from process expressions.

[5] The stage-level/individual-level distinction goes back to Carlson (1977) (building on earlier work by Milsark 1974, 1977) and has been given an event semantic treatment by Kratzer (1995). On this treatment, stage-level predicates are assumed to have an additional event argument, while individual-level predicates lack such an argument. See Maienborn (2003) for an overview of further developments based on Kratzer's approach.

These properties can, in turn, be used to derive the linguistic eventuality tests listed below.

(3) *Linguistic diagnostics for eventualities*:

a. Eventuality expressions can serve as infinitival complements of perception verbs.

b. Eventuality expressions combine with locative and temporal modifiers.

c. Eventuality expressions combine with manner adverbials, instrumentals, comitatives, etc.

These assumptions about the Davidsonian notion of events are fairly standard; see Maienborn (2003, 2005b) for a more detailed discussion. The diagnostics in (3) provide a way to detect hidden event arguments. In what follows, I use German sentences for illustration; see Maienborn (2005a) for a discussion of the Spanish copula forms *ser* and *estar*.

The behaviour of state verbs and statives with respect to perception reports is illustrated in (4). While state verbs can serve as infinitival complements of perception verbs (cf. (4a–c)), statives – including copula constructions – are prohibited in these contexts; cf. (4d–g).

(4) *Perception reports*:

a. Ich sah das Buch auf dem Tisch liegen.
I saw the book on the table lie.

b. Ich sah Bardo schlafen.
I saw Bardo sleep.

c. Ich sah die Schuhe glänzen.
I saw the shoes gleam.

d. *Ich sah das Buch auf dem Tisch sein.
I saw the book on the table be.

e. *Ich hörte das Radio laut sein.
I heard the radio loud be.

f. *Ich sah die Tomaten 1 Kg wiegen.
I saw the tomatoes 1 kg weigh.

g. *Ich sah meine Tante Romy Schneider ähneln.
I saw my aunt Romy Schneider resemble.

In addition, as (5a–c) shows, state verbs combine with locative modifiers, whereas statives do not; see (5d–g).[6]

(5) *Locative modifiers*:

a. Das Auto wartet an der Ampel.
The car waits at the traffic light.

b. Bardo schläft in der Hängematte.
Bardo sleeps in the hammock.

c. Die Perlen glänzen in ihrem Haar.
The pearls gleam in her hair.

d. *Das Kleid ist auf der Wäscheleine nass.
The dress is on the clothesline wet.

e. *Bardo ist vor dem Kühlschrank hungrig.
Bardo is in-front-of the fridge hungry.

f. *Die Tomaten wiegen neben den Paprikas 1 Kg.
The tomatoes weigh besides the paprikas 1 kg.

g. *Bardo weiß (gerade) dort drüben die Antwort.
Bardo knows (at-this-moment) over there the answer.

The same pattern can also be observed with manner adverbials, comitatives and the like – that is, modifiers that elaborate on the internal functional structure of eventualities. State verbs combine regularly with them, whereas statives do not, as (6) shows. (See also Katz 2000, 2003, where it is claimed that manner adverbs cannot occur with stative verbs. Some apparent counterexamples to this claim will be discussed in section 3.)

[6]Note that when using locatives as eventuality diagnostics we have to make sure that we are checking for locative *VP-modifiers*. These should not be confused with frame-setting locatives such as (i)–(iii). The latter, being *sentential modifiers*, do not relate to an underlying eventuality argument, but instead provide a semantically underspecified domain restriction for the overall proposition; see Maienborn (2001) for more details about the syntax and semantics of frame-setting locatives.

(i) Bei Kerzenlicht ähnelt Carolin ihrem Bruder.
In candle light resembles Carolin her brother.

(ii) In der Wiener Staatsoper heißt der Souffleur "Maestro Suggeritore".
In the Vienna state opera is-called the prompter "Maestro Suggeritore".

(iii) Im Kindergarten war Bardo brav.
In.the kindergarten was Bardo well-behaved.

(6) *Manner adverbials and similar expressions*:

a. Bardo schläft friedlich/mit seinem Teddy/ohne Schnuller.
Bardo sleeps calmly/with his teddy/without dummy.

b. Carolin saß reglos /kerzengerade am Tisch.
Carolin sat motionless /straight as a die at.the table.

c. Die Perlen glänzen matt/rötlich /feucht.
The pearls gleam dully/reddishly /moistly.

d. *Bardo war friedlich /mit seinem Teddy/ohne Schnuller müde.
Bardo was calmly /with his teddy/without dummy tired.

e. *Carolin war unruhig /geduldig durstig.
Carolin was restlessly/patiently thirsty.

f. *Andrea ähnelt mit ihrer Tochter Romy Schneider.
Andrea resembles with her daughter Romy Schneider.

g. *Bardo besitzt sparsam/spendabel viel Geld.
Bardo owns thriftily /generously much money.

In sum, state verbs and statives differ sharply with respect to all of the standard eventuality diagnostics; see Maienborn (2003, 2005b) for further eventuality diagnostics yielding the same results. In view of the evidence given in (4)–(6), we can conclude that state verbs denote true Davidsonian eventualities, that is, *Davidsonian states* (or "*D-states*" for short). Statives, on the other hand, appear to resist a Davidsonian analysis.[7]

2.2. A Kimian Approach to Statives

Maienborn (2003, 2005b) develops an alternative approach, according to which copular constructions (as exponents of the class of statives) refer instead to *Kimian states* (or "*K-states*" for short). Kimian states combine Kim's (1969, 1976) notion of temporally bound property exemplifications[8] with Asher's (1993,

[7] In Maienborn (2005a) these eventuality diagnostics are applied to the Spanish copula forms *ser* and *estar* (which are generally considered to be lexical exponents of the stage-level/individual-level distinction). The results reported in that study confirm this conclusion: neither *ser* nor *estar* meets any of the eventuality criteria. The Spanish copula forms do not differ from their German or English counterparts in this respect. That is, there is no good reason to adopt an event-based analysis of *ser*/*estar*, as proposed within the stage-level/individual-level paradigm. Maienborn (2005a) develops a discourse-based account of *ser*/*estar* instead.

[8] While Kim understood his proposal as an *alternative* to Davidson's approach, I think of K-states as a *supplement* to Davidsonian eventualities.

2000) conception of abstract objects as mentally constructed entities.[9] Kimian states are tentatively characterised as follows:

(7) *Kimian states*:
K-states are abstract objects for the exemplification of a property P at a holder x and a time t.

From this definition, the properties given in (8) follow, with properties (8a) and (8b) due specifically to the status of K-states as abstract objects.

(8) *Ontological properties of Kimian states*:
a. K-states are not accessible to direct perception and have no location in space.
b. K-states are accessible to (higher) cognitive operations.
c. K-states can be located in time.

(9) gives the corresponding linguistic diagnostics.

(9) *Linguistic diagnostics for Kimian states:*
a. K-state expressions cannot serve as infinitival complements of perception verbs and do not combine with locative modifiers.
b. K-state expressions are accessible for anaphoric reference.
c. K-state expressions combine with temporal modifiers.

The characterisation of Kimian states given in (7)–(9) parallels that of Davidsonian eventualities in (1)–(3) and accounts for the previously observed behaviour of statives with respect to the eventuality diagnostics (see (4)–(6)), as well as for their combination with temporal modifiers, as illustrated in (10).

(10) *Temporal modifiers:*
a. Carolin war gestern /immer/zweimal /tagelang müde.
Carolin was yesterday /always/twice /for days tired.
b. Die 3 war gestern /immer/zweimal/jahrelang Bardos Glückszahl.
The 3 was yesterday /always/twice /for years Bardo's lucky number.
c. Bardo besaß jahrelang /in seiner Jugend ein Haus am See.
Bardo owned for years /in his youth a house at.the lake.
d. Carolin kannte immer/nie /wieder /letztes Jahr Leonardos Adresse.
Carolin knew always/never /again /last year Leonardo's address.

[9] According to Asher (1993, 2000), abstract objects (like facts and propositions) are introduced for efficient natural language processing and other cognitive operations but do not exist independently of them. Roughly speaking, abstract objects exist only because we talk and think about them.

The K-state approach also accounts for the observation that statives are subject to a particular kind of anaphoric reference, as shown in (11). In (11a), for example, the anaphoric pronoun *das* refers back to some "state" of Carolin being angry. Notice that *das* cannot be analysed as a fact anaphor here, given that facts are atemporal (e.g. Asher 1993, 2000).

(11) *Anaphoric reference:*

a. Carolin ist wütend. Das wird bald vorbei sein.
Carolin is angry. This will soon over be.

b. Der Schlüssel war weg und das seit dem Wochenende.
The key was away and this since the weekend.

c. Das Öl kostet 30 $. Das dauert nun schon 3 Monate.
The oil costs 30 $. This lasts already 3 months.

d. Carolin wog zu viel. Das endete erst mit der Pubertät.
Carolin weighed too much. This ended not-until with the puberty.

The evidence presented so far suggests that statives do indeed introduce an underlying argument that is, however, ontologically "poorer" than Davidsonian event arguments. The entity referred to by statives cannot be perceived, located in space, or vary in the way that it is realised, but it can be located in time and may serve as an antecedent for anaphoric reference.[10] Kimian states were designed to account for this behaviour. I will come back to the issue of anaphoric reference in section 4. (12) Shows the lexical entry for English *be*, German *sein*, Spanish *ser*, etc. proposed in Maienborn (2003, 2005a, b).[11]

(12) *be/sein/ser*...: $\lambda P\ \lambda x\ \lambda z\ [z \approx [P(x)]]$

[10] It might be worth pointing out that our characterisation of K-states as having no location in space (see (8a)) does not exclude copular constructions with locative main predicates, as illustrated in (i). Like any other copular construction, (i) assigns a property (here: the property of being located in the garden) to the subject referent. That is, locative copular constructions do not locate some underlying state argument, but the object (or eventuality) referred to by the subject referent.

(i) Carolin ist im Garten.
Carolin is in.the garden.

[11] The following representations use the formal framework of Discourse Representation Theory (DRT; Kamp 1981, Kamp and Reyle 1993). See Asher (1993) for the compositional DRT variant with λ-abstraction employed here. I use a flat notation for DRSs: discourse referents are separated from DRS conditions by a straight line; see the notational convention in (i).

(i) Notation: $\lambda y\ \lambda x \ldots$ [discourse referents | DRS conditions]
Variables are sorted as follows. x, y, u, v: individuals; z: K-states; e: eventualities; s: K-states ∪ eventualities; P, Q, R: first-order predicates.

Asher (1993: 145f) defines "≈" as relating a discourse referent for an abstract object (facts, propositions etc.) to a DRS that characterises this discourse referent; cf. Maienborn (2003, 2005b) for details.

The copula introduces a referential argument z of type K-state, which is characterised by the predicate P applying to the individual x. The corresponding entry for a stative verb is given in (13).

(13) *ähneln* 'resemble': $\lambda y\ \lambda x\ \lambda z\ [z \approx [\text{resemble}\ (x, y)]]$

(14) and (15) illustrate the compositional derivation of a copular construction and a stative expression, respectively.

(14)	a.	Carolin ist müde.	('Carolin is tired')
	b.	Carolin:[12]	$[v \mid \text{carolin}\ (v)]$
	c.	müde:	$\lambda y\ [\text{tired}\ (y)]$
	d.	[müde sei-]:	$\lambda x \lambda z[z \approx [\text{tired}(x)]]$
	e.	[$_{VP}$ Carolin müde sei-]:	$\lambda z[v\|z \approx [\text{tired}\ (v)], \text{carolin}\ (v)]$
	f.	Infl:[13]	$\lambda P[s\|P(s)]$
	g.	[$_{IP}$ Carolin ist müde]:[14]	$[s^z, v\|s \approx [\text{tired}\ (v)], \text{carolin}\ (v)]$
(15)	a.	Carolin ähnelt Bardo.	('Carolin resembles Bardo')
	b.	[$_{V'}$ Bardo ähnel-]:	$\lambda x\ \lambda z\ [u\|z \approx [\text{resemble}\ (x, u)], \text{bardo}\ (u)]$
	c.	[$_{VP}$ Carolin Bardo ähnel-]: carolin (v)]	$\lambda z\ [v, u\|z \approx [\text{resemble}\ (v, u)], \text{bardo}\ (u),$
	d.	[$_{IP}$ Carolin ähnelt Bardo]: carolin (v)]	$[s^z, v, u\|s \approx [\text{resemble}\ (v, u)], \text{bardo}\ (u),$

(16) provides the corresponding composition of a Davidsonian state verb for purposes of comparison. (For the sake of simplicity, I adopt the neo-Davidsonian convention of adding the participants of an eventuality by means of thematic roles (cf., e.g., Parsons 1990); but see Bierwisch (2005) for critical remarks on this practice.)

[12] For the sake of simplicity, I will assume that a proper name introduces a discourse referent v into the universe of discourse, as in (14b).

[13] Note that Infl as defined in (14f) introduces a discourse referent s for the referential argument of the VP. This corresponds to the operation of existential closure in alternative frameworks. That is, in the notation of predicate logic, the DRS for Infl in (14f) would correspond to (i).

(i) Infl: $\lambda P \exists s\ [P(s)]$.

[14] Note that in the course of applying Infl (14f) to an K-state VP like (14e), Infl's discourse referent s which originally ranges over eventualities and K-states is narrowed down to the domain of K-states. This is indicated in (14g) by the addition of a superscript z to s within the universe of discourse.

(16) a. Carolin schläft. ('Carolin is sleeping')

b. schlafen: $\lambda x\ \lambda e$ [sleep (e), theme (e, x)]

c. [$_{VP}$ Carolin schlaf-]: λe [v|sleep (e), theme (e, v), carolin (v)]

d. [$_{IP}$ Carolin schläft]: [s^e, v|sleep (s), theme (s, v), carolin (v)]

As (14)–(16) show, the difference between K-state and D-state expressions basically consists in a sortal contrast, which can be exploited in the course of building up the compositional meaning. That is, while eventuality arguments are suitable targets for locative modifiers, manner adverbials, and the like, K-state arguments won't tolerate them. The difference disappears as soon as the verb's referential argument is existentially bound by Infl. Therefore, the present account predicts that K-state and D-state expressions do not differ with respect to the admissibility of, e.g., "higher", sentential modifiers; see footnote 6.

This ends our brief review of the theory of statives developed in Maienborn (2003, 2005b).

3. SOME APPARENT COUNTEREXAMPLES

One kind of evidence for the claim that statives do not refer to Davidsonian states but to something ontologically "poorer" comes from their inability to combine with manner adverbials, as shown in (6) above. In contrast to Davidsonian eventualities, which display a rich spectrum of possible realisations, the referents of statives apparently cannot vary in the way that they are realised. Yet, as has been occasionally observed by proponents of the neo-Davidsonian approach, there seem to be at least some instances of manner modification with statives. This might indicate that we have been too hasty in dismissing the possibility that statives have a hidden eventuality argument and that these cases do call for such an argument after all.

Let us take a closer look at the kind of evidence that has been offered for this analysis in the literature. A representative sample is given in (17)–(20).[15]

(17) John was a Catholic with great passion in his youth. (Jäger 2001: 101)

(18) Peter war mit Begeisterung Angler. (Dölling 2003: 529)
Peter was with enthusiasm angler.

(19) Dan is in the country illegally. (Mittwoch 2005: 79)

(20) The board is coarsely grooved. (Parsons 2000: 86)

[15] In the following, I will concentrate on the combination of manner adverbials with copular constructions. Cases of (apparent) manner modification with stative verbs like *know personally, love passionately*, and *believe firmly* are discussed in Katz (2000, 2003).

In what follows, I will argue that these cases all involve some kind of non-compositional reinterpretation and therefore do not support a plain Davidsonian analysis for statives after all.[16]

The cases of (17) and (18) are rather straightforward. What John is passionate about in (17) is not the state of being a Catholic but the *activities* associated with this (Kimian) state (e.g. going to mass, praying, going to confession). The same holds true for (18), which requires us to infer activities related to the deverbal noun *Angler* 'angler'. If, however, no related activities come to mind for some predicate, such as *being a relative (of Grit)*, as given in (21), then the sentence becomes odd.

(21) ??John was a relative (of Grit) with great passion.

This suggests that the combination of these manner adverbials (more specifically mental-attitude adverbials, according to the terminology of, e.g., Ernst 2002, 2003) with statives does not proceed regularly but relies on a reinterpretation process based on *event coercion* (e.g. Pustejovsky 1995, Egg 2001). That is, the sortal requirements of mental-attitude adverbials, which are not fulfilled by stative expressions, force us to infer a suitable event that stands in some natural relation to the given stative. Once this event has been (non-compositionally) inserted, it may serve as the target for the adverbial's meaning contribution. Obviously, such inferences rely heavily on world knowledge, and their plausibility depends on the presence of (or the hearer's ability to supply) a suitable context. If statives had a Davidsonian eventuality argument right from the start, no such additional inferential processes would be necessary, and unacceptable cases like (21) would not be expected.

In Maienborn (2003), I sketch a formal treatment of this kind of event coercion (based on van der Sandt's 1992 account of presuppositions). The basic idea is that such event coercion takes as presuppositions the sortal requirements of a modifier that conflict with the modifier's compositionally designated target and, if possible, accommodates these requirements by introducing a new event referent into the universe of discourse.

Notice that this approach allows us to preserve the well-established Davidsonian analysis of adverbial modification as conjunction of event predicates and thus to account for the characteristic Davidsonian inference patterns of *modifier drop* (Parsons 2000), which Jäger (2001: 101) also observes for stative sentences like (17).

[16] As one reviewer remarks, Jäger's sentence (17) is judged as rather bad English by native speakers. This fits well with the view defended here, according to which a sentence like (17) might be interpretable somehow by some mechanism of meaning coercion (see below), but it nevertheless remains ungrammatical because the copular construction, lacking an eventuality argument, does not support a compositional integration of the manner adverbial.

(17') a. John was a Catholic with great passion in his youth.

b. John was a Catholic in his youth.

c. John was a Catholic with great passion.

d. John was a Catholic.

I agree with Jäger that, for example, sentence (17'a) entails (17'b–d), and both (17'b) and (17'c) entail (17'd). But I do not agree with his conclusion about these and similar data, as given below.

> So if we consider the arguments for a Davidsonian treatment [of adverbial modification; CM] compelling, we are forced to assume that statives have a Davidsonian argument, too.
>
> Jäger (2001: 102)

The validity of the inference pattern in (17') does indicate that the manner adverbial *with great passion* adds a simple event predicate that can be omitted *salva veritate*, given the logical rule of conjunction reduction. Yet, there is no reason to assume that the target of the manner adverbial is necessarily the *regular* referential argument of the stative. Rather, I would claim, the modifier's target event originates only in the course of reinterpreting the stative – a process which is triggered exactly by the stative's *lack* of an underlying eventuality argument. In short, the Davidsonian approach does not require us to account for inference patterns like (17') by surface-oriented analyses.

The sentences in (22) give further illustrations of manner adverbials in the broad sense (including other obviously event-related modifiers like instrumentals and comitatives) that trigger event coercion when combined with statives.

(22) a. Hans ist mit den Hunden im Park.
Hans is with the dogs in.the park.

b. Maria war schnell in der Stadt.
Maria was quickly in the town.

c. Chirac war mit der Concorde in New York.
Chirac was with the Concorde in New York.

A sentence like (22a) can easily be (re)interpreted. The reason is that we are immediately able to associate characteristic activities with 'being in a park': jogging, relaxing, walking the dog, feeding ducks, etc. According to the argumentation developed above, this should not lead us to believe that (22a) is a regular, well-formed sentence, though. In fact, a structurally identical sentence like (22'a) sounds rather weird – unless we can infer a plausible scenario for 'being beside a window' that allows us to accommodate the required event argument.

(22') a. ?? Hans ist mit den Hunden neben dem Fenster.
Hans is with the dogs beside the window.

Analogously, the adverb *schnell* 'quickly' in (22b) does not modify the state of Maria's being in the city but an inferred event of her going to the city. Interestingly, the antonym *langsam* 'slowly' in (22'b) does not support such an ingressive coercion by which the sentence could be "rescued"; see Maienborn (2003: 93–94) for a possible explanation.

(22') b. ?? Maria war langsam in der Stadt.
Maria was slowly in the town.

An ingressive coercion is also triggered by the instrumental *mit der Concorde* 'with the Concorde' in (22c) – and is blocked, once again, in (22'c).

(22') c. ?? Der Koffer war mit der Concorde in New York.
The suitcase was with the Concorde in New York.

Note that a sentence like (22"c) is not compatible with a scenario in which Maria came to Italy by plane and then travelled around using a hired car. This underlines the need for a non-regular, ingressive coercion in order to integrate the instrumental adverbial.

(22") c. Maria war mit einem Leihwagen in Italien.
Maria was with a hired car in Italy.

We may now have a look at Mittwoch's example (19), which is repeated here:

(23) Dan is in the country illegally. (Mittwoch 2005: 79)

This seems like just the kind of counterevidence we are looking for: namely, true manner modification of a stative. Under this assumption, sentence (23) indicates that there is a (Davidsonian) state of the subject referent's being located in the country and this state is furthermore qualified as illegal. This is shown in the logical representation given in (24).

(24) $\exists e$ [be_located_in_the_country (e) $\wedge$ theme (e, dan) $\wedge$ illegal (e)]

On the basis of these and similar data, Mittwoch reaches the following conclusion:

> Hence the empirical basis for a Davidsonian argument for states [statives in my terminology; CM] is thinner than in the case of events; the DA [Davidsonian argument; CM] has less work to do. But there is no difference in principle. Mittwoch (2005: 86)

I remain sceptical. In fact, closer inspection reveals that sentence (23) isn't as "innocent" as it first appears.[17] First, if the compositionally determined meaning representation of the copular sentence (23) were really something like (24),

[17] Thanks to Anita Mittwoch for bringing this example to my attention and for discussing it with me. Thanks also to Thomas Ernst and Benjamin Shaer for discussion and judgements.

why would the parallel sentence (25) not have a representation like (26), rather than being ungrammatical? (Remember that the crucial assumption of the neo-Davidsonian approach is that *every* VP has a hidden eventuality argument. That is, trying to explain the ungrammaticality of (25) on neo-Davidsonian premises by assigning copula plus DP combinations an exceptional, i.e., non-Davidsonian, status (a) would be completely ad hoc and (b) wouldn't even work given (more or less) "well-behaved" copula plus DP combinations like (17) and (18).)

(25) *Dan is a UK resident illegally.

(26) $\exists e$ [be_a_UK_resident (e) $\wedge$ theme (e, dan) $\wedge$ illegal (e)]

Second, there are reasons to believe that the logical representation in (24) does not accurately reflect the meaning of sentence (23). Note that the structurally identical (23') is odd, although it makes perfect sense. That is, the marginal acceptability of (23') apparently has no deep conceptual source but instead originates in the grammatical system.

(23') ? The car is on the factory premises illegally.

The German counterparts for (23)/(23') are given in (27):

(27) a. Dan ist illegal im Land.
Dan is illegally in.the country.

b. ? Das Auto ist illegal auf dem Fabrikgelände.
The car is illegally on the factory premises.

As we might expect, occurrence of *illegally* with a Davidsonian state verb is fine. (German intransitive *parken* 'park' refers to Davidsonian states; see also *The car was parked on the factory premises illegally* (*for hours*).)

(28) a. Das Auto parkt illegal auf dem Fabrikgelände.
The car parks illegally on the factory premises.

b. Das Auto steht illegal auf dem Fabrikgelände.
The car stands illegally on the factory premises.

What all of this suggests is that, despite first appearances, the sentence in (23) (and, by the same token, (23') and (27)) does not display a regular combination of a stative and a manner adverbial after all. Rather, I would claim, (23) is just another instance of rescuing the combination of a manner adverbial with a stative via event coercion. That is, sentence (23) does not indicate merely that the state of the subject referent's being located in the country is illegal; what is actually illegal is the eventuality of *residing* there or *staying* there temporarily, which is inferred on the basis of the relevant Kimian state.

Why then, one might ask, is there no analogous "rescue operation" for (23')? In particular, in view of (28) it would be straightforward to reinterpret (23') by inferring a Davidsonian state of, for example, the car standing on the factory premises. Yet, the conditions under which non-compositional event coercion may take place are apparently more restrictive. In Maienborn (2003), this behaviour is accounted for in terms of optimality-theoretic pragmatics (Blutner 1998, 2000). Roughly speaking, rescuing ungrammatical combinations of statives with event-based modifiers via event coercion will be tolerated only if there is no equally economical way of expressing the same meaning by means of a grammatically well-formed sentence. The violation of grammatical rules must be profitable, so to speak – hence the preference for inferring more or less complex activities; see Maienborn (2003: chap. 6.2) for details.

So far, all of the counterexamples to the claim being defended here have turned out to have an independent explanation, allowing us to preserve our claim. The only remaining evidence of manner modification with statives is the sentence in (20), which I repeat here for convenience.

(29) The board is coarsely grooved. (Parsons 2000: 86)

In fact, (29) seems to be part of a rather productive pattern, further examples of which are given in (30). (See also Parsons (1990: 191–192).)[18]

(30) a. Das Brett ist grob gefurcht.
The board is coarsely grooved.

b. Das Fenster ist weit offen.
The window is wide(ly) open.

c. Die Tür ist fest zu.
The door is tightly shut.

d. Die Tür war locker mit einem Lederriemen verschlossen.
The door was loosely with a leather belt closed.

e. Die Blumenbeete waren üppig bepflanzt.
The flower beds were lavishly planted.

f. Die Jacke ist dick gefüttert.
The coat is thickly lined.

Parsons (1990: 191–192) takes data like these as strong support for an underlying event analysis of statives.[19] According to this view, *coarsely, wide, loosely, tightly,*

[18] Note that the participial forms in (30) are unambiguously so-called "adjectival passives" (i.e. combinations of the copula *be* plus a deverbal adjective), since "verbal" (i.e. true) passives take the auxiliary *werden* in German; see, e.g., Kratzer (1994, 2000).

[19] Parsons (2000) is a bit more sceptical. With respect to sentence (29) he notes: "The problem about these constructions is that they seem to occur only when the adjective is spelled like the past participle

lavishly, etc. predicate over Davidsonian states; see also Jäger (2001: 102). That is, the logical representation for, e.g., sentence (30b) would be something like (31).

(31) $\exists e$ [be_open (e) $\wedge$ theme (e, the_window) $\wedge$ wide (e)]

In his study of manner adverbs, Geuder (2000) argues against such an analysis. He calls adverbs of the kind given in (29) and (30) "resultative adverbs", which he analyses as predicates not over states but over *resultant objects*, i.e., implicit objects resulting from an event. That is, sentence (30b) does not indicate that there is a state of the window being open and that this state is wide. What is, instead, qualified by the adverb is the *gap* between the window and its frame, which results from an opening event. Accordingly, the other modifiers should be analysed as predicates over grooves in (30a), a lock in (30c/d), an ensemble of plants in (30e), and the lining of the coat in (30f).

Geuder's (2000) analysis fits neatly into the arguments presented here. The relevant modifiers do not apply to an alleged (Davidsonian) state argument introduced by a stative but have more specific sortal requirements, which statives do not fulfil. Therefore, the sentences are strictly speaking ungrammatical. Under special circumstances, however, a hearer can resolve the sortal conflict by inferring an appropriate event that yields a resultant object, which provides a suitable target for the modifier. That is, rather than (31), the final logical representation for (30b) should comprise at least the following information:

(32) $\exists z$ [z $\approx$ [open (the_window)] $\wedge$ $\exists$e,x [opening (e) $\wedge$ theme (e, the_window) $\wedge$ resultant-state (e) = z $\wedge$ resultant-object (e) = x $\wedge$ gap (x) $\wedge$ wide (x)]]]

Nothing but the first conjunct belongs to the regular compositional meaning of a copular construction. Everything else must be inferred in order for the modifier's contribution to be integrated into the logical representation.

Additional support for the kind of analysis advocated here comes from data like (33), which underline the need for a mediating event.

(33) a. ?? Die Höhle war weit offen.
The cave was wide(ly) open.

b. ?? Das Marmeladenglas war weit offen.
The jam-jar was wide(ly) open

Although caves are natural openings, the adverbial modifier *weit* in (33a) cannot, it seems, apply directly to this referent, but requires the presence of a causing event.

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of a verb: *grooved* is an example. The construction is thus quite restricted and special and cries out for some special explanation" (Parsons 2000: 86). For this reason, I will concentrate on (30b) *The window is wide open* in the discussion in the text. My claim will be that not only adjectival passives but also true adjectives cry for a special, non-compositional explanation.

That is, in order to make (33a) acceptable, we have to assume a scenario in which the entrance of the cave was previously closed by, for example, a wooden wall which then was opened, thereby creating a new, artificial opening.

Sentence (33b) indicates that it does not suffice to have an object like a jam jar, which can be opened and closed and has an opening, too. The problem here is that the jar's opening exists independently of an opening event and therefore does not qualify as the event's resultant object.

All of this shows that the (re)interpretation of sentences like (29), (30) and (33) (a) is dependent on world knowledge and more or less complex assumptions about the contextual setting, and (b) always involves some kind of event coercion.

In the case of adjectival passives, given the deverbal origin of the predicative AP, the respective event comes for free. This is why adjectival passives lend themselves to this construction.

Summing up the discussion so far, we have seen that apparent counterexamples to the claim that statives do not combine with manner adverbials turn out to involve event coercion. That is, special (extragrammatical) measures are to be taken in order to integrate the meaning contribution of these modifiers. The respective adverbials definitely do not directly modify the referential argument introduced by statives. Hence, they do not support but rather refute a Davidsonian analysis of statives.

4. CONSIDERATIONS FROM TIME TRAVEL

Does Parsons' recently presented *time travel argument* fare better in providing support for a Davidsonian approach to statives? Parsons (2000: 88) illustrates his argument with the following story situated in the ancient Greece:

Let us assume that Socrates is sitting outside the city walls and talking to Parmenides at a particular time. Some time later, Socrates stumbles into a time warp and travels back in time. After he emerges from the time warp (as the very same Socrates), he ponders his discussion with Parmenides for a while. Then – at the very same time that his discussion with Parmenides is taking place outside the city walls – Socrates lies down in the marketplace, where he begins cursing the gods.

With this little story, Parsons invites us to assume, for the sake of the argument, that the two sentences in (34) and (35) are both true at the same time.[20]

(34) Socrates is sitting outside the city walls and talking with Parmenides.

(35) Socrates is lying in the marketplace and cursing the gods.

[20]Parsons admits that the assumption of time travel raises intricate philosophical problems. But, he goes on, "contemplation of cases of time travel can force us to clarify our theories about ordinary situations" (Parsons 2000: 88).

Now, here is the time travel argument. Consider the following inference pattern:

(36) a. Socrates is sitting. (by conjunction reduction from (34))

b. Socrates is in the market place. (by conj. reduction from (35))

c. $\therefore$ Socrates is sitting in the marketplace. (by conjunction of (36a/b))

Given that the conclusion in (36c) is obviously false, we have to make sure that this inference is blocked somehow by our logical analysis of (34) and (35). If we analysed the positional and locative predicates in (34) and (35) as predicates that apply to the individual Socrates, we would have no means to block the invalid inference in (36c). If, instead, we adopt a Davidsonian analysis, according to which the respective predicates apply to hidden state arguments as in (37), the invalid inference is, correctly, blocked. ((37) gives Parsons' (2000: 90) formulation.)

(37) a. For some state s: s is a state of sitting $\wedge$ s is a state of being outside the city walls $\wedge$ Socrates is in s.

b. For some state s: s is a state of lying $\wedge$ s is a state of being in the marketplace $\wedge$ Socrates is in s.

c. $\therefore$ For some state s: s is a state of sitting $\wedge$ s is a state of being in the marketplace $\wedge$ Socrates is in s. (invalid)

According to (37a/b), Socrates is simultaneously in two different states. There is no state that has both the property of being a sitting state and that of being located in the marketplace. Therefore, there is no way to derive the inference in (37c). This is, in short, the time travel argument. Parsons concludes:

> Considerations of how we describe what takes place in time travel stories suggest that there are underlying states in stative sentences involving state verbs and copulative sentences with adjectives, locatives, and nouns. Parsons (2000: 92)

As this quotation shows, Parsons does not distinguish between the two kinds of states differentiated here but takes both copular constructions and state verbs like *sit* and *lie* to belong to one and the same class of state expressions. So let us evaluate Parsons' time travel argument in terms of the analysis advocated here.

As it stands, Parsons' argument provides a further piece of evidence in favour of a Davidsonian approach to state verbs. Moreover, it is consistent with the behaviour of state verbs with respect to standard eventuality tests, as reported in section 2.1. Yet, as our considerations in section 2.1 have also shown, this behaviour by no means carries over to statives.

What would a stative version of Parsons' time travel argument look like? Let us try (38). Of course, we shouldn't be able to infer (38c) from (38a) and (38b). But, this will never happen, simply because the sentences in (38a/b) are grammatically ill-formed. Our previous considerations have shown that statives do not tolerate any kind of modifier that could fit into this pattern.

(38) a. Socrates is {in an X-way, with Parmenides, at location X} hungry.

b. Socrates is {in a Y-way, without Parmenides, at location Y} full.

c. ∴ Socrates is {in an X-way, with Parmenides, at location X} full.

That is, according to the analysis of statives defended here, the invalid inference does not emerge because there are no legitimate premises in the first place. Thus, Parsons' time travel argument does not carry over to statives. Once again, we haven't found the slightest hint of a hidden Davidsonian eventuality argument.

However, in what follows, I will show that Parsons' argument, suitably adapted, may indeed provide additional support for the Kimian alternative advocated here. The data that my version of the time travel argument will build on is related to the German anaphoric expression *dabei* (literally: 'thereat').

As illustrated in (39), *dabei* adds some accompanying circumstance to its antecedent. Sentence (39b), for example, indicates that the Davidsonian state of Carolin waiting for the bus is accompanied by her reading a book.

(39) a. Bardo tanzte und klatschte dabei mit den Händen.
Bardo danced and clapped thereat with the hands.

b. Carolin wartete auf den Bus und las dabei ein Buch.
Carolin waited for the bus and read thereat a book.

As the sentences in (40) show, *dabei* is not reserved for Davidsonian eventualities but may also be used for Kimian states.

(40) a. Es war kalt und dabei regnerisch.
It was cold and thereat rainy.

b. Bardo war krank und lief dabei ohne Schal herum.
Bardo was ill and walked thereat without scarf about.

c. Die Zwei ist eine Primzahl und dabei gerade.
The two is a prime number and thereat even.

Sentence (40b), for example, is thus interpreted as indicating that the Kimian state of Bardo being ill is accompanied by (possibly iterated) events of Bardo walking about without a scarf. (Notice that the antecedent of *dabei* may also be introduced by a copular individual-level predicate like 'being a prime number', as in (40c).)

In section 2.2, Kimian states were characterised as entities that are ontologically "poorer" than Davidsonian eventualities. In fact, up to now we have seen only the temporal dimension of Kimian states; see (10). This raises the question whether we need such an ontological category at all. Wouldn't it suffice to assume that statives just introduce a temporal argument? This temporal argument could then serve as a target for temporal modification. Following this line of reasoning, we could then

say that the anaphoric expression *dabei* in (40) refers back to the *time interval* at which the respective property holds and expresses temporal overlap.

At this point, Parsons' time travel argument can be used to show that *dabei* does not express mere overlap between two time intervals but relates to the "substance" of its antecedent. That is, *dabei* really calls for a reification of the denotatum of statives, consistent with the assumption of Kimian states.

So let us once again tell a little time travel story about Socrates. This time, Socrates is outside the city walls, weak from hunger, when he stumbles into the time warp and is in the marketplace and full afterwards. In other words, let us take sentences (41a) and (41b) both to be true at the same time with the same Socrates. While (41c) is a valid inference from (41a/b), the conclusion in (41d) is invalid and should therefore be blocked.

(41) a. Sokrates ist außerhalb der Stadtmauern und er ist dabei hungrig.
Socrates is outside the city walls and he is thereat hungry.

b. Sokrates ist auf dem Marktplatz und er ist dabei satt.
Socrates is in the marketplace and he is thereat full.

c. ∴ Sokrates ist auf dem Marktplatz und er ist gleichzeitig hungrig.
Socrates is in the marketplace and he is at the same time hungry.
(valid)

d. ∴ Sokrates ist auf dem Marktplatz und er ist dabei hungrig.
Socrates is in the marketplace and he is thereat hungry. (invalid)

This indicates that *dabei* does not refer back to a mere time interval but calls for a reification of the denotatum of its antecedent. That is, the antecedent of *dabei* in (41a), for example, must be some temporal entity qualified by the property of Socrates being located outside the city walls. This is precisely what Kimian states allow us to capture.

5. CONCLUSION

In a recent overview of the role that events play in linguistic semantics, Higginbotham (2000) reaches the following conclusion about the presence of Davidsonian eventuality arguments in natural language expressions:

> The arguments in favour of the hypothesis point toward a restricted theory of linguistic organisation: events enter semantic computation only as they are linguistically represented through thematic grids, and discharge of open positions takes place only under structurally controlled conditions. The theory pays for in ontology what it buys semantically – that is, the cost, if it is a cost, of the combinatorial simplification is the positing of objects, reference to which is not immediately manifest in linguistic structures. Higginbotham (2000: 76)

What I have done in this paper is to weigh the grammatical/ontological costs and benefits of postulating hidden Davidsonian arguments for statives. The results are, I

think, quite clear: the grammatical benefit tends toward zero, while the grammatical and ontological costs are quite high.

As regards the purported benefits of this hidden Davidsonian argument, if statives did have such arguments, they must, keep them very well hidden, since – in the course of a compositional semantic derivation, at least – they never show up.

As for the costs, if statives were equipped with Davidsonian eventuality arguments, there would have to be some grammatical (and perhaps supplementary pragmatic) explanation for why their behaviour is so radically different from that of other eventuality expressions. Moreover, a radical redefinition of the category of eventualities would also seem to be required, given that the central assumption that eventualities are spatiotemporal entities (with functionally integrated participants) could no longer be maintained; see Maienborn (2005b, c).

By way of conclusion, I would like to compare the Kimian approach to statives advocated here with two alternatives in the literature.

One approach is represented by the work of authors like Bäuerle (1994), Katz (2000, 2003), and Jäger (2001), who take the borderline drawn by the eventuality diagnostics in section 2.1 to coincide with an opposition between *events* and *states*. While Bäuerle (1994) and Jäger (2001) take the crucial difference to be location in space – they claim that events (including processes) but not states can be located in space–, Katz (2000, 2003) accounts for the event/state opposition in terms of the presence or absence of a Davidsonian eventuality argument. There appears to be no place for Davidsonian state verbs in this picture. However, the fact that they fully satisfy the criteria for Davidsonian eventuality expressions argues against any marginalisation of verbs like *sit*, *stand*, *lie*, *sleep*, and *wait*.

What the linguistic evidence leads us to conclude, then, is that a class of *static eventualities* (= Davidsonian states) does exist; and that the event/state opposition cannot help us clarify the difference between eventuality expressions and statives.

A second approach is represented by the work of Dölling (1999), who tries to account for the peculiar behaviour of statives within a neo-Davidsonian framework by distinguishing two subtypes of states. According to Dölling, *sit*, *stand*, *sleep*, *wait*, etc. belong to the subtype of states that can be located in space, whereas statives build a subtype that has no location in space. That is, Dölling wants to subsume both Davidsonian and Kimian states under the ontological category of eventualities; see also Dölling (2005).[21] On this view, Kimian states would be just a special sort of eventualities – eventualities, that, according to our findings in section 2.1, can be neither perceived nor located in space and cannot vary in the way that they are realised.

[21] The proposals of Dowty (1979) and Bach (1986) point in the same direction. According to Dowty (1979: 180ff), *sit, stand, lie*, etc. belong to the subtype of "interval statives" (see the table in Dowty 1979: 184). Bach (1986: 6) distinguishes "dynamic states" described by, e.g., *sit, stand*, and *lie* from "static states" described by statives.

In my view, such a move creates two major problems. First, what would be the smallest common denominator for events, processes, and Davidsonian states, on the one hand, and Kimian states, on the other? If we were to adopt such a liberal perspective, the only thing we could say about eventualities would be that they have a temporal dimension and some further content. That is, Kimian states would set the tone for the whole category of eventualities. This is clearly inadequate. Second, postulating two kinds of states as subtypes of the category of eventualities, depending on whether they can be located in space or not, is completely ad hoc. Remember that the subdivision of eventualities into events, processes, and states was based on temporal/aspectual criteria in the tradition of Vendler (1967). Why should non-dynamic, homogeneous eventualities (i.e. states) divide into spatial and non-spatial subtypes? And why should the non-spatial instances moreover exclude manner variance? This does not follow from their ontological properties, and would have to be stipulated.

In sum, trying to adapt the ontological category of Davidsonian eventualities in such a way that Kimian states can be subsumed under them inevitably requires us to renounce all of the benefits of the Davidsonian approach. It seems worthwhile, then, to continue to explore the idea of supplementing the ontological category of Davidsonian eventualities with Kimian states, in order to account adequately for both eventive and stative expressions.

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PART II

EXISTENTIAL SENTENCES ACROSS LANGUAGES

JIANHUA HU AND HAIHUA PAN

FOCUS AND THE BASIC FUNCTION OF CHINESE EXISTENTIAL YOU-SENTENCES

Abstract. In this paper we use data from the Chinese existential *you*-construction, the closest counterpart to the English *there*-construction, to show that the existential construction can be used to mark not only a new entity, but also a new relation. When it marks a new relation, the referent of the postverbal NP is not required to be a new entity. Based upon the relevant facts in Chinese *you*-sentences, we claim that the basic function of Chinese existential *you*-sentences is to introduce new information into the discourse; the new information can be either a new entity or a new relation, and the so-called *Definiteness Effect* (DE) is only a by-product of the discourse function of the existential construction.

1. EXISTENTIAL *YOU*-SENTENCES IN CHINESE

According to Huang (1987), the Chinese existential *you*-construction, the closest counterpart to the English *there*-construction, can be represented by using the following general form:

(1) … (NP) … V … NP … (XP) …
1 2 3 4

Position 1 is optional and can be either left empty, as shown in (2) and (3), or filled by a locative NP which functions as the subject, as exemplified in (4) and (5). Position 2 is filled by the existential verb *you* 'have', and position 3 by the NP whose existence is usually being asserted. Position 4 is also optional and can be filled by either a clause or a phrase which predicates over the NP in position 3, as shown in (3) and (5).

(2) *You gui.*
have ghost
'There are ghosts (here)'

(3) *You yige ren hen xihuan ni.*
have one man very like you
'There is a man who likes you very much.'

(4) *Zhuo-shang you yiben shu*
table-top have one book
'On the table there is a book'

I. Comorovski and K. von Heusinger (eds.), Existence: Semantics and Syntax, 133–145.

(5) *Zhuo-shang you yiben shu hen youqu*
table-top have one book very intresting
'On the table there is a book very interesting'
Huang (1987):227

Huang (1987) shows that the *you*-existential sentences in Chinese, as in every other language, exhibit the Definiteness Effect (DE). Thus, in contrast with the above sentences, the following sentences are unacceptable simply because the postverbal NPs (i.e., the NP after *you*) are definite.

(6) **You neige ren.*
have that man
Lit. 'There is that man'

(7) **You neige ren hen xihuan ni.*
have that man very like you
Lit. 'There is that man who likes you very much.'

(8) **Zhuo-shang you neiben shu.*
table-top have that book
Lit. 'On the table there is that book'

(9) **Zhuo-shang you neiben shu hen youqu.*
table-top have that book very interesting
Lit. 'On the table there is that book which is very interesting.'

However, what is unnoticed in the literature is that, although it is generally excluded from the post-*you* position, a definite NP can occur there if a focus particle is introduced into the relevant sentences, as exemplified below.

(10) ***Hai*** *you neige ren/Zhangsan.*
in-addition have that man/Zhangsan
Lit. 'There is in addition that man/Zhangsan'

(11) ***Hai*** *you neige ren/Zhangsan (**ye**) hen xihuan ni.*
in-addition have that man/Zhangsan **also** very like you
Lit. 'There is in addition that man/Zhangsan who also likes you very much.'

(12) a. *Zhuo-shang **hai** you neiben shu.*
table-top in-addition have that book
Lit. 'On the table there is in addition that book'

b. *Zhuo-shang **jiu** you neiben shu.*
table-top precisely have that book

(13) *Zhuo-shang* ***hai*** *you neiben shu* ***(ye)*** *hen youqu.*
table-top in-addition have that book also very interesting
Lit. 'On the table there is in addition that book which is also very interesting.'

In the above examples, the focus particle *hai* focuses on the postverbal NP, whereas the focus particle *jiu* focuses on the preverbal one. Notice that *hai* can be optionally used with another focus particle *ye*. The grammaticality of the sentence in question will not be affected if *hai* is used without *ye*, which mainly serves to emphasize the additive meaning of *hai* in the above sentences.

Although it has long been claimed that English *there*-sentences are incompatible with definite NPs (Milsark 1974, 1977, Jenkins 1975, Guéron 1980, Safir 1985, Belletti 1988, Freeze 1992), it is also found that formally definite NPs can occur in existential constructions. Various accounts have been proposed for the characterization of the definiteness restriction on the postverbal NP in the English existential construction in the literature, though there is little consensus about the nature of such a constraint. Safir (1985) and Belletti (1988) give a syntactic account of the restriction on existential constructions. Under Safir's (1985) analysis, the postverbal NP and the subject position of the *there*-sentence would form an 'unbalanced' chain, and Principle C of the Binding Theory would be violated if the postverbal NP is definite. For Belletti (1988), the postverbal NP in *there*-sentences must receive partitive case (an inherent case), and since only indefinite NPs can receive partitive case, Case Filter would be violated if the postverbal NP is definite. In Milsark (1974, 1977), it is argued that there is a distinction between strong and weak quantified expressions, and that only weak quantifiers can occur in existential sentences. Lumsden (1988), on the basis of Milsark's distinction between strong and weak quantifiers, claims that the interpretation of strong quantified expressions is determined by the expectation of the hearer with respect to their accessibility. Hannay (1985) accounts for the relevant constraint using the notion of Topic Restriction, a pragmatic condition. Under Hannay's (1985) analysis, a formally definite NP can occur in the *there*-sentence if it does not function as the sentence topic. Prince (1992) makes a distinction between the information status of NPs along two parameters: hearer-old/hearer-new and discourse-old/discourse-new. According to Prince (1992), a definite NP can occur postverbally in *there*-sentences if it is believed by the speaker that it represents a hearer-new entity. McNally (1992), adopting Prince's (1992) analysis of the information status of NPs, argues that necessarily quantificational NPs are not allowed to occur postverbally in the existential construction. Abbott (1993) claims that the function of existential construction is 'to draw the addressee's attention to the existence and/or location of the entity or entities denoted by the focus NP'. She accounts for the occurrence of definite NPs in existential sentences using the notion of Contextualized Existentials, since the occurrence of these definite NPs need be licensed by special contextualization. Ward and Birner (1995) further develop Prince's notion of hearer-new NPs and try to provide a unified account for this intriguing phenomenon by proposing that the

postverbal NP is required to be hearer-new. Under their analysis, five distinct cases of formally definite NPs may be used to represent hearer-new discourse entities and can thus occur postverbally in *there*-sentences. These five classes of definite postverbal NPs are identified as NPs representing (a) hearer-old entities treated as hearer-new, (b) hearer-new tokens of hearer-old types, (c) hearer-old entities newly instantiating a variable, (d) hearer-new entities with uniquely identifying descriptions, and (e) false definites. Because of the limit of space, we will not discuss the details of these accounts here, except for making the following two points. First, the syntactic account has little to say about the grammaticality of the existential sentence with postverbal definite NPs, since it predicts that formally definite NPs cannot occur in the postverbal position in the existential construction, contra the fact. Second, although previous semantic as well as pragmatic accounts have shed light on our understanding of the existential construction, they mainly focus on the function of the existential construction in introducing new entities, though they differ in 'their characterization of what it means for an entity to be new', as pointed out by Ward and Birner (1995: 724), and hence, these accounts fail to notice that such a construction can also be used to introduce new membership relations. We argue that in (10–13) the existential construction does not assert the existence of a new entity, but that of a new relation between the referent denoted by the definite NP and a presupposed set. Hence, the third sentence below introduces neither a discourse-new nor a hearer-new entity, but a new relation.

(14) A: *Zhiyou Wangwu hen xihuan Lisi.*
only Wangwu very like Lisi
'Only Wangwu likes Lisi very much.'

B: *shi ma? Zhangsan xi-bu-xihuan Lisi ne?*
yes Q Zhangsan like-not-like Lisi Q
Lit. 'Really? Does Zhangsan like Lisi or not?'

A: *Oh, duile,* ***hai*** *you Zhangsan/ta (ye) hen xihuan Lisi.*
right in-addition have Zhangsan/he also very like Lisi
Lit. 'Oh, right, there is in addition Zhangsan/HE who also likes Lisi.'

In the above constructed example, it is impossible to treat the postverbal NP *Zhangsan* as a discourse-new entity in the third sentence because it is just introduced into the discourse in the previous (second) sentence, and it is also impossible to treat it as a hearer-new entity because it is Speaker B – the hearer – who introduces *Zhangsan* into the discourse in the second sentence. In responding to Speaker B's question, Speaker A uses the existential *you*-construction not to introduce *Zhangsan* referred to by the third person pronoun *ta* 'he' as a hearer-new entity nor to remind Speaker B of the existence of *Zhangsan*, but to convey the information that *Zhangsan* is also a member of the set of persons who like *Lisi*.

What is asserted is the relationship between *Zhangsan* and the presupposed set – the persons who like *Lisi*.

Since an overt focus particle is inserted into each of the sentences given in (10–13), one may think that the focus particle can always help the existential construction avoid a DE violation when the postverbal NP is definite. However, this expectation is not borne out. Although focus particles are added to the following sentences, these sentences are still unacceptable.

(15) ****Hai*** *you meige ren/daduoshu-de ren.*
in-addition have every man/most man

(16) * ***Hai*** *you meige ren/daduoshu-de ren* ***(ye)*** *hen xihuan ni.*
in-addition have every man/most man also very like you
Lit. 'There is/are in addition everybody/most people who also like you very much.'

(17) **Wuzi-li* ***jiu*** *you neige ren/ Zhangsan.*
Room-in **precisely** have that man/Zhangsan
Lit. 'There is that man/Zhangsan precisely in the room.'

Côté (1998) finds that, although in Québec French, definite nominal elements can appear in the complement of the existential verb *ya*, as shown in (18a), their occurrence is constrained by the type of predicate in the predicative element, as shown in (18b). The generalization is that definite nominal elements in the complement of the existential verb *ya* are compatible only with stage-level predicates (including stative ones), as in (18a), but not with individual-level predicates, as in (18b).

(18) a. Y a Jean qui est venu.
'There is Jean who came.'

b. *Y a Marie qui est intelligente/qui aime Montréal
(no focus on Marie).
'There is Marie who is intelligent/who likes Montréal.'

Based upon the above contrast, Côté (1998) claims that sentences such as (18a) do not assert the existence of an individual (Jean) but that of an event (Jean's coming), and that the reason why only stage-level predicates are allowed can be accounted for by Kratzer's (1989) hypothesis that only stage-level but not individual-level predicates contain an event variable, given the assumption that the existential operator in the existential construction can quantify over either event or individual variables. One may think that in the Chinese sentences given in (10–13), what is quantified over by the existential operator is also a kind of event variable. Unfortunately this is not true. The examples given in (11) and (13) and the following sentences show that

in Chinese the definite nominal element in the complement of the existential verb *you* is compatible not only with stage-level predicates, but also with individual-level predicates.

(19) ***Hai*** *you neige ren/Zhangsan* ***(ye)*** *yao lai.*
in-addition have that man/Zhangsan also will come
Lit. 'There is in addition that man/Zhangsan who will also come.'

(20) a. ***Hai*** *you neige ren/Zhangsan* ***(ye)*** hen congming.
in-addition have that man/Zhangsan also very intelligent
Lit. 'There is in addition that man/Zhangsan who is also very intelligent.'

b. ***Hai*** *you neige ren/Zhangsan* ***(ye)*** shi Zhongguoren.
in-addition have that man/Zhangsan also be Chinese
Lit. 'There is in addition that man/Zhangsan who is also a Chinese.'

Obviously, the acceptability contrast between the sentences in (10–13) and those in (15–17) cannot be explained by the event variable account because there are acceptable sentences such as (11), (20a), and (20b) in which no event variable is available, as *be a Chinese* in (20b), for instance, is an individual-level predicate, and thus does not contain an event variable. In fact, the occurrence of event variables cannot guarantee the grammaticality of the existential construction in Chinese when the post-*you* NP is definite, as shown below.

(21) **you neige ren/Zhangsan lai le.*
have that man/Zhangsan come ASP
Lit. 'There is that man/Zhangsan who came.'

Although the predicative element occurring after the definite NP is a stage-level predicate in the above example, the sentence is still ungrammatical.

2. MEMBERSHIP RELATION

From the above discussion, we can see that the occurrence of a definite NP in the existential construction in Chinese cannot be licensed by an event variable. If a definite NP occurs in the existential sentence, the only way to license it is to associate a focus particle with it. If this is true, then the question left unanswered is why the definite NP can occur in Chinese existential *you*-sentences when a focus particle is introduced into the relevant sentence. A possible account is to assume that when the focus particle is introduced into the relevant sentence, what is asserted by the existential operator is not the existence of the referent denoted by the definite NP, but that of a new relation associated with the relevant referent in interpretation.

An interesting point to note is that, if *neige ren* 'that man' in (17) is replaced by *neiben shu* 'that book', the relevant sentences become acceptable, as shown below:

(22) *Wuzi-li* ***jiu*** *you neiben shu.*
Room-in precisely have that book
Lit. 'There is that book precisely in the room.'

The difference between (17) and (22) is that *neiben shu* 'that book' in (22) is ambiguous between a definite reading and a token reading (cf. Jenkins 1975, Hannay 1985, Lumsden 1988, Prince 1992, Abbott 1993, Ward and Birner 1995, Verkuyl 1997), and can thus be easily treated as a copy of that book when identified as an instance of a known type, while neither *neige ren* 'that man' nor the name *Zhangsan* in (17) can be treated as a token of a certain person. Notice that what *jiu* focuses on is the preverbal locative subject, and that the relevant sentences in (22) will become unacceptable if the preverbal locative subject is dropped, as shown below.

(23) ****jiu*** *you neiben shu.*
precisely have that book

It has long been observed that *jiu* indicates earlier-than-expected or smaller-than-expected values on an underlying pragmatic scale (Paris 1985, Biq 1987, Lai 1995). Hence, in (21) *jiu* presupposes a scale of different locations, with a location on that scale which is expected to apply to the existential predicate, i.e., *you neiben shu*, and the location asserted by *jiu* is the one that is lower than the expected point on that scale. Since a scale of locations is associated with the existential predicate in interpretation, the token reading of the post-*you* NP is forced out. If in some context the overt locative phrase can be easily treated as one of the options that can apply to the predicate, the focus particle *jiu* can be omitted, as shown in (24a).

(24) a. *tade wuzi-li you neiben shu.*
his room-in have that book
Lit. 'There is that book in his room.'

b. **tade wuzi-li you neige ren/Zhangsan.*
his room-in have that man/Zhangsan
Lit. 'There is that man/Zhangsan in his room.'

The token reading of the definite NP is allowed in (22) and (24a), but not in (24b) simply because in (22) and (24a) what is asserted is not the entity denoted by the relevant definite NP, but a token of the type represented by the definite NP. The type/token distinction can be made clear by the acceptability contrast between (24a) and (24b). (24b) is ungrammatical because a definite NP denoting a human being cannot instantiate a token reading.

Obviously, the token reading account cannot be applied to the analysis of the examples given in (10–13) when the focus particle used is *hai* (in addition) rather than *jiu* (precisely). We claim that, when *hai* is used, what is asserted in (10–13) is not a token of the entity represented by the relevant definite NP, but a membership

relation. Following Horn (1972) and Karttunen (1974), we adopt a presuppositional analysis of focus particles. Under our analysis, *hai* functions as an additive operator which not only presupposes the existence of a set of persons who like you (*hen xihuan ni*), but also assert the membership relation of the focused NP to the presupposed set. Hence, in (11) what is asserted is neither the existence of the entity denoted by the definite NP *Zhangsan* nor a token of *Zhangsan*, but the relationship between *Zhangsan* and a presupposed set, specifically *Zhangsan*'s being added to the presupposed set as a new member. According to Lü (1980), the focus particle *hai* implies the expansion of some quantity or the extension of some domain or range. Notice that the relevant quantity or domain of range need not be overtly given, since their existence can be presupposed by the use of *hai*.

From the above discussion, we can see that, although it seems that what occurs after the post-*you* NP is definite in (10–13), the definite NP in question must be licensed by being a member of a set in order for the relevant existential sentence to be acceptable. Now, we can describe the semantics of the focus particle *hai* as follows.

(25) a. HAI (α, P)

b. Presupposition: $\exists B[C(D) \wedge B = \{x|P(x)\}]$

c. Assertion: $[[\alpha]] \in B$

In the above semantic representation, α represents the post-*you* NP marked by *hai*, C, the contextual restriction function, D, the domain of discourse, B, the given set, and P, the property held by α, realized as the predication clause in position 4 in (1).

In Chinese there is another focus particle *ye* 'also' which may trigger a presupposition more or less identical to the one triggered by *hai*. Hence, in (26) both *hai* and *ye* presuppose that *Wang Laoshi* teaches at least another subject besides linguistics when they are associated with the object, respectively.

(26) a. *Wang Laoshi* ***hai*** *jiao* [***yuyanxue***]^F.
Wang teacher in-addition teach linguistics
'Wang Laoshi also teaches linguistics.'

b. *Wang Laoshi* ***ye*** *jiao* [***yuyanxue***]^F.
Wang teacher also teach linguistics
'Wang Laoshi also teaches linguistics.'

Although *ye* and *hai* exhibit the same property in the above sentences, they behave differently in the existential *you*-sentences when the postverbal NP is definite.

(27) ****Ye*** *you neige ren/Zhangsan hen xihuan ni.*
also have that man/Zhangsan very like you
Lit. 'There is also that man/Zhangsan who likes you very much.'

The acceptability of sentences like (7) cannot be improved when the post-*you* NP is focused by *ye* if it is definite, as shown in (27) above, though the relevant sentence can be acceptable if the post-*you* NP is indefinite, with or without *ye*, as shown in (28) below.

(28) (***Ye***) *you jige nan xuesheng hen xihuan ni.*
also have several male student very like you
Lit. 'There are also several male students who like you very much.'

We think that the difference between *hai* and *ye* lies in the fact that *hai* asserts the existence of a new membership relation by adding an entity to the presupposed set, whereas *ye* only asserts the existence of an entity, denoted by the definite NP, by ascribing a property to it. The semantic description of *ye* can be given below:

(29) a. YE (α, P)

b. Presupposition: $\exists$x[P(x)]

c. Assertion: $\exists$x $\neq \alpha$ [P(x)]

From the semantic representations, given in (25) and (29), we can see that *hai* and *ye* have different presuppositions and assertions. The presupposition triggered by *hai* is a set, the so-called presupposed set mentioned above, while that by *ye* is only the existence of some entity that has the relevant property P. *Hai* asserts the existence of a membership relation, namely that the entity denoted by the definite NP is a member of the presupposed set, whereas *ye* asserts the existence of the entity, denoted by the definite NP, that has the relevant property. These differences help us explain why (27) is ungrammatical. This is because the assertion triggered by *ye*, namely the existence of the entity denoted by the definite NP, is in conflict with the basic function of the existential construction: the definite NP presupposes the existence of its referent, while the existential construction introduces the relevant referent into the discourse.

Another point that we want to make is that what is asserted in (10–13) is not the existence of a list, as is the case in the LIST reading of definite NPs widely discussed in the literature, but rather the existence of a membership relation of the relevant definite NP to a presupposed set. According to Milsark (1974), and Rando and Napoli (1978), what is asserted in the following LIST sentence (30) is not the existence of the referent denoted by the postverbal NP, but rather that of a list associated with that NP. Rando and Napoli (1978) argue that the postverbal NP in the English existential sentence must represent an unfamiliar entity. Hence, under their analysis, the so-called LIST sentences which contain formally definite NPs do not constitute counterexamples to the nonanaphoricity requirement as the requirement applies to the whole semantically indefinite list rather than the members of the list, as shown below:

(30) Q. What's worth visiting here?
A. There is the park, a very nice restaurant, and the library.
(Rando and Napoli 1978: 300–301)

However, the analysis proposed by Rando and Napoli (1978) may not fully account for the Chinese data. For instance, in (14), repeated below as (31), the post-*you* NP does not satisfy the nonanaphoricity requirement as the postverbal NP is a pronoun referring to the NP occurring in the previous sentence, though the sentence is not ungrammatical. Notice that in (31) Speaker A does not use the existential sentence to assert the existence of a list, but rather that of a membership relation between *Zhangsan* and the set of persons who like *Lisi*. Hence, it is not the existence of a list but the existence of a membership relation between *Zhangsan* and the presupposed set/list that is asserted by the relevant sentences in Chinese.

(31) A: *Zhiyou Wangwu hen xihuan Lisi.*
only Wangwu very like Lisi
'Only Wangwu likes Lisi very much.'

B: *shi ma? Zhangsan xi-bu-xihuan Lisi ne?*
yes Q Zhangsan like-not-like Lisi Q
Lit. 'Really? Does Zhangsan like Lisi or not?'

A: *Oh, duile, hai you Zhangsan/ta (ye) hen xihuan Lisi.*
right in-addition have Zhangsan/he also very like Lisi
Lit. 'Oh, right, there is in addition Zhangsan/HE who also likes Lisi.'

Now, let us see how to account for the ungrammaticality of (15) and (16), repeated below as (32) and (33).

(32) ****Hai*** *you meige ren/daduoshude ren.*
in-addition have every man/most man

(33) ****Hai*** *you meige ren/daduoshude ren (ye) hen xihuan ni.*
in-addition have every man/most man also very like you
Lit. 'There is/are in addition everybody/most people who also like you very much.'

A anonymous reviewer suggests that the above two sentences are ungrammatical because the list membership under discussion cannot include the universal quantifier *every man*. We think that his/her suggestion is basically right. In the above sentences, neither *meige ren* 'everybody' nor *daduoshude ren* 'most people' are individual denoting, and as a result, the focus operator cannot apply to it so as to derive the set–member relationship reading as required. Notice that, when there is a way to treat *meige ren* as an individual-like NP, then the relevant sentences become acceptable, as shown below.

(34) a. ***Hai*** *you meiguo lai de meige ren (ye) hen xihuan ni.*
in-addition have America come MOD every man also very like you
Lit. 'There is in addition everybody from America who also likes you very much.'

b. *Zhe'er* ***jiu*** *you ni xihuan de meiben shu.*
here precisely have you like MOD every book
Lit. 'There is every book that you like precisely in this place.'

When *meige ren* is modified by a relative clause, as in (34a), the quantifier-containing NP refers to a particular set of persons. In this case, the set denoted by *meiguo lai de meige ren* 'everybody who comes from America', as a whole, constitutes a member of the presupposed set of persons that like you very much. (34b) is acceptable for the same reason.

We have discussed two ways to avoid a DE violation in the Chinese *you*-existential construction when a definite NP occurs after *you*. One way is to use focus particles like *hai*. The other way is to make use of the lexical semantics of the definite NP. If the relevant definite NP can be assigned a token reading, then what is asserted is the existence of a copy of the referent of the definite NP. The use of the focus particle *jiu* relies on the lexical semantics of the definite NP. If there are other devices that can derive a token reading from the lexical semantics of the relevant definite NP, the focus particle *jiu* need not appear. Notice that the focus particle *hai*, different from *jiu*, does not rely on the lexical meaning of the relevant definite NP. Since *hai* means that the referent of the NP associated with it is a member newly added to the presupposed set, the sentence in (17) will become acceptable if *jiu* is replaced by *hai*, as shown below.

(35) *Wuzi-li* ***hai*** *you neige ren/Zhangsan.*
room-in in-addition have that man/Zhangsan
Lit. 'There is in addition that man/Zhangsan in the room.'

3. CONCLUSION

In this paper we have found that, whenever a definite NP is allowed to occur in an existential sentence in Chinese, it must be interpreted as standing in a relation to a presupposed set. In such cases, it is not the existence of the referent denoted by the definite NP that is asserted, but that of either a token of the entity represented by the relevant definite NP or a membership relation that the referent denoted by the definite NP has with the presupposed set. Since what is asserted is not the existence of the referent denoted by the definite NP, the apparent violation of DE will not result in the ungrammaticality of the relevant Chinese existential sentences. These facts show that the alleged restriction against the definite NPs in existential *you*-sentences is in fact a reflex of a more general constraint which requires existential sentences to introduce new information into the discourse, and the new information can be either a new entity or a new relation.

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EXISTENTIAL SENTENCES, BE, AND THE GENITIVE OF NEGATION IN RUSSIAN

Abstract. The Genitive of Negation (Gen Neg) in Russian involves alternation of Genitive with Nominative or Accusative under conditions which have been debated for many decades. What gives the construction its name is that Gen Neg occurs only under sentential negation; other allegedly crucial factors include topic–focus structure, unaccusativity, perspectival structure, the lexical semantics of the verb, and the referential status of the NP. Here we focus on Subject Gen Neg sentences, which on our account (following Babby and many Russian scholars) are normally Existential sentences. We address the problem raised by certain Gen Neg sentences with the copula *byt*' and referential subjects which appear to be negations of Locative rather than Existential sentences. We review why Babby exempted some sentences with *byt*' from his analysis, and present challenges raised by the two present tense forms of the verb. These problems lead to a re-examination of the distinction between Existential and Locative sentences, and of the distinction between sentential and constituent negation. We identify three distinct approaches to these issues, exploring their strengths and weaknesses. We do not argue conclusively for one approach but identify open questions which we believe need answers before the issues can be resolved.

1. INTRODUCTION

In many languages, Existential sentences have a special syntactic shape, different from regular subject–predicate sentences, as illustrated by English (1a–b).

(1) a. There are two holes in my left pocket.

b. Two holes are in my left pocket.

In Russian, perhaps because of (a) the "freedom" of word order, (b) the absence of articles, and (c) the absence of an overt *there*-like expletive, the difference between Existential and predicative sentences is less obvious in many cases.

(2) a. V gorode byl doktor.
In town was-M.SG doctor-NOM.M.SG
'There was a doctor in town.'

b. Doktor byl v gorode.
doctor-NOM.M.SG was-M.SG in town
'The doctor was in town.'

I. Comorovski and K. von Heusinger (eds.), Existence: Semantics and Syntax, 147–190.

It is possible and natural to view the sentences in (2), under neutral intonation, as differing only in Theme–Rheme structure and word order (and correspondingly in definiteness of the bare NP); the issue of whether there is any deeper syntactic difference between them is controversial. But under negation, a well-known phenomenon distinguishes the two types sharply:

> In some negated sentences of Russian, as is well known, two main case forms are possible – nominative case and genitive case: *Otvet ne prišel – Otveta ne prišlo*.[1] The syntactic, semantic, and communicative particulars of the second of these constructions are one of the classic themes of general and Russian grammar, and have given rise to a huge literature. (Apresjan 1985, p. 292)

The contrasting pair of sentences mentioned by Apresjan are shown in (3a–b).

(3) a. Otvet ne prišel.
Answer-**NOM.**M.SG NEG came-M.SG
'The answer didn't come.'

b. Otveta ne prišlo.
Answer-**GEN.**M.SG NEG came-**N.SG**
'No answer came.'

Another characteristic of intransitive sentences whose subject is marked with the Genitive of Negation (henceforth Gen Neg) is the non-agreement of the "impersonal predicate" with the subject, i.e., the verb is always **N.SG**. One common view: such sentences are impersonal sentences. But not the corresponding affirmatives: "These sentences are impersonal only when negated. If one removes the negation, they become personal[2] . . . ". (Peškovskij 1938, p. 334)

In a classic work on the subject, Babby (1980) argued that all intransitive Gen Neg sentences are Existential sentences. Babby introduced the following terminology: "negated declarative sentences" (NDS), for the sentences with nominative subjects, (4a) (also called "Locative sentences" if the predicate is locative.) vs. "negated Existential sentences" (NES), for those with genitive "subjects", (5a). The corresponding affirmative sentences (ADS and AES) are shown in (4b) and (5b).

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[1] We have changed the noun in Apresjan's example from a neuter one (*pis'mo* 'letter') to a masculine one (*otvet* 'answer') to show the lack of subject–verb agreement in the case of a genitive 'subject'. In glossing our examples, we use the following abbreviations:

NOM, GEN, ACC	nominative, genitive, accusative
M, F, N	masculine, feminine, neuter
SG, PL	singular, plural
1, 2, 3	first person, second person, third person

We use boldface to highlight the relevant occurrences of **NOM** and **GEN** on nouns and **N.SG** on non-agreeing verbs. We do not gloss irrelevant morphology.

[2] Perlmutter and Moore (2002) consider even the affirmative counterparts of these sentences, where the "subject" is necessarily nominative, to be impersonal constructions; so does Babby (2001).

(4) NDS (a) Otvet iz polka ne prišel.
Answer-**NOM.**M.SG from regiment NEG arrived-M.SG
'The answer from the regiment has not arrived.'

ADS (b) Otvet iz polka prišel.
Answer-NOM.M.SG from regiment arrived-M.SG
'The answer from the regiment has arrived.'

(5) NES (a) Otveta iz polka ne prišlo.
Answer-**GEN.**M.SG from regiment NEG arrived-**N.SG**
'There was no answer from the regiment.'

AES (b) Prišel otvet iz polka.
Arrived-M.SG answer-NOM.M.SG from regiment
'There was an answer from the regiment.'

Babby notes that the affirmative ADS and AES sentences, which are morphologically identical, normally differ in the order of subject and verb (under neutral intonation), while in the negative sentences, where the difference between NDS and NES is marked by case, the word order seems to vary more easily; we return to this important point later.

Here are some more standard examples. In (6a) and (7a), with nominative subjects, there is a presupposition that there was some runoff of thawed snow, or that there was frost (i.e. temperature below freezing); in (6b) and (7b), there is no such presupposition, leading to an implicature of non-existence. Sentences (8a–b) and (9a–b) show that there is not always a choice: (8a) is semantically anomalous because the presupposition of existence associated with the choice of nominative case conflicts with the assertion of non-existence; the genitive in (8b) is obligatory. And (9a–b) illustrates the fact that Gen Neg is incompatible with agentive verbs.

(6) a. NDS: Stok talyx vod ne nabljudalsja.
Runoff-**NOM** melted water NEG was.observed-M.SG
'The runoff of thawed snow was not observed.'

b. NES: Stoka talyx vod ne nabljudalos'.
Runoff-**GEN** melted water NEG was.observed-**N.SG**
'No runoff of thawed snow was observed.' (= There was no runoff.)

(7) a. NDS: Moroz ne čuvstvovalsja.
Frost-**NOM.**M.SG NEG be.felt-M.SG
'The frost was not felt.' (E.g. we were dressed warmly).

b. NES: Moroza ne čuvstvovalos'.
Frost-**GEN.**M.SG NEG be.felt-**N.SG**
'No frost was felt (there was no frost).'

(8) a. NDS: *(#) Somnenija ne byli.
Doubts-**NOM.**N.PL NEG were-N.PL

b. NES: Somnenij ne bylo.
Doubts-**GEN.**N.PL NEG were-**N.SG**
'There were no doubts.'

(9) a. NDS: Lena ne pela.
Lena-**NOM**.F.SG NEG sang-F.SG
'Lena didn't sing.'

b. NES: *(#) Leny ne pelo.
Lena-**GEN.**.F.SG NEG sang-**N.SG**

In addition to "subject Gen Neg" as sketched above, there is "object Gen Neg", in which direct object Accusative alternates with Genitive under negation. The semantic effect in that case, if any, is less well understood, although some scholars such as Babyonyshev (1996) believe that is equally a matter of being inside/outside the scope of negation. Some but not all scholars believe that the two cases should be viewed as a single phenomenon. In some Slavic languages, the two phenomena clearly diverge; in Russian, many argue that they can and should be seen as one phenomenon.

Our concerns in this paper and the structure of the rest of the paper are as follows. In section 2, we review the evidence from Babby (1980) and many others that DS's and ES's differ in scope of negation. Babby further claims that the scope of negation is determined by Theme–Rheme structure. Also in section 2 we review the claims of Pesetsky (1982) and many others that "object" Genitive of Negation and "subject" Genitive of Negation are a unified phenomenon. On this view, Gen Neg always applies to underlying objects, hence in the "subject" case, the verbs are all unaccusative. No special notion of "Existential sentences" is appealed to on this view. For Babby, on the other hand, all Subject Gen Neg sentences are Existential (with one exception to be discussed, involving the important verb *byt*' 'be'). For Paducheva (1997), there are two distinct cases of subject Gen Neg: Existential sentences and perception-report sentences.

In Borschev and Partee (1998a,b), we followed Babby in the use of Theme–Rheme structure as a critical factor. We added an obligatory LOC(ation) role in ES's (following many earlier authors) and made proposals integrating lexical and compositional semantics and Theme–Rheme structure. But Borschev and Partee (2002a,b) argue that the needed distinction is not identical to the Theme–Rheme distinction. We introduce a "Perspective Structure", which we believe may be related to diathesis choice, although we remain agnostic about the syntactic implementation. "Perspectival Center" is proposed in place of Babby's use of Theme. We review this analysis in section 3, and its application to Existential sentences with a range of lexical verbs in section 4. The material in sections 2 through 4 is taken in large part from Borschev and Partee (1998a, 2002a,b), where we have built on the

work of Babby (1980), Paducheva (1992, 1997), Arutjunova and Širjaev (1983), Arutjunova (1997), Bailyn (1997), Brown (1999) and others. Some examples given here without specific attribution are ones that have become "common property" in the rich literature on Gen Neg, tracing back to such classic works as Peškovskij (1938), Ickovič (1974), and Babby (1980).

A related issue that has been a classic problem in Russian syntax and semantics concerns the forms and meanings of the verb *byt*' 'be' in Existential and other sentences, and its interaction with Gen Neg, studied by Chvany (1975), Babby (1980), Kondrashova (1996), Harves (2002a,b), and Paducheva (1992, 2004, 2006). In section 5, we review why Babby (1980) exempted some sentences with the verb *byt*' from his analysis, and present the challenges raised by the present tense forms of the verb. In section 6, we show how these problems lead to a re-examination of the distinction between Existential and Locative sentences, and to some difficult questions about the distinction between sentential and constituent negation. We identify three distinct approaches to these issues, exploring their motivations and their strengths and weaknesses. We do not try to argue conclusively for one approach but identify open questions which we believe need to be studied further before the issues can be resolved. We close in section 7 with brief summary conclusions.

2. BABBY ON "DECLARATIVE" AND "EXISTENTIAL" SENTENCES

2.1. Information Structure and the Scope of Negation

Babby's first main proposal about the distinction is shown in his chart (10) (Babby 1980: 72) below: DS's and ES's differ in their "scope of assertion/negation".

(10)

	AFFIRMATIVE	**NEGATED**
EXISTENTIAL	$[_{\text{Scope of A}}$ VP NP$] \Rightarrow_{\text{NEG}}$	[ne VP NP_{gen}]
DECLARATIVE	NP $[_{\text{Scope of A}}$ VP$] \Rightarrow_{\text{NEG}}$	NP_{nom} [ne VP]

Thus the NDS (6a) presupposes that there was some runoff of thawed snow and asserts that it was not observed, i.e. negates only that it was observed. The corresponding NES (6b) is used to negate the very existence of any runoff of thawed snow. The NES also negates "was observed", i.e. it negates the whole sentence; but in this case *nabljudalos*' 'was.observed' functions as a "weak verb" (often described as "semantically empty"). The notion of "weak" or "empty" verbs was at the center of the work reported in Borschev and Partee (1998a); we will discuss it in section 4.

Babby relates chart (10) to the *categorical* vs. *thetic* distinction (cf. Kuroda's 1972 discussion of Brentano and Marty). But that important issue will not be discussed here.

Babby's second main proposal is that the scope of assertion/negation can be equated with the Rheme of the sentence according to the division of the sentence

into Theme and Rheme (or Topic and Focus). (Babby 2001 maintains the same correlation but adds a syntactic layer of analysis so that morphology does not have to interface with information structure directly.)

On Babby's view, an AES or NES is a "Rheme-only" sentence (plus optional thematic locative). Babby's (1980) rule of genitive marking in NES's is shown in (11).

(11) NEG
$[_{\text{Rheme}}\text{V NP}] \Rightarrow [\text{ne V NP}_{\text{gen}}]$
Conditions: (a) NP is indefinite
(b) V is semantically empty

Our principal amendment in Borschev and Partee (1998a,b) is the idea that existence is always relative to a "LOCation", which may be implicit.[3] We accept Jackendoff's (1972, 1990) metaphorical-structural extensions of "being in a location" to include "being in some state", "occurring in some spatiotemporal region", "being in someone's possession", extending also to "being in the speaker's (or an observer's) perceptual field" (Paducheva 1992, 1997). Then whereas Babby analyzed ES's as "Rheme-only", with a possible optional Thematic Location, we argued that the LOCation, either given or contextually presupposed, is a semantically obligatory part of the construction and is the Theme. The assertion (Rheme) is that the/a "THING" described by the subject NP exists in that LOCation.

2.2. Alternatives to Babby's Analysis: Unaccusativity

Starting with Chvany (1975) and gaining ground after Perlmutter introduced the subdivision of intransitive verbs into unaccusative and unergative, some scholars began to argue that (all and only) the unaccusative verbs undergo Gen Neg on their subjects. However Babby (1980, 2001) argued that not all unaccusative verbs can occur with Gen Neg, citing (12) as an example that disallows a genitive variant despite containing an arguably unaccusative verb.

(12) Za vse vremja suda u nee na lice ne
during whole time of-trial at her on face NEG
drognul ni odin muskul.
twitched not one-**NOM** muscle-**NOM**
'Not a single muscle twitched on her face during the entire trial.'
(Babby 2001, p. 43)

[3]The claim that existential *be*-sentences always have an obligatory Locative argument is also made by Yokoyama (1986), Kondrashova (1996) and Comorovski (1995). Chvany (1975) emphasizes that no such argument is syntactically obligatory, while Kondrashova (1996) goes so far as to make the location the subject at her level of NP-structure.

Proponents of the unaccusative analysis, starting with Chvany (1975), Perlmutter (1978) and Pesetsky (1982), would argue that being an underlying direct object is a necessary but not a sufficient condition for the occurrence of Gen Neg, so even if it were true that a genitive variant of (12) were impossible, it would need further explanation but would not be a conclusive argument. But in fact the genitive variants of sentences like (12) *are* possible (but only when they contain the emphatic negative focus particle *ni*, a condition absent from typical Existential sentences). This fact is actually a considerable problem for Babby's and our analyses; either these are not Existential sentences, and the claim that subject Gen Neg occurs only with the semantics of Existential sentences is too strong, or they are Existential sentences but of some not well understood sort.[4] Perhaps the dichotomous classification of sentences into two types is too simplistic. In any case we recognize the existence of genitive variants of sentences like (12) as an important problem but defer it to future research. For the rest of this paper we ignore the existence of such sentences.

Another of Babby's arguments against the unaccusative analysis is that some unergative verbs can occur in Existential sentences with Gen Neg (see (13)). Proponents of the unaccusative analysis would presumably argue that the verb has been shifted to an unaccusative in (13).

(13) ..., tam ne rabotaet ni odnogo inženera.
..., there NEG works not one-**GEN** engineer-**GEN**
'there hasn't been a single engineer working there'
(Babby 2001, p. 50)

Unaccusativity and Existentiality are clearly different notions; one property they share is "non-Agentivity". We remain agnostic about the Unaccusativity requirement, noting only that given the openness of the class of possible "genitive verbs", this approach will have to permit verbs to shift in and out of the unaccusative class. It is possible, as we suggested in Borschev and Partee (2002a), that 'it may be the choice of "LOCation" as the "Perspectival Center" (see section 3.2) of the sentence that is the functional trigger for choosing the impersonal construction' (Borschev and Partee 2002a, p. 234), a construction that according to Perlmutter and Moore (2002) involves Unaccusativity; and it may be that Existential sentences are just one particularly prominent class of sentences that have LOC as Perspectival Center.

Paducheva (1997) breaks the subject Gen Neg sentences into two classes, Existential sentences and perception sentences. We believe these can be viewed as two subclasses of Existential sentences once we make existence relative to a location

[4] Sentences of this sort seem to have near-paraphrases in English like "There was not a single muscle twitching on her face", "There was not a single bottle broken", etc.; such sentences are also not typical existentials in English, and the status of their participial "codas" is not clear. We leave this matter for further research.

(section 3); in perception sentences, the relevant location is implicitly 'the perceptual field of the observer'.[5]

There are a great many analyses of Gen Neg in the literature, too many to discuss. Most Western Slavists hold that Unaccusativity is at least a necessary condition; few are explicit about the semantics of the construction other than that it occurs within the scope of sentential NEG (a generalization challenged in Partee and Borschev (2002)). Babby and we have been among the few to argue that subject Gen Neg sentences are all Existential[6] (a property not easily ascribed to object Gen Neg).

3. EXISTENTIAL VS. LOCATIVE: "PERSPECTIVE STRUCTURE"

3.1. Against Theme–Rheme Differences as the Crucial Distinction

In the light of comments by colleagues and a review of Arutjunova (1976) and other literature, we came to doubt the correlation of the NES–NDS distinction with the postulated difference in Theme–Rheme structure. Thus in examples (14–16) below, it appears to us that the words *sobaki* 'dog-**GEN**.F.SG', *myšej* 'mouse-**GEN**.F.PL', *kefira* 'kefir-**GEN**.M.SG' may be Theme (or part of the Theme) of these sentences. Both their most natural intonation pattern and their (most likely) interpretation in the given contexts support this point of view, which argues against the generalization in (11).

(14) (in a context talking about dogs]
Sobaki u menja net. (Arutjunova 1976)
dog-**GEN**.F.SG at I-GEN NEG.is
I don't have a dog.

(15) [Myši v dome est'?] – Net, myšej v dome net.
[mouse-PL in house is?] No, mouse-**GEN.**F.PL in house NEG.is
[Are there mice in the house?] – No, there are no mice in the house.
(Arutjunova 1997)

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[5] Our earlier papers treat examples like (i a–b) with perception predicates like *vidno* 'to be seen, visible'.

(i) (a) Maši (GEN) ne vidno. (b) Maša (nom) ne vidna.
Masha is not visible/is nowhere to be seen. Masha is not visible.

Gen Neg in (ia) indeed implicates Masha's absence, while Nominative in (ib) conveys that Masha is present but simply not visible (e.g. she's standing behind a tall person). Such examples fit our analysis nicely. These "perception sentences" seem to tolerate definite subjects with Gen Neg more easily than the typical existential sentences, a property which may eventually turn out to require rethinking their assimilation to the existential type. But it is not only perception sentences and sentences with *byt*' 'be' (section 4) that allow definite subjects with Gen Neg; we have found examples with quite a range of verbs, so we continue to believe that perception verbs allow the same kinds of diathesis alternation as other 'optionally genitive' verbs. Steube and Späth (1999), discussing Borschev and Partee (1998a), argue for the "non-referentiality" of many definite Gen Neg subjects. See also Footnote 8.

[6] And given the observation in the previous footnote, we are no longer sure that this position is correct. But at least a very large proportion of the subject GenNeg sentences are existential, and those are the focus of this paper.

(16) [Ja iskal kefir.] Kefira v magazine ne bylo.
Kefir-**GEN.**M.SG in store NEG was-**N.SG**
'[I was looking for kefir.] There wasn't any kefir in the store.'
(Borschev and Partee 1998b, 2002a,b)

In (16), *kefira* 'kefir', in the genitive, is nevertheless part of the Theme. The evidence is twofold. In the first place, the rules governing the interplay of word order and intonation in Russian have been very well studied and repeatedly argued to be intimately bound up with Theme–Rheme structure (Kovtunova 1976, Švedova 1980, Yokoyama 1986; similarly for Czech and in general as discussed in Sgall et al. 1986). According to those principles, *kefira* should be the Theme or part of the Theme in (16). Secondly, according to virtually all theories of communicative structure, the Rheme of one sentence is a favored candidate to become the Theme of the following sentence: one sentence introduces something as important, and the following sentence picks up that topic and says something about it. There are more details and further discussion of this issue in Borschev and Partee (2002a,b,c).

3.2. What Distinguishes "Existential Sentences" from "Locative" Sentences?

3.2.1. Making location part of the story

Among the central notions needed for understanding Existential sentences, Arutjunova (1976, 1997) distinguishes three components in a "classical" Existential sentence: a "Localizer" ("Region of existence"), a name of an "Existing object", and an "Existential Verb":

(17) V ètom kraju (Loc'zer) est' (Exstl Verb) lesa ("Existing Object").
In that region is/are forests-NOM.M.PL
'There are forests in that region.'

We have used different terms for the same notions: LOCation, THING, and BE. One of the core principles behind our analysis is as follows.

(18) "EXISTENCE IS RELATIVE" PRINCIPLE:
Existence (in the sense relevant to AES's and NES's) is always relative to a LOC(ation).

We discuss the principles that determine *which* LOCation is relevant in a given case in Borschev and Partee (1998a, 2002a) and will not address them here.

3.2.2. Existential sentences: LOC as perspectival center

There seems clearly to be a distinction, discussed by many authors in many frameworks, involving a contrast in two kinds of sentences each having the parts we call "BE (THING, LOC)", where BE stands for any "potentially existential" verb which can be used in both kinds of sentence. In an Existential sentence, it is as if

the predication is somehow "turned around", to assert of the LOCation that it has the THING in it. But in what way and at what "level" of structure is the predication "turned around"?

Babby (1980) proposed a difference at the level of Theme–Rheme (or Topic–Focus) structure. A number of linguists including Babby (2000) have proposed differences in syntactic structure, without taking a definite stand on the resulting semantics. We propose in Borschev and Partee (2002a) that in addition to topic–focus structure there is a relevant 'Perspectival Structure', relating to an often observed difference in predication in Existential vs. Predicational sentences. Both types have a verb with two arguments we call THING and LOCation.

In the unmarked structure, the THING is chosen as "Perspectival Center"; this is a Predicational sentence. In an Existential sentence, the LOC[7] is chosen as "Perspectival Center"; in some sense it turns the predication around: saying of the LOC that it has THING in it. If the LOC is implicit, this is a "thetic judgment". (Our Perspectival Center plays the role that "Theme" played for Babby 1980.)

(19) PERSPECTIVE STRUCTURE:
An "existence/location situation" may be structured either from the perspective of the THING or from the perspective of the LOCation. We use the term *Perspectival Center* for the participant chosen as the point of departure for structuring the situation.

An analogy may be made with a video camera and "what the camera is tracking". A Predicational sentence keeps the camera fixed on the protagonist as she moves around (THING as Center); an Existential sentence is analogous to the way a security camera is fixed on a scene and records whatever is in that location (LOC as Center).

(20) PERSPECTIVAL CENTER PRESUPPOSITION:
Any Perspectival Center must normally be presupposed to exist.

Principle (20) allows us to derive the same presuppositions that were derived in Borschev and Partee (1998a) from the correlation of greater presuppositionality with the Theme of the sentence (Hajičová 1973, 1974, 1984, Peregrin 1996, Sgall et al. 1986). In particular, from this principle it will follow that the nominative subjects in NDS's are normally presupposed to exist, whereas in NES's, only the LOCation gets an existence presupposition from the construction, and the perspectival structure does not provide any existence presupposition for the THING. To test such claims, we need examples where the subject or the LOC phrase does not get an existential presupposition from its lexical content or from some other part of the structure, so the LOC phrase should not, for instance, be a well-known place

[7]This is oversimplified; the term "LOCation" must be construed broadly, and the sentences are not only about existence but also 'coming into existence', 'being present', occurring, being in one's perceptual field, etc.

name. Example (21) has the right structure, with potentially non-presuppositional NP and LOC. The contrast between (21a) and (21b) confirms the hypothesis.

(21) (a). Studenty ne byli na koncerte. Koncerta ne bylo.
Students-**NOM** NEG were at concert. Concert NEG was
'The students were not at the concert. There was no concert.'

(b). Studentov na koncerte ne bylo. #Koncerta ne bylo.
Students-**GEN** at concert NEG was. Concert NEG was
'There were no students at the concert. #There was no concert.'

(22) THE SEMANTICS OF NESs:
An NES denies the existence *in the Perspectival center LOCation* of the THING(s) described by the subject NP.

We have seen examples with implicit Thematic locations associated with implicit observers. There are also cases, like (23), in which the implicit Thematic location is simply "the actual world," yielding a literal denial of existence.

(23) Edinorogov ne suščestvuet.
Unicorns-**GEN**.M.PL NEG exist-**SG**
'Unicorns do not exist.'

In Borschev and Partee (1998a), we related principle (22) to the following principle, where "V" represents any lexical verb.

(24) PRESUPPOSED EQUIVALENCE:
An NES presupposes that the following equivalence holds locally in the given context of utterance:
V(THING, LOC) $\Leftrightarrow$ BE(THING, LOC)

In the general case, we assume that verbs have their usual lexical meaning, which in most cases is not simply "exist" or "be". If the Gen Neg construction is used, the hearer uses contextual information to support an accommodation of the presupposition (perhaps shifting the verb meaning to make it "less agentive" in some cases). Examples involving the interaction of additional "axioms" deriving from lexical semantics, encyclopedic knowledge, and local contextual information are given in Borschev and Partee (1998a); a few examples are reviewed in section 4.

Our current hypothesis (Partee and Borschev 2004, 2006) about 'where in the grammar' the choice of Perspective Structure is registered is that it is a "diathesis choice", a choice among two alternative argument structures for verbs that can take both a "THING" and a "LOC" argument, analogous to the argument structure choices for verbs like *spray, load* or verbs like *give, send*. An alternative that might be preferred in some frameworks is to permit alternative surface syntactic choices from a single underlying structure, as in the "small clause" analyses of Chvany (1975) and Moro (1997), but as Ora Matushansky points out (p.c.), such an

analysis would presumably not work for the many non-raising verbs discussed in section 4.

3.2.3. THING and LOC in 'locative' vs. existential sentences

One could say that THING and LOC are *roles* of the verb *byt*', but it is undoubtedly better to consider them roles of the *participants of the situation* (or *state*) of existing or of being located. Thus, in the *kefir* sentence (16), THING is (what is denoted by) *kefir* 'kefir', and LOC is (what is denoted by) *v magazine* 'in the store'.

The LOC may be given explicitly, as in (16), or it may be implicitly understood, as in (3) or (7b). Existence is always understood with respect to some LOCation; if LOC is not expressed explicitly, it must be given by the context. An implicit LOCation is often understood as "here" or "there", "now" or "then": at the place and time where someone is awaiting a letter which "didn't arrive", for (3), or "feeling (or not feeling) the frost", for (7b).

3.3. Summary: Perspective and Its Role in Existential Sentences

Perspectival structure is basically a structuring at the model-theoretic level, like the telic/atelic distinction, or the distinction between Agents and Experiencers. These properties reflect cognitive structuring of the domains that we use language to talk about, and are not simply "given" by the nature of the external world. Correspondingly, all of them are properties with respect to which we find differences from language to language.

There are two kinds of descriptions of situations containing a THING and a LOC: the situation may be described with the THING as Perspectival Center, or with the LOCation as Perspectival Center; we make an analogy with "what the camera is tracking".

When the THING is chosen as Perspectival Center, its existence is presupposed, and the sentence speaks of its LOCation and potentially about other properties or states or actions in the situation. When we choose the LOCation as Perspectival Center, the sentence speaks about what THINGs there are or are not in that situation and potentially about what is happening in the situation.

The choice of Perspectival Center, as so described, has much in common with the choice of Theme (Topic) on the one hand, and with the choice of grammatical Subject on the other: all three notions involve structuring something (a situation, a proposition, or a sentence) so that one part is picked out and the rest is in effect predicated of it.

4. LEXICAL VERBS IN EXISTENTIAL SENTENCES

As illustrated in the examples above, a wide range of so-called "weak verbs" can be used in Existential sentences with Gen Neg. Babby (1980) put a condition on his NEG transformation (11) that the verb must be "semantically empty", and noted that this is a property that depends on multiple factors in any given case.

Paducheva (1992, 1997) ties the Gen Neg construction to the presence of a "genitive verb", but acknowledges that verbs can shift in and out of this class under pressure of the semantic and pragmatic context. In the framework of Borschev and Partee (1998a,b) we assume that the lexical verbs that show up with Gen Neg are not literally "semantically empty", but have their normal meanings, whatever those are. Corresponding to Babby's requirement that the verb be "semantically empty", we have the Gen Neg construction trigger the equivalence in (24). So when interpreting a Gen Neg sentence, we ask: what types of further axioms can we find holding for the given sentence in the given context, i.e. contained in the "theory" of the given sentence in the given context, whose presence could contribute to making the equivalence in (24) a "locally valid" theorem? We argue that such axioms may come from the dictionary, from common knowledge, or from particular contextual information or inferences. A very few examples are given below, but we omit discussion here.

"Dictionary axioms"

(25) a. NES: Ne belelo parusov na gorizonte.
NEG shone-white-**N.SG** sails-**GEN**.M.PL on horizon
'No sails were shining white on the horizon.'

b. Presupposed Equivalence:
'A sail shone white on the horizon.' <==> 'There was a sail on the horizon.'

c. 'Dictionary axiom' (part of lexical semantics):
to shine-white <==> to be white (and in observer's field of vision)

d. Dictionary or encyclopedic axiom; 'common knowledge':
Sails as a rule are white.

Dictionary plus Contextual Axioms. The force of the presupposed equivalence (24) is even clearer for an example in which the equivalence is less expected.

(26) NES:
Ne belelo domov na gorizonte.
NEG shone-white-**N.SG** houses-**GEN.**M.PL on horizon
'No houses were shining white on the horizon.'

Example (26) is initially infelicitous in most contexts, but is acceptable if the hearer can accommodate the assumptions that all houses in the region are white, that the horizon is visible, and that there is an observer.

Axioms of "Free Choice". The pair (7a–b), repeated below as (27a–b), illustrates that the relevant assumptions may be a matter of choice, depending on what the speaker wishes to convey. To predicate of the (existing) frost that it was not felt, one avoids equating existing with being felt, and uses the nominative choice (27a). In (27b) the verb is "bleached": here *feeling* is not of direct interest, but is just taken as the usual way of detecting the existence of 'frost' (i.e. of coldness).

(27) a. NDS: Moroz ne čuvstvovalsja.
Frost-**NOM**.M.SG NEG be.felt-M.SG
'The frost was not felt.' (E.g. we were dressed warmly).

b. NES: Moroza ne čuvstvovalos'.
Frost-**GEN**.M.SG NEG be.felt-**N.SG**
'No frost was felt (there was no frost).'

Axioms about characteristic actions or states for given kinds of things. The general form for axioms of this kind is: for a thing of such-and-such a kind to exist (in a given location) is for it to perform a characteristic action or activity or be in a characteristic state (in that location). Examples like these show that whether a verb in a given sentence permits the "semantic bleaching" required by the Gen Neg construction often depends on the choice of subject, as observed by Mel'čuk (1982).

(28) a. NES:
V našem lesu ne rastet gribov. (Babby 1980, p. 66, ex. (71a))
In our forest NEG grows-**SG** mushrooms-**GEN**.M.PL
'There are no mushrooms growing in our forest.'

b. NDS for contrast: (Babby 1980, p. 67, ex. (72b))
Zdes' daže trava ne rosla.
Here even grass-**NOM**.F.SG NEG grew-F.SG
'Even grass couldn't grow here'

"Genitive" verbs. Let us return to the issue of which verbs can be "genitive" and the nature of their "weakness." What we conclude is that NES's may contain any verb which in a given context for one reason or another may be considered equivalent to "be" (or "appear" – "begin to be," etc.).[8] Since the axioms supporting this equivalence may come in part from the context in which the sentence is used, a "list" of

[8] Valentina Apresjan points out (p.c.) that this equivalence requirement can be used to sort out which verbs of perception do and which do not occur with Gen Neg, thereby resolving a challenge raised by Ju. D. Apresjan to E.V. Paducheva's contention that verbs of perception as well as existential verbs occur with Gen Neg. So perception verbs like *belet'* 'to shine white' and *slyšat'sja* 'to be heard' can occur with Gen Neg because the presupposition that 'to shine white is to be' or 'to be heard is to be' can be accommodated, whereas *paxnut'* 'to smell (intr.)' cannot occur with Gen Neg in a sentence meaning 'the fish didn't smell', since in such a case it is difficult or impossible to accommodate the presupposition that for a fish, to be is to smell (bad). This observation further strengthens our preference to analyze the perception sentences that show Gen Neg as a subtype of existential sentences. But the second author urges caution, since it is equally impossible to use *paxnut'* with Gen Neg about roses, even though one would think that emitting a fragrance is as characteristic for roses as *belet'* 'shine white' is for sails.

such verbs is impossible, as noted by Babby and others. When such axioms cannot be reasonably assumed, the NES construction is impossible: its presupposed equivalence is inconsistent with presuppositions of the verb or of other parts of the sentence, or with our representation of reality, or with our suppositions about the given context.

And conversely, some verbs virtually "demand" genitive, when the verb's meaning directly entails equivalence with *be*. With such verbs, like *suščestvovat'* 'to exist', the nominative is normally impossible,[9] and becomes possible only in special cases involving non-standard "Locations", such as alternative possible worlds. See Borschev and Partee (2002a) for examples.

There are some morphological and syntactic requirements as well which cannot be simply reduced to semantic requirements. The verb must normally take a nominative subject, i.e. it must take structural rather than lexical case. And perhaps there is a requirement of Unaccusativity, as claimed by Pesetsky (1982) and others, although on this point the independence of syntax and semantics is not clear.

5. THE CHALLENGE OF *BYT'* 'BE'

5.1. Babby's Exclusion of Some 'Be' Sentences from the Class of Existentials

Babby (1980: 124) (like Arutjunova 1976: 225) considers sentence (29a) *not* to be an NES, even though in all syntactic and morphological respects, including the manifestation of Gen Neg, (29a) looks like an ordinary NES, contrasting with (29b), which is clearly a "Locative" sentence, an NDS.

(29) a. Ivana ne bylo na lekcii
Ivan-**GEN**.M.SG NEG was-**N.SG** at lecture
'Ivan wasn't at the lecture.'

b. Ivan ne byl na lekcii
Ivan-**NOM**.M.SG NEG was-M.SG at lecture
'Ivan wasn't at the lecture.'

Why does Babby consider (29a) not to be an NES? He argues that since the main assertion in an NES is a denial of existence of the referent of the subject NP, NES's should not permit definite NPs as subjects. So a *be*-sentence with a definite subject like (29a) must be a "Locative sentence", a type of NDS, with *be at the lecture* as the negated Rheme. This, however, goes contrary to the generalizations about the distribution of Gen Neg. Furthermore, *byt'* is in a sense a "basic" verb of existence ("being") and NESs almost always have paraphrases with *byt'*:

[9] Wayles Browne (p.c.) informs us that although he would also have thought that nominative is normally impossible with *suščestvovat'* 'exist', a quick Google search on the phrase *ne suščestvoval* (masculine past, therefore agreeing with a nominative subject) yielded 21,000 examples. This surprise is worth further exploration to see whether they all fit with explanations of what we had taken to be 'exceptional' examples.

(30) a. Otveta ne prišlo = Otveta ne bylo
Answer-**GEN** NEG arrived = Answer-**GEN** NEG was
'No answer came' = 'There was no answer.'

b. Moroza ne čuvstvovalos' = Moroza ne bylo
Frost-**GEN** NEG be-felt = Frost-**GEN** NEG was
'No frost was felt' = 'There was no frost.'

c. Posudy na stole ne stojalo = Posudy na stole ne bylo
Dishes-**GEN** on table NEG stood = Dishes-**GEN** on table NEG were
'No dishes stood on the table' = 'There were no dishes on the table.'

Given the centrality of *byt'* in the understanding of Existential (Russian *bytijnye* 'be-') sentences, we considered it odd to have to exclude (29a) from the class of Existential sentences, and preferable to find an account for the possibility of definite subjects in some Existential sentences.

In Borschev and Partee (1998a), we argued that by making existence relative to a LOCation, this obstacle to the treatment of sentences containing *byt'* and a definite subject is removed, and Babby's Gen Neg analysis can be uniform. So we treated the sentences (29a–b) as normal instances of the NES–NDS alternation.

But the present tense counterpart of (29a) presents further problems concerning the distribution of Ø vs. *est'* as present tense forms of *byt'* 'be', leading a number of authors to claim that in the present tense, Gen Neg and *net* '(there) is/are not' are used in both NES and NDS. We present this challenge in the next subsection, and in section 6 we discuss several alternative responses to it, and re-open the question of the distinction between Existential and Locative sentences.

5.2. The Challenge of the Present Tense of Byt' 'Be' in Russian

So in our earlier work we departed from Babby and from Arutjunova and Širjaev and proposed to treat sentences like (29a) above and (31) below as Existential in spite of their definite subjects.

(31) Petinogo dnevnika na stole ne bylo
Petja-GEN diary-**GEN**.M.SG on table NEG was-**N.SG**
Petja's diary was not on the table.

But we encountered a serious challenge to this position in the recent dissertation Harves (2002a).[10] Harves, consistent with Babby (1980), claims that when the verb

[10]This section owes a great deal to extended discussions with our colleagues Elena Paducheva, Ekaterina Rakhilina, and Yakov Testelets starting in summer 2002, and to comments and questions raised by participants in N.D. Arutjunova's seminar in Moscow in February 2004, where we presented a version of this work (in Russian).

is *byt'* 'be', Gen Neg applies in Locative as well as Existential sentences. Her argument starts from the observation that in present tense affirmative sentences, unambiguously Existential sentences use the form *est'*, while unambiguously Locative sentences use the null form Ø of the verb *byt'*, and it appears that the negations of both kinds use *net* '(there) is/are not' and Gen Neg. The null form appears only in the present tense; in all other forms (past, future, infinitive, etc.) there is only a non-null form.

Kondrashova (1996: 38–40) gives the following descriptive categorization of BE-sentences in Russian. Groups I–III are copular sentences; groups IV–VII are Existential and Locative sentences.

(32) I. Equative
Naš učitel' (*est') Kolja.
our teacher-NOM *BE Kolja-NOM
'Our teacher is Kolja.'

(33) II. Predicative
a. Kolja (*est') durak.
Kolja-NOM *BE fool-NOM
'Kolja is a fool.'
b. Maša (*est') p'janaja
Maša *BE drunk-NOM
'Maša is drunk '

(34) III. Generic/Definitive
Sobaka (*est') drug čeloveka
dog-NOM *BE friend-NOM of-man
'A dog is a man's friend.'

(35) IV. Locative
a. Kolja (*est') v Moskve.
Kolja-NOM *BE in Moscow
'Kolja is in Moscow.'
b. Naša mašina (*est') na stojanke.
our car-NOM *BE in parking lot
'Our car is in the parking lot.'

(36) V. Locative-Possessive
a. Vaše pis'mo (*est') u sekretarja.
your letter-NOM *BE at secretary
'The secretary has your letter.'
b. Kolja (*est') u sestry.
Kolja-NOM *BE at sister
'Kolja is at (his) sister's place.'

(37) VI. Existential

a. V Moskve est' tramvai.
in Moscow BE street cars-NOM.PL
'There are street cars in Moscow.'

b. V xolodil'nike est' eda.
in refrigerator BE food-NOM.SG
'There is food in the refrigerator.'

(38) VII. Possessive

a. U Koli est' mašina
at Kolja-GEN BE car-NOM
'Kolja has a car.'

b. U Koli est' bilet v kino.
at Kolja-GEN BE ticket-NOM to movies
'Kolja has a ticket to the movies.'

Our focus is on the contrast between the types IV "Locative" and VI "Existential". We assume, as do others, that the contrast between types V and VII is analogous to that between types IV and VI, and in our account, taking possessive phrases like *u Koli* lit. 'at Kolja' as part of the extended class of LOCations,[11] we would regard IV + V as a single class, and likewise VI + VII, and we will generally use the terms Locative and Existential to cover these broader classes.

Chvany (1975) distinguished two different verbs *byt*' in Russian: a main verb *byt*' ("∃") in both Existential and Locative sentences (Kondrashova's types IV–VII), and a grammatical form *byt*' inserted in surface structure in copular sentences (Kondrashova's types I–III), which she took to have no verb in deep structure. She argues that for both the main verb *byt*' and the grammatical *byt*', there is both a null form Ø and a non-null form *est*' in the present tense. Harves (2002a), like Kondrashova, aims to have all kinds of *byt*' inserted as the spell-out of various feature combinations. We do not enter that debate, but note that everyone agrees that there is a major distinction between I–III (which do not have a V(THING, LOC) diathesis) and IV–VII (which do), and an important distinction (corresponding to Babby's ES vs. DS) within IV–VII. In the remainder of this paper we can dispense with Babby's ES/DS terminology, substituting the terms Existential and Locative, which suffice for the subclass of cases involving the verb *byt*'.

So far, this classification is not problematic. The examples in (37–38) are typical Existential sentences, and differ from the Locative sentences in (35–36) in word order and in definiteness of the subject. All the Existential sentences have the non-null form of *byt*', *est*'; all the Locative sentences have a null form in the Present

[11] This is not to say that we equate *u Koli* in its possessive sense with *u Koli* 'at Kolya's (place)'; Chvany (1975, pp. 100–01) gives clear syntactic and semantic arguments against equating them, while acknowledging that both might be classified within some "[+local] archicase".

tense, which we write as $Ø_{be}$. So far the only thing we have to make note of is the distribution of the forms of *byt*' across the two sentence types.

The big problem in facing the attempt to analyze sentences with *byt*' as just like sentences with other verbs with respect to the Existential–Locative distinction shows up when we look at negative sentences and try to pair them with "corresponding" affirmatives. Harves considers that all four classes IV–VII have negations with the negative 'existential' verb *net* '(there) is/are not' and Gen Neg.

(39) Locative:
Koli net v Moskve.
Kolja-**GEN**.M.SG NEG.is in Moscow
'Kolja is not in Moscow.'

(40) Locative-possessive:
Vašego pis'ma net u sekretarja.
Your letter-**GEN**.N.SG NEG.is at secretary
'Your letter is not at the secretary's.'
(or: 'The secretary doesn't have your letter.')

(41) Existential:
V xolodil'nike net edy.
In refrigerator NEG.is food-**GEN**.F.SG
'There is no food in the refrigerator.'

(42) Possessive:
U Koli net mašiny.
at Kolja-GEN NEG.is car-**GEN**.F.SG
'Kolja doesn't have a car.'

This classification of negative sentences contradicts our thesis that subject Gen Neg is possible only in Existential sentences.[12] We would have classified sentences (39–40) as Existential, not Locative; we have already argued that there can be Existential sentences with definite THING argument.[13] And we would NOT have considered sentences (39–40) to be the sentential negation of sentences (35–36), which we agree are Locative sentences. If Harves is correct in claiming that sentences (39–40) are the negations of sentences (35–36), then our analysis is making an incorrect prediction and needs revision of some kind. If we want to try to claim that she is wrong, then we need to say which positive sentences have (39–40) as their negations, and what the negations of (35–36) are. Exploring these questions, which we

[12] We have mentioned earlier that this statement is too strong; but the other kinds of examples of Subject GenNeg do not include Locative sentences, so we can safely ignore them here.

[13] The general issue of the definiteness restriction on existential sentences is beyond the scope of this paper, although it clearly plays a role in the problematic examples that share properties of Existential and Locative sentences. For a subset of relevant discussion, see Comorovski (1995), Ward and Birner (1995), Abbott (1993, 1997), Partee (2000) and Paducheva (2000).

do in section 6, will lead us to re-examine the basic distinction between Existential and Locative sentences.

6. RE-EXAMINING THE EXISTENTIAL–LOCATIVE DISTINCTION

In this section we focus particularly on Locative sentences like those in (35) and variants of them that raise questions about the Existential–Locative distinction. The main questions we will be concerned with are the following:

Distribution of Gen Neg. Does Gen Neg occur only in Existential sentences, or, as Babby and Harves, among others, have claimed, also in some Locative sentences?

What is the Negation of What. What is the sentential negation of Locative sentences with $Ø_{be}$? Is it $ne + Ø_{be}$? *net*? Or isn't there any? Do such sentences permit only constituent negation?

The Distribution of Net' '*(There) is/are not*'. Does *net* '(there) is/are not' occur only in Existential sentences?

The Exhaustiveness of the Existential/Locative Distinction. Among sentences with *be*, both $Ø_{be}$ and *est*' (as well as past and future tenses), having a THING and a LOC, is a binary classification into Existential and Locative types sufficient, or does the distribution of linguistically important properties of such sentences require a more fine-grained classification? We will argue for the latter.

These questions lead to broader questions which require more research:

What are the various concepts of "sentential" and "constituent" negation, how are they related, and which notions are most important for Gen Neg? It is generally accepted that Gen Neg occurs only with sentential negation, but clearer criteria are needed for hard cases like (35–36). Only with clearer concepts and clearer criteria can we decide whether every sentence "has" a sentential negation, or possibly more than one, and the converse question of whether every negative "has" a positive sentence which it is the negation of. This question is addressed in Borschev et al. (2006) and discussed here in section 6.2.

And of course we need to understand more about the different forms and meanings of the verb *byt*' 'be'. It is undoubtedly evident that we are far from expert on this question in spite of good help from our friends and colleagues. How do the meanings of the verb *byt*' 'be' vary, or shift, with variation in various parameters of the sentence, including referentiality of the THING argument, negation, changes in word order and intonation, Theme–Rheme structure, Perspectival Structure, and the Existential–Locative property (or family of properties)?

And these questions call for deeper examination of the relation between our Perspectival Structure and various notions of Theme–Rheme structure or Topic–Focus structure, since the classification and analysis of similar sentences with different word orders and/or intonation patterns and different referential status of their THING argument is far from clear.

6.1. Key Examples: "BE" Sentences with Referential Subject

The following three examples, all ADS on Babby's scheme, are undisputed examples of Locative sentences.[14]

(43) Petja sejčas v Londone (tuda Lena priezžaet).
Petja-NOM now in London, (to-there Lena is.arriving)
'Petja is now in London (Lena is arriving there).'

(44) Petja byl v Londone (kogda Lena priezžala).
Petja-NOM was in London (when Lena arrived)
'Petja was in London (when Lena arrived).'

(45) Petja budet v Londone (kogda Lena priedet).
Petja-NOM will.be in London (when Lena will.arrive)
'Petja will be in London (when Lena arrives).'

The next three examples represent an "intermediate" type about which it is not clear whether they should be regarded as Existential or Locative.

(46) V Londone sejčas Petja. (Ja poprošu ego zajti k Lene.)
In London now Petja-nom (I request him to.drop.in to Lena).
'Petja is now in London. (I will ask him to drop in on Lena.)

(47) V Londone byl Petja (kogda Lena priezžala).
In London was Petja-nom (when Lena arrived)
'Petja was in London (when Lena arrived).'

(48) V Londone budet Petja (kogda Lena priedet).
In London will.be Petja-nom (when Lena will.arrive)
'Petja will be in London (when Lena arrives).'

Here we find disagreements and different points of view. Paducheva (1992), and also Chvany, Babby, Harves, and Arutjunova and Širjaev consider (46–48) to be Locative sentences, both because of the referential subject and because of the $Ø_{be}$ form in (46). The second author believes that these have Perspectival Structure and Theme–Rheme structure as in an Existential sentence, with London as Perspectival Center and Theme.[15] But they do not contain *est*', so they may be classified either as a special kind of Existential sentence with $Ø_{be}$ instead of *est*', or a third type

[14] But in Borschev et al. (2006) the majority opinion was that (43) could also have a second interpretation as an Existential sentence with Perspectival Center on London and Petja as a fronted Theme or Topic.

[15] We also note that although we are presenting our examples in "paradigms" in order to compare the behavior of present tense *be* sentences with their "corresponding" past and future analogs, the correspondences are not always straightforward: tense and aspect can evidently have an impact on the available meanings. Since present tense is inherently 'synchronous' in the sense of Paducheva (1994), we have tried to suggest contexts for our past and future sentences that will facilitate a 'synchronous' temporal

of "Existential /Locative" sentence, whose properties are a mixture of properties of the two types (more on this in section 6.3). The first author suspects that they are Locative sentences with topicalized LOC, showing a mismatch between Theme–Rheme structure and Perspectival structure.

As a crucial part of the debate about the classification of these sentences, there are issues about what their negations are. The first set below, (49–51), do not have Gen Neg. It is not obvious whether (49) is an instance of sentential negation or not, since there is no overt verb, and this sentence will play an important role in the discussion ahead. If (49) does involve sentential negation, it could be a negative Locative sentences, the negation of (43). But (49) has been argued (e.g. by Harves) to involve constituent negation rather than sentential negation. That difficult issue will be discussed in section 6.2, where we will consider two potential structures of (49). Sentences (50) and (51) clearly have sentential negation, but it is not clear whether they are the past and future "versions" of (49); Paducheva (2006), foreshadowed in part by Chvany (1975) has argued that (50–51) can be interpreted only by giving a "dynamic" sense to *byt*' 'be',[16] and that no such interpretation can be found in the present tense (49). While it seems to be agreed by everyone that present tense sentences with $Ø_{be}$ cannot be "dynamic", the relation between present tense and past or future tense in these sentences seems not entirely straightforward.

(49) Petja sejčas ne v Londone (, a tuda Lena priežaet).
Petja-NOM now NEG in London (, and to-there Lena is.arriving)
'Petja is not in London now, and Lena is arriving there.'

(50) Petja ne byl v Londone (kogda Lena priezžala).
Petja-NOM NEG was in London (when Lena arrived)
'Petja was not in London (when Lena arrived).'

(51) Petja ne budet v Londone (kogda Lena priedet).
Petja-NOM NEG will.be in London (when Lena will.arrive)
'Petja will not be in London (when Lena arrives).'

The next three, (52–54), which do have Gen Neg, are possible negative correspondents for sentences (46–48), the ones whose status as Locative or Existential is under debate. Below we will discuss the various possibilities and the issues,

perspective there as well, a perspective that in turn tends to promote thetic interpretation and the use of Gen Neg.

[16]The second author resists the idea that there is a distinct "dynamic" *byt*', and believes that the impression of such a sense (roughly similar to English 'has been to Paris') results from interaction of tense, aspect, and ordinary *byt*'. Paducheva (2006) discusses some examples of the second author's which she agrees show that in appropriate contexts, past tense sentences like (50–51) can get non-dynamic interpretations. The question of how we would try to account in detail for "dynamic" interpretations remains beyond the scope of this paper. See also Partee (1977) for arguments for an 'active *be*' in English, and see arguments against positing any such distinct *be* in Déchaine (1995).

including the possibility that the (a) versions of (52–54) are Existential but the (b) versions Locative, as well as the possibility that all are Existential and the difference between the (a) and (b) versions is in Theme–Rheme structure. In section 6.3 we will outline three different positions concerning "intermediate" or "mixed-property" cases like (46–48) and their negations, and in section 6.4 we discuss three different approaches to the problem of accommodating the *byt'* data into a theory of Existential and Locative sentences.

(52) a. V Londone sejčas net Peti.
In London now NEG.is Petja-**GEN**
'Petja is not now in London.'

b. Peti sejčas net v Londone.
Petja-**GEN** now NEG.is in London
'Petja is not now in London.'

(53) a. V Londone togda ne bylo Peti.
in London then NEG was Petja-**GEN**
'Petja was not then in London.'

b. Peti togda ne bylo v Londone.
Petja-**GEN** then NEG was in Londone
'Petja was not then in London.'

(54) a. V Londone togda ne budet Peti.
in London then NEG will be Petja-**GEN**
'Petja will not then be in the London.'

b. Peti togda ne budet v Londone.
Petja-**GEN** then NEG will.be in London
'Petja will not then be in the London.'

For all who believe that Existential sentences cannot have referential subjects, including Russian scholars from Arutjunova to Paducheva as well as Babby and Harves, the (a) and (b) variants of the sentences (52–54) are all Locative sentences.

The second author believes that both the (a) and (b) variants of the sentences (52–54) can be Existential or are perhaps of the mixed Existential/Locative type, that they can be negations of (46–48), and that they share Perspectival Structure with Existential sentences.

The first author believes that the (a) variants of (52–54) are Existential, and are negations of (46–48), but considers the answer for the (b) variants to be unclear. The (b) variants could possibly be Locative, negations of (43–45), but that would require retracting the claim that *net* '(there) is/are not' occurs only in Existential sentences. Or the (b) variants could possibly be Existential, and sentential negations of (43–45), if (43–45) have alternate interpretations as Existential sentences with fronted Rheme.

6.2. Sentential and Constituent Negation in Copular Sentences

In this section we focus on two central questions connected with negation, both concerned with how to identify what sentence is "the sentential negation" of what.

Question 1. Is there ever sentential negation with ne + $\emptyset_{be}$? The first question to ask about (49) is whether it can be interpreted as sentential negation, or only as constituent negation, i.e., we can ask whether (49) can have the sentential negation structure as shown in (55a) below, analogous to (50) and (51), or only the constituent negation structure shown in (55b), analogous to (56) below. Our answer will be "constituent negation only", i.e. only the structure in (55b).

(55) a. Petja sejčas ne $\emptyset_{be}$ v Londone.
Petja now NEG be-Null in London.

b. Petja sejčas $\emptyset_{be}$ ne v Londone
Petja now be-Null NEG in London.

(56) Petja togda byl ne v Londone (, a v Pariže).
Petja then was NEG in London (, but in Paris).

Harves (2002a) has argued that sentence (49) must be constituent negation, based on the claim that sentences like (49) can only be interpreted contrastively, as also argued by Chvany (1975), p. 156. We dispute that claim, for reasons discussed in Borschev et al. (2006); hence we don't find that a sufficient argument, but in Borschev et al. (2006) we and our colleagues also present a new argument for the same conclusion.

We believe that the strongest argument that (49) is *not* syntactic sentential negation comes from present and past tense quantificational sentences.[17] If (49) could have structure (55a), it should have the properties of (57a). While (constituent) negation in (57b) cannot take scope over the subject, sentential negation in (57a) can (optionally). But (57c) allows only narrow scope for the negation, so (57c) and (49) must have the constituent-negation structure of (55b).

(57) Context: We are talking about why the Royal Ballet won't be performing in London while our friend is or will be there.

a. Vse baleriny ne budut v Londone.
All ballerinas-**NOM** NEG BE.FUT in London
AMBIG: (i) $\forall >$ NEG : all of the ballerinas will [not be in London]; i.e. None of the ballerinas will be in London; or

[17] The idea for this argument came from Igor Yanovich, co-author of Borschev et al. (2006).

(ii) NEG > ∀ [dispreferred but possible with a marked Topic–Focus structure] not all will be in London.[18]

b. Vse baleriny budut ne v Londone.
All ballerinas-**NOM** BE.FUT NEG in London
UNAMBIG: Only (i): ∀ > NEG

c. Vse baleriny ne v Londone.
All ballerinas-**NOM** NEG in London
UNAMBIG: Only (i): ∀ > NEG

So we can conclude that (49) cannot be sentential negation. Now we still have a problem: either (52b) is the negation of (43), as so many of our predecessors and colleagues believe, and we were wrong, or (43) has no sentential negation, and that has to be explained and its consequences explored. These issues are reflected in the following question.

Question 2. Do Locative sentences with $Ø_{be}$ *have sentential negation counterparts?* Consider the Locative sentence (43). Does it have any sentential negation counterpart? There are three competing answers: (i) Yes: (52b); (ii) Yes: (49); (iii) No.

Chvany and Harves say "Yes", a Locative sentence with $Ø_{be}$ is negated with *net*: the negation of (43) is sentence (52b) above.

We suggest that the question cannot be answered without more discussion of what we mean by the negation *of* a given sentence, and how that notion relates to the distinction between sentential and constituent negation. We now believe that "negation of" is not a simple notion. We need to consider the possibility that not every sentence "has" a negation, and the possibility that, in cases such as this, if there is no "perfect sentential negation of" a sentence such as (43), a speaker may choose between two 'functional approximations': either constituent negation, (49) with structure (55b), or the closest Existential sentence, (52b), an Existential sentence in which THING is Theme.

The arguments in Borschev et al. (2006) help to clarify these issues, although they do not fully settle them. There we discussed the distinctions among syntactic Sentential negation, semantic "contradictory negation of [a proposition]", and pragmatic "contradictory negation of [a proposition in a context] relative to a given context". Paducheva (1974) had already distinguished the *syntactic* opposition of sentential negation, characterized by pre-verbal *ne* 'not', vs. constituent negation, from the *semantic* opposition of 'general negation', characterized as 'it is not the case that . . . , vs. 'partial negation'. She notes that Russian makes more use than English of syntactic 'constituent negation', since the Slavic languages generally prefer to position the negative morpheme immediately before the Rheme (Paducheva 1974,

[18] Similar examples were described in Paducheva (1974: 143, 155) as involving *smeščennoe otricanie* 'shifted negation'; a particular Topic-Focus structure (marked by word order and intonation) allows negation to take scope over a preceding quantifier.

Sgall et al. 1986): see (58). The significance of this fact about Russian will become apparent in the discussion below.

(58) a. English: My observations didn't help me much. (58ab from Paducheva 1974, p. 152)
Russian: Moi nabljudenija ne sil'no pomogli mne.
My observations NEG strongly helped me

b. English: I didn't often see him.
Russian: Ja ne často videl ego.
I NEG often saw him

Further, following (Horn 1989, Sgall et al. 1986 and others), we may say that *pragmatic* negation, or "functional negation", produces a proposition that is narrower than pure logical negation, preserving presuppositions, including the presuppositions of the Theme (existence, non-emptiness of predicates; see Peregrin 1996) and presuppositions associated with Perspectival Structure, and negates only the content of the Rheme. Then what is "the negation of" a given sentence? Slavic linguists have concentrated on syntactic sentential negation, since only that structure licenses *ni*-words and allows wide scope negation as in (57a). But given that Russian constituent negation often falls on the Rheme as in (58) and (49), constituent negation may often provide the best "functional negation" for the sentence. The functional importance of constituent negation in Russian, and the corollary that (49) is a good functional negation of (43), may have been underestimated in previous studies.

What about (52b), *Peti net v Londone*? Most researchers have called this sentence the negation of (43). This question was central in Borschev et al. (2006); we offered two possible resolutions. A majority of the authors supported an account on which (43) is Perspectivally ambiguous, having *Petja* unambiguously as topic, but having either *Petja* or *London* as Perspectival Center.

When *Petja* is Perspectival Center, (43) is definitely a Locative sentence. It cannot be negated with the normal preverbal negation; the null form of *be* is apparently unable to host negation.[19] We argue that in that case, the constituent-negation sentence (49) is a good pragmatic (or functional) negation of (43), but (52b) is not then a negation of (43).

When *London* is Perspectival Center, the best pragmatic negation is one which preserves Topic–Focus Structure and Perspectival Structure, namely (52b).

On this account we view (52b) as a mixed case, neither a typical Locative nor a typical Existential, characterized by disharmonies among 'Perspective Structure', Theme–Rheme structure, and definiteness. While (52b) may not be an Existential sentence, we do not consider it an accident that (52b), like Existential sentences, suggests a 'Perspective' or implicit 'observer' centered 'in London' (e.g. it is natural if the speaker is 'in London'), and remarks on the absence of Petja; sentence (49) resists such a perspective.

[19] There are exceptions to this claim. Our colleague Yakov Testelets is pursuing this issue.

In Borschev et al. (2006) we also described the "minority opinion" of the second author of this paper. On this view, (43) and (49) agree in both Perspectival Structure and in Theme–Rheme structure; as on the "majority opinion", (49) then makes a good pragmatic negation of (43) even though it has constituent negation rather than sentential negation, since there is no straightforwardly "corresponding" sentential negation for (43). Sentence (43) and the sentential-negation sentence (52b) share Topic–Focus structure but not Perspective Structure: in (43) the Perspectival Center is unambiguously *Petja*, and in (52b) unambiguously *London*. The suggestion on this account is that it can be natural to shift Perspectival structure depending on whether one is reporting on Petja's presence or his absence from London: if he is present, it is natural to make him the Perspectival center,[20] but if it is his absence that is being asserted, then it is natural to take London as the Perspectival center, especially if the speaker is or imagines himself to be in London.

Closer attention to the fine-grained semantics and pragmatics of negation and of *be*-sentences can thus help us to understand and resolve the puzzles of such imperfect matches between affirmative and negative *be*-sentences. But more work is needed before we can feel sure of the best analysis of these problematic examples.

Given these alternative views of the positive and negative examples discussed so far, in section 6.3 we organize and schematize what seem to us the available competing views concerning the "intermediate case" sentences on the borderline between Existential and Locative sentences.

6.3. Three Views about "Intermediate Cases" Between Existential and Locative

The difficulties and conflicts described above have a number of sources, but one central one is evidently the existence of examples that seem to have some properties of Existential sentences and some properties of Locative sentences. Most discussions have involved clear cases in which the Locative sentences have one set of co-occurring properties and the Existential sentences have another set. The "typical" Existential sentences (37a–b) from Kondrashova's list share a cluster of five properties, (∃i–∃v) in (59). And the "typical" Locative sentences (35a–b) from that list share a complementary set of five properties (Li–Lv).

(59) (∃i) The verb form in the present tense is *est*'.
(∃ii) The THING argument is indefinite.
(∃iii) The LOC argument is initial (presumably the Topic or Theme[21]).
(∃iv) The negation of the sentence definitely uses *net* and Gen Neg.

[20] This intuition is based in part on the well-known anthropocentrism that affects various aspects of grammar, and it may also be related to the dispreference for definite NPs in existential sentences.

[21] We assume neutral intonation. With non-neutral intonation, judgments of both definiteness of the THING argument and Theme–Rheme structure can be different in ways we are aware of but have not tried to analyze beyond the preliminary observations in Borschev and Partee (2002a). For an important treatment of the relation between intonation and word order see Yokoyama (1986).

(∃v) The sentence is understood to assert the existence of instances of THING in the given LOCation, that is, it has the semantics we typically associate with Existential sentences.

(Li) The verb form in the present tense is $Ø_{be}$.
(Lii) The THING argument is definite.
(Liii) The THING argument is initial (presumably the Topic or Theme).
(Liv) There are disagreements about what the negation of the sentence is.
(Lv) The sentence is understood to assert the location of the THING, whose existence is presupposed, that is, it has the semantics we typically associate with Locative sentences.

But there are sentences in which these sets of properties do not cluster together, whose classification is much less clear. Examples of such sentences are given below. Sentence (60) is a repetition of (46) above; example (61) is a similar one that is included in our synthesizing chart in the next subsection.

(60) V Londone sejčas Petja.
in London now Petja-NOM
'Petja is now in London.'

(61) V Moskve Kolja.
in Moscow Kolja-NOM
'Kolja is in Moscow.'

The second author is inclined to believe that these sentences, in at least one possible reading, answer the questions "Who is there in London now?" and "Who is in Moscow now?", corresponding to the Existential-sentence semantic property (∃v).[22] It seems that the main reasons that Babby, Chvany, and Harves do not want to call them Existential are that they have a definite subject, property (Lii), and the null verb $Ø_{be}$, property (Li). But on the other hand, in these sentences, the LOC argument is initial (and appears to be the Topic or Theme), property (∃iii). What the negation of these sentences is is not clear; most suggest that it uses the form *net* '(there) is/are not', which in the clearest cases (property (∃iv)) corresponds to Existential sentences (but which Babby, Chvany, and Harves say is also used in Locative sentences (property (Liv))). So that property, which we have already identified as important, is not settled.

[22] Kondrashova (p.c.) agrees that these are a "murky case"; she notes that there are examples like *V škole sejčas nikogo* 'In the school now no-one-GEN' which are missing the expected verb *net* '(there) is/are not'; if that means that *net* is sometimes deleted, it could be evidence for the possibility of sometimes omitting *est*' 'there.is/are' from sentences that would normally have it, and these examples could be such a case.

We are well aware that there are many other 'difficult cases' that we have not discussed, both with *byt*' and with other verbs that can have THING and LOC arguments. We are confident that scrutiny of a wider variety of cases will help identify separable properties that go into the property-clusters that characterize the typical Locative and Existential sentence types.

There are two variants of (61) which seem to come closer to being Existential sentences,[23] suggesting that the classification of these sentences may not be discrete.

(62) V Moskve u nas Kolja.
in Moscow at us Kolja-NOM
'In Moscow Kolja is 'at our disposal'.'/ 'In Moscow we have Kolja.'

(63) V Moskve u nas est' Kolja.
in Moscow at us is Kolja-NOM
'In Moscow there's Kolja 'at our disposal'.'

Sentences (62) and (63) are difficult to translate exactly into English, but they would fit in a conversation analogous to that in (64).

(64) A. We don't have anyone campaigning for us in Moscow.
B. Oh, yes we do. In Moscow there's Kolja and several others.

Up until now in the discussion, we have not accorded any special status to "Possessive" sentences like (38a–b), Kondrashova's class VII, but have regarded them as a subclass of Existential sentences. It may be significant, however, that even with the null verb $Ø_{be}$, the presence of the possessive *u nas* 'lit: at us' in (62) makes it possible to interpret that sentence as semantically closer to an Existential than it would be without the possessive. Sentences (62) and (63) are reportedly very close in meaning, as if possession by itself were "one step toward Existentiality" (Paducheva, p.c.). And in discussions of the possibility of interpreting the disputed (61) existentially, native speakers agree that it is easiest to force an existential reading in a context that supports an implicit *u nas*: a reading of 'availability', or 'in the speaker's personal sphere' (Apresjan 1986, Arutjunova, Paducheva, Rakhilina and others, p.c.).

This same concept of 'availability', 'at our disposal' appears to play a role in another set of unclear cases, this time involving indefinite THING. Alongside the clearly Existential sentence (65), whose negation is indisputably (66), there is the unclear-case sentence (67), which has most of the properties of an Existential sentence but has the null verb $Ø_{be}$ and whose meaning is not simply existential.[24] What

[23] Kondrashova (1996) discusses sentences of this sort, regarding both as Existential sentences and deriving (62) from (63) by Gapping. They are discussed, but not resolved, and are included as "cases not covered by the theory," along with another well-known kind of example, *U Maši sinie glaza* 'Masha has blue eyes', an inalienable possession construction that has been much discussed (Šatunovskij 2000, Yanko 2000; see also Mel'čuk and Iordanskaja (1995)).

[24] The difference in meaning between sentences (65) and (67) has been discussed extensively, for instance by Seliverstova (1990), Apresjan (1995), Kondrashova (1996), Yanko (2000), Šatunovskij (2000), and Paducheva (2004, chapter 9). The sentence with *est'* is said to express existence in a sense connected with 'availability', while the sentence with $Ø_{be}$ is said to express a current state of affairs, and would be natural if that refrigerator is currently being used for beer, or has only beer in it. See also note 22.

the negation of (67) is is not clear; one candidate, (68), is ungrammatical. One possibility is that (67) is a "Presentational" sentence[25] and has no negation; another possibility is that (67) is an Existential sentence and (66) is the negation of both (65) and (67). A third possibility is that (67) is a Locative sentence with indefinite subject and topicalized Location, and those who hold that the negation of Locative sentences with $Ø_{be}$ uses *net* and Gen Neg would also say that (66) is the negation of both (65) and (67).

(65) V xolodil'nike est' pivo.
In refrigerator is/are beer-NOM.N.SG
'There is beer in the refrigerator.'

(66) V xolodil'nike net piva.
In refrigerator NEG.is beer-**GEN.**N.SG
'There is no beer in the refrigerator.'

(67) V xolodil'nike pivo.
In refrigerator beer-NOM.N.SG
'In the refrigerator there is beer.' (about the condition of the refrigerator)

(68) * V xolodil'nike ne pivo. (acceptable only when contrastive)
In refrigerator NEG beer-**NOM.**N.SG

The disputed-status sentence (67) is similar in status and in properties to the earlier discussed mixed-property examples (46), (60), and (61). The difference is that the THING is definite in the earlier examples but indefinite in (67).

The chart in section 6.4 includes the sentences (65–68), as well as variants in which the THING constituent is sentence-initial. In some cases a sentence-initial THING is strongly preferred to be reinterpreted as definite, but the negative sentence (69), a word-order variant of (66), is generally taken to have the same interpretive possibilities as (66).

(69) Piva net v xolodil'nike.
beer-**GEN.**N.SG NEG.is in refrigerator
'There is no beer in the refrigerator.'

The main intermediate cases we have discussed in this section are like typical Locative sentences in containing the null verb $Ø_{be}$ and like typical Existential sentences in having an initial, Thematic LOC. We have seen that there are semantically very

[25] We use "Presentational" in the sense of Bolinger (1977) and various work on Locative Inversion, for sentences like *Here comes the train, Across the street was a pharmacy, Suddenly there appeared a strange apparition.* We have not undertaken a full investigation of this domain and do not have clear criteria for defining this class and distinctions within it. But these sentences clearly lack negations in English, and probably cross-linguistically; that is the property we appeal to here. Bolinger (1977) argues convincingly that the presence and absence of *there* in such sentences can have semantic significance, but to our knowledge his insights have not been captured in any formal semantic analysis.

similar sentences with both definite and indefinite subjects; if definiteness is taken as criterial for the Existential/Locative sentences, then this class of cases will be artificially split. We have not found agreement in the applicability of the other two pairs of properties from the list in (59), since both the semantic interpretation of these sentences and the question of what their negations are are under dispute.

Here we summarize three views about these intermediate cases; in section 6.4 we spell out how these three positions do, or might, treat the problematic *byt*' 'be' data.

I. The Harves–Chvany position: whenever the subject is definite, the sentence is Locative. Harves did not discuss any examples like (67), but Chvany (1975) did and classified them also as Locative. The negation of these Locative sentences uses *net* and Gen Neg. So as Babby argued, in the case of the verb *byt*', not all Gen Neg sentences are Existential.
II. The Paducheva position: Sentences (46), (60), and (61) are Presentational and have no Negated counterparts. The indefinite-subject example (67) is also a special type of sentence (agnostic as to whether it should also be called "Presentational"). These sentences have special conditions of use with quite a range of presuppositions; it is because of this that they have no straightforward negative counterparts.
III. The VB position: These sentences are a type of Existential; they are not standard Existential sentences because of their mixed properties. One can say either that they have no negations because of their special properties (a combination of Theme–Rheme properties and presuppositions), or that one uses the 'closest available' negative sentence, which would be the negation of the normal *est'* Existential, using *net* and Gen Neg.

6.4. Three Schemes for Accommodating the "BE" Data

The preceding discussion leads to the following summary in chart form of the problematic *byt*' 'be' data, with three possible positions identified. The column labelled H–C (for Harves–Chvany) represents a position we believe conforms to the writings of Harves, Chvany, and Babby. Not all of them have discussed all of these cases in print, but their published positions appear to be compatible, so we have drawn on all of them to fill in the chart. The column EVP represents Paducheva's position as articulated in part in Paducheva (1992, 1997, 2004) and in part in personal communications. The column labelled VB represents the second author's position. (The first author considers the questions still open and is most concerned to try to articulate the different positions and the arguments for and against each.) (See Table 1.[26])

[26] Abbreviations used in the table: CNEG = constituent negation; ∃L = "Existential: Locative type" (the mixed case); Amb = ambiguous; Pres = Presentational. Also to save space we write *xol-k* for *xolodil'nik* 'refrigerator', we gloss *ne* as NE, *net* as NET and *est*' as EST', and we omit translations: variants of all these examples occur in the text.

Table 1

Type	AFFIRMATIVE	NEGATIVE	H-C	EVP	VB
	Standard examples				
Lexical V, Locative	Knigi stojat na polke. NP.NOM(DEF) V LOC	Knigi ne stojat na polke. NP.NOM(DEF) NE V[+AGR] LOC	Loc	Loc	Loc
Lexical V, Existential	Na polke stojat knigi. LOC V NP.NOM(INDEF)	Na polke ne stoit (nikakix) knig. LOC V[-AGR] NP.GEN(INDEF)	∃	∃	∃
***byt'* Past, Locative**	Kolja (togda) byl v Moskve. NP.NOM(DEF) BE-PAST LOC [+AGR]	Kolja (togda) ne byl v Moskve. NP.NOM(DEF) NE BE-PAST LOC [+AGR]	Loc or Agt	Loc[1] or Agt	Loc
***byt'* Past, Existential**	V xol-ke bylo pivo. LOC BE-PAST NP.NOM(INDEF) [+AGR]	V xol-ke ne bylo piva. LOC NE BE-PAST NP.GEN(INDEF) [−AGR]	Amb ∃, Loc	Amb ∃, Pres	∃
	Present tense *byt'*, def subject				
***byt'* Ø, NP Loc**	Kolja Ø v Moskve. NP.NOM Ø LOC		Loc	Loc Neutral	Loc
***byt'* Ø + *ne*, NP Loc**		Kolja (Ø?) ne (Ø?) v Moskve. NP.NOM (Ø?) NE (Ø?) LOC	CNEG	Loc	CNEG
***byt'* Ø, Loc NP**	V Moskve Ø Kolja. LOC Ø NP.NOM		Loc	Presentational	∃L
***byt'* Ø + *ne*, Loc NP**		*V Moskve (Ø?) ne (Ø?) Kolja. LOC (Ø?) NE (Ø?) NP.Nom (OK only contrastively)	*	*	*

byt' net, **Loc NP**		V Moskve net Koli. LOC NET NP.GEN	Loc	Can be Loc	∃, ∃L
byt' est', **NP Loc**	*Kolja est' v Moskve. NP.NOM EST' LOC		*	*	*
byt' net, **NP Loc**		Koli net v Moskve. NP.GEN NET LOC	Loc	Loc	∃, ∃L
byt' est', **Loc NP**	V Moskve (u nas) est' Kolja. LOC EST' NP.NOM		–[2]	∃	∃
byt' net, **Loc NP**		V Moskve (u nas) net Koli. LOC NET NP.GEN	Loc	∃	∃
	Present tense *byt'*, indef subject				
byt' Ø, **Loc NP**	V xol-ke Ø pivo. LOC Ø NP.NOM (INDEF)		Loc	Presentational	∃L
byt' Ø +***ne***, **Loc NP**		*V xol-ke ne pivo. LOC NE NP.NOM (INDEF) (OK only contrastively)	*	*	*
byt' est', **Loc NP**	V xol-ke est' pivo. LOC EST' NP.NOM (INDEF)		∃	∃	∃
byt' net, **Loc NP**		V xol-ke net piva. LOC NET NP.GEN (INDEF)	Amb ∃, Loc	∃	∃, ∃L

Table 1(Continued)

Type	AFFIRMATIVE	NEGATIVE	H-C	EVP	VB
byt' **Ø, NP Loc**	Pivo Ø v xol-ke NP.NOM (?INDEF) Ø LOC		(Loc)	–	L (not indef)
byt' **Ø + *ne*, NP Loc**		Pivo ne (Ø) v xol-ke. NP.NOM (?INDEF) NET (Ø) LOC			L (not indef)
byt' est'**, NP Loc**	Pivo est' v xol-ke. NP.NOM(INDEF) EST' lOC		∃	∃	∃
byt' net**, NP Loc**		Piva net v xol-ke. NP.GEN (INDEF) NET LOC	Amb ∃, Loc	∃	∃, ∃L

[1]Paducheva (p.c.) considers *Kolja (togda) ne byl v Moskve* to be acceptable only when Kolja is agentive, when paraphrasable by *ne pobyval* 'wasn't (+agentive) for a while' . Otherwise, if it's a normal stative Locative sentence in negative form, it should be *Koli ne bylo v Moskve*, with Gen Neg.

[2]This type is not mentioned by Harves or Chvany; because Chvany sees ∃-deletion as governed by the presuppositionality of the subject, this might be considered an ∃-sentence with the meaning of Kolja shifted to become 'indefinite'.

The top four rows of the table show the generally agreed on classification of standard examples of the sort discussed in the first sections of this paper; the remainder of the table concentrates on present tense sentences with null and non-null *byt*' 'be' and the negative forms *ne* 'not' and *net* '(there) is/are not'.

What matters is not the labelling of the sentences as Existential, Locative, or other, but the corresponding analyses. We believe that each of the approaches suggested in the table captures some generalizations and misses others, and that a fully adequate analysis has not yet been found. Doubt has been cast on whether our own approach can indeed extend to all sentences with *byt*' 'be' as we had earlier claimed. In exploring the problematic examples, we have identified a number of broader issues that need further work. A summary of the advantages and shortcomings of each of the listed approaches follows.

Generalizations and claims connected with the Harves–Chvany scheme:

- **No *ne* + $\emptyset_{\mathbf{be}}$**. Sentence (49), *Petja sejčas ne v Londone*, is never sentential negation. We discussed this dispute in section 6.1.
- **No Existential sentences with *byt*' and Definite NP subject**. Sentence (39), *Koli net v Moskve*, and presumably also *V Moskve net Koli*, are Locative sentences, not Existential.
- ***Net*** is not always ***ne* + *est***'; it may also be the negation of $\emptyset_{\text{be}}$ sentences.
- Scheme with selected examples:

(70)

ADS:	Kolja	$\emptyset_{\text{be}}$	v Moskve.	
(LOC)	NP.NOM	$\emptyset_{\text{be}}$	LOC	
NDS:	Koli	net v	Moskve.	
(LOC)	NP.**GEN**	NET	LOC	
AES:	V	xolodil'nike	est'	pivo.
(∃)	LOC		EST'	NP.NOM
NES:	V	xolodil'nike	net	piva.
(∃)	LOC		NET	NP.**GEN**

- Odd piece of picture (from our point of view): Gen Neg in NDS.
- **No** account offered for: (i) the variation of $\emptyset_{\text{be}}$ and *est*' in be-sentences with indefinite subject: Is *V xolodil'nike pivo* also Existential or Locative? (ii) The existence of *est*'-sentences with definite subjects like (63): *V Moskve* (*u nas*) *est' Kolja*.

Generalizations and claims connected with the Paducheva scheme:

- **Possible *ne*+$\emptyset_{\mathbf{be}}$**. Sentence (49), *Petja sejčas ne v Londone*, can be the sentential negation of a Locative sentence.[27]

[27] Subsequent discussion in the course of writing Borschev et al. (2006) indicates that Paducheva was consenting to the description "x is the sentential negation of y" as long as x expresses a contradictory of

- **Some sentences have no** (non-contrastive, structurally simple) **negations**, because of their communicative function. In particular (what we have labeled as) Presentational sentences have no sentential negation.[28]
- **Net** is not always ***ne*** + ***est***'; it may also be the negation of certain $Ø_{be}$ sentences which include an implicit Observer.
- **Est**' is always[29] existential; $Ø_{be}$ is normally not existential, but with strong contextual support may be existential.
- Scheme with selected examples:

(71)	ADS:	Kolja		$Ø_{be}$	v Moskve.
	(LOC)	NP. NOM		$Ø_{be}$	LOC
	NDS:	Kolja	ne	$Ø_{be}$	v Moskve.
	(LOC)	NP.**NOM**	NE	$Ø_{be}$	LOC
	AES:	V xolodil'nike		est'	pivo.
	(∃)	LOC		EST'	NP.NOM
	NES:	V xolodil'nike		net	piva.
	(∃)	LOC		NET	NP.**GEN**

- **Disputed piece of picture: the NDS**. Others claim that there's no possible $ne + Ø_{be}$.
- **Has an account of** (67) *V xolodil'nike pivo*. As discussed in Paducheva (2004), these are NOT Existential. Location is thematic but not (in our sense) Perspectival Center. Such sentences are sometimes judged somewhat odd and may need contextual support (such as the addition of *u nas* 'lit: at us', or *tol'ko* 'only'). And similarly for (61) *V Moskve Kolja*. Locational sentences with Location as Theme have the special communicative function that we are calling Presentational.

Generalizations and claims connected with the VB scheme:

- **No *ne*** + $Ø_{\mathbf{be}}$. Sentence (49), *Petja sejčas ne v Londone*, is never sentential negation.
- **There are mixed-type '∃/Loc' sentences with *byt*' and Definite NP subject.** These share properties of the two types; see discussion in Section 6.3. *V Moskve net Koli* and presumably also *Koli net v Moskve* are of this mixed ∃/Loc type.

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y relative to contexts in which the presuppositions of x and y are satisfied; hence this difference between Paducheva and the Harves–Chvany position is in large part terminological. We retain it here, but with the caveat that in this respect and probably others, the Paducheva scheme and the Harves–Chvany scheme are not entirely comparable, and that Paducheva might no longer believe that syntactic $ne + Ø_{be}$ is possible.

[28] See discussion of *naxodit'sja* 'be located' and the corresponding sense of *byt*' 'be' in sections 2.1 and 2.3 of Paducheva (2004). Actually, it is claimed there that sentences with the *naxodit'sja* sense of *byt*' have no sentential negation no matter which part is Theme, because the verb itself is always part of the Theme in those sentences.

[29] There are exceptional uses of *est'*, for instance in definitions or in certain emphatic uses, that are well known; see for instance Chvany (1975). Here we are limiting attention to the Locative and Existential sentences.

- **There are no pure Existential sentences with $Ø_{be}$.** When LOC is initial, it is both Theme and Perspectival Center, but with the null verb $Ø_{be}$ we have a mixed ∃/Loc type.
- ***Net* is never used in pure Locative sentences,** but it is not always the negation of *est'* - it can be the negation of $Ø_{be}$ in mixed ∃/Loc sentences.
- Not every positive sentence *has* a negative counterpart, and vice versa.
- Scheme with selected examples:

(72) ADS: Kolja $Ø_{be}$ v Moskve.
(LOC) NP.Nom $Ø_{be}$ LOC

NDS: None in this case; the sentence above has no sentential negation.
(LOC) 'Functional' or 'pragmatic' negation may use Constituent Negation with *ne*, or make use of ∃/Loc mixed type with *net*.

AES: V xolodil'nike est' pivo.
(∃) Loc EST' NP.NOM

NES: V xolodil'nike net piva.
(∃) LOC NET NP.**GEN**

- Odd piece of picture: the missing NDS. Defended by arguing that not every sentence "has" a straightforward negation. This is discussed in section 6.3, and argued for in Borschev et al. (2006).
- **Novel piece of picture:** Arguments for breaking up the cluster of properties that distinguish typical Existential sentences from typical Locative sentences, and the potential divergence of Theme and Perspectival Center, leading to mixed Existential/Locative cases (some of them possibly Presentational) with both definite and indefinite subjects.

All three of the schemes shown in the chart and summarized above are coherent, and all of them help to highlight the fact that the original paradigms of positive and negative Locative and Existential sentences are oversimplified. It remains to be seen whether it is just the undisputed added complexity of *byt'* 'be' that is responsible for the more complex picture we have seen in sections 5 and 6, or whether the overtly complex behavior of *byt'*, with its alternative present tense forms $Ø_{be}$ and *est'*, is an overt manifestation of a greater complexity in general which is simply less obvious on the surface with other verbs.

6.5. Open Issues

We have not settled the question of which of the approaches described above, if any, may lead to a satisfying account of Gen Neg that includes the puzzling behavior of the verb *byt'* 'be'. Our more modest goal has been to lay out the alternatives as we see them, and discuss the advantages and problems of each approach, and

particularly to try to identify the main issues that need to be addressed in order to settle which approach (or another) would be best.

One issue whose importance has become clear in this discussion is the issue of correspondences between affirmative and negative sentences. The standard assumption that each sentence has "a negation" and that each negative sentence is the negation of a particular affirmative sentence is clearly an oversimplification that does no harm in many cases but which quickly proves untenable on closer examination. Of course probably no one would actually deny that there are sentences with no negations and sentences that can be negated in "more than one way"; the distribution of positive and negative polarity items is enough to thwart any attempt at a simple one-to-one correspondence between affirmative and negative sentences. But a deeper analysis of the relations among positive and negative sentences studied in Borschev et al. (2006) is clearly needed, and one of the important ingredients must be greater attention to information structure. We have argued that Perspective Structure is not identical to Theme–Rheme structure, but we have not settled the question of whether they are independent, or whether there is a non-accidental correlation between the two. This issue will be essential for understanding better the properties of the "intermediate cases" of sentences with mixed Existential and Locative properties.

We have been asked[30] how our analysis of Existential sentences as asserting that an entity "exists in a LOCation" would differ from the analysis of the verb *naxodit'sja* 'to be located'. This verb is an interesting one, which apparently has constraints on the possible Theme–Rheme structures it tolerates; sentences with *naxodit'sja* cannot be negated as freely as sentences with more 'ordinary' verbs. In any case, the question points up a need to be more explicit about the theoretical underpinnings and exact definition of our Perspectival Structure, which so far is less than ideally explicit.

The discussion of the beer-in-the-refrigerator sentences (65) and (67) brings up another point that needs more investigation. As N.D. Arutjunova (p.c.) pointed out to us, we have made the notion of LOCation central to our analysis of Russian Existential sentences, and this is disputable. She would argue that association with "someone's personal sphere" is more important, and that the importance of this notion for Russian Existential sentences can help explain why a possessive phrase like *u nas* 'lit: at us' can by itself help to make a sentence be interpreted as Existential. Arutjunova suggests that there is an important functional dimension to the relevant concept of LOCation which we have not yet captured, and which could in principle help to solve several of our problems. One could argue that in the most acceptable instances of Existential sentences with proper name THING, the name has been shifted to a quasi-indefinite reading by virtue of its functional role; a natural use of a sentence like (73) would for instance be in a discussion of whether the person in question has anyone at home to help them.

[30] We thank Ju. D. Apresjan for raising this question.

(73) U neë est' Maša.
At her is Maša
She has Masha (to help her).

Arutjunova's comment is consistent with the difference pointed out to us by Paducheva between (65) and (67), suggesting that Existential sentences with *est'* have more to them than simply expressing a relation between a THING and a LOCation, but may often involve some notion of 'at one's disposal' or some other functional relevance. The second author does not believe that the notion of "personal sphere" is very generally applicable to Existential sentences, but we both believe the issue deserves closer attention.

The aspectual parameters of Existential sentences have not been addressed in this work but are often important. Paducheva's (1997) analysis of Existential sentences makes prominent use of the notion of an Observer, and in the past tense sentences she distinguishes between the position of a "Synchronous Observer" (for Existential sentences) and a "Retrospective Observer" (for Locative sentences). We accomplish similar distinctions with the choice of Perspectival Center; but we have noted at several points that the temporal dimensions of such choice need to be further explored and integrated with other studies of the aspectual properties of Existential sentences, such as Pereltsvaig (1997).

Another important factor that has not been given serious attention in this paper is the syntax of Russian sentences with *byt'*. The Russian literature does not give a great deal of attention to this question, but there is a great deal written about the syntax of the Gen Neg construction and about sentences with *byt'* in the Western literature, including Kondrashova (1996), Bailyn (1997), Brown (1999), Babby (2001) and Harves (2002a,b). These works have influenced our own at a number of points, but we have not yet made a serious attempt to settle on a syntactic analysis of our own. This is in part because syntax is not our specialty, and in part because it is not easy to find a common syntactic language with Russian colleagues. But this will be an essential step in trying to resolve the issues raised here and to develop a full compositional semantic analysis.

7. CONCLUDING REMARKS

While we are still far from a full account, we have made progress. The Perspectival Center status of the LOCation and the corresponding not-ordinary-subject status of the THING are both marked choices. A language which let one make the LOCation the subject (like Chichewa, see Bresnan and Kanerva 1989) would align subject and Perspectival Center, and the syntactic predicate with what is predicated of the subject; that would represent a full 'syntacticization' of the distinction. On the other hand, one could imagine a language in which there was no difference except word order, and the Existential sentence was realized just by making the Perspectival Center the Theme and the rest of the sentence the Rheme, indicated by

word order. Russian seems to do something in between; thus the analysis of the difference between Existential and Locative sentences in Russian is not surprisingly controversial.

The starting point for this paper has been the fact that the difference between Existential and Locative sentences in Russian emerges most clearly under negation. We have argued for an analysis of the Russian Gen Neg construction in which it is Perspectival Structure that is crucial for the construction, and not Theme–Rheme structure. But the mysteries of the forms of *byt'* 'be' stand in the way of a straightforward account, especially where the correspondences between affirmative and negative sentences are not straightforward. Some of the issues that create problems for the analysis of Russian existential sentences appear to be related to controversies about existential sentences in English with definite subjects, and to problems of "free" word order and the factors that influence it (including debates about Locative inversion in English, Chichewa, and other languages).

We have no firm conclusions about the *byt'*-sentences, but we have made progress in identifying some of the main issues and dissecting and comparing several explicit analyses. We have identified clusters of properties that underlie the typical Existential vs. Locative sentences, and our work on the mixed-properties cases that share properties of each type suggests that further progress will require greater attention to these properties individually, and not just to the typical cases in which the properties co-occur in clusters.

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LUCIA M. TOVENA

NEGATIVE QUANTIFICATION AND EXISTENTIAL SENTENCES

Abstract. This paper gives an insight into a productive type of construction in Italian that can be broadly characterised by the absence of verb, the presence of an initial n-word—from a surfacy point of view, and is interpreted as a full sentence, more precisely as a negative existential sentence. It is proposed that the sentential interpretation is possible because the negative expression requires tripartite structure at some abstract level of representation. The negated existential type of sentence is linked to the intersective relation imposed by the n-word and the constraint of empty intersection. The use of different n-words is interpreted as an overt marking of different perspectives on the situation described and result in different ways of satisfying conservativity.

1. INTRODUCTION

The Italian n-words *niente* (nothing) and *nessuno* (no/nobody) can enter the productive constructions in (1) and (2), characterised by the absence of verbs and yet interpreted as full sentences.

(1) Nessun testimone intorno a lei
(there were) no witnesses around her

(2) Niente processo per la truppa (13/9/2003IM)
(there will be) no trial for the troops

A feature of these constructions is the presence of an n-word quantifying over entities at the beginning of the sequence, at least from a surface point of view, in case preceded by some topic material. These sequences appear to be internally structured, despite the absence of verbs, and denote in the set of truth values. They can therefore be analysed as equivalent to clauses, in particular as negative existential statements. In uttering (1) or (2), the speaker commits herself to the truth of the description of a given situation. Hereafter, the first case will be referred to as an instance of *nessuno*-construction and the second case as an instance of *niente*-construction. As it will become clear below, the fact that the predicate is missing does not mean that it has been elided, and at least in the case of (2) its presence would lead to unacceptability.

A second feature is represented by the fact that these clauses convey particular assessments, not propositions corresponding to general truths. Despite the absence of a verb, they appear to be temporally anchored. In examples (1) and (2), the

I. Comorovski and K. von Heusinger (eds.), Existence: Semantics and Syntax, 191–219.

temporal differences highlighted in the English renderings come from information in the context of occurrence and should not necessarily be attributed to material in the clauses.

Another point to note is that both constructions are interpreted as negated existential clauses, in broad terms, but they differ in subtle ways related to expectations, presuppositions and information articulation. Still, in certain cases it seems possible to substitute one construction for the other, especially out of context.

A peculiarity specific to the *niente*-construction is constituted by the sequence *niente* plus nominal, which is hardly accepted elsewhere. Therefore, we seem to have a licensing problem as far as the distribution of the sequence goes, and a compositional problem as far as its interpretation goes.

In this paper, we focus our attention on how to characterise these verbless sequences so that they are interpreted as sentences and on their interpretation as negated existential sentences. Our proposal is cast inside the framework of Generalised Quantifier Theory. The alternative of treating n-words as indefinites will not be discussed. The n-word is analysed as an operator that takes restrictor and scope arguments. The resulting tripartite structure is reinterpreted as the representation of a sentence. The proposal extends to all determiners, with restrictions due to a definiteness effect.

The second part tries to capture some of the differences between the two constructions. The initial characterisation as 'existential' is a cover term for two types of sentences. Indeed, there is a wealth of studies on the existential vs. locative interpretation of existential constructions in the literature. We propose that aspects of this distinction can be found also in negative existentials. In particular, we hypothesise that *nessuno*- and *niente*-constructions are specialised ways to describe a situation. In (1) the description is structured around the object named by the noun, similarly to locative sentence. In (2), the situation is looked at from the perspectival centre of the domain of existence and says what is/isn't there. A further complication in the story is due to the question of the referential properties of the negated DP used to name what the negated existential broadly is about. Formally, the shift in perspective is captured by modifying the constraint of conservativity that characterises generalised quantifiers.

2. BACKGROUND

The two n-words concerned by the phenomenon under examination are *nessuno* (nobody/none/no) and *niente* (nothing). As reviewed in section 2.1, *nessuno* is a determiner and a quantifier/pronoun, and as a determiner combines only with singular countable nouns and some abstract mass nouns. On the contrary, *niente* is only a quantifier/pronoun. Thus, in a way their distribution leaves gaps in negative quantification over entities in Italian, because there are no negative determiners that combine with plural countable nouns or with singular concrete mass nouns. However, when *niente* linearly precedes a noun, such a noun can be concrete mass, plural

countable but also singular countable in many cases, hence the *niente*-construction does not really fill a gap in this respect.

Then, it will be shown that the *nessuno*- and *niente*-constructions under discussion are averbal existential clauses. But section 2.2 briefly recalls that Italian has other ways to form tensed positive and negated existential sentences. Thus, the averbal constructions do not fill a gap in this respect either.

2.1. N-words as Determiners and Quantifiers/Pronouns

Nessuno (nobody/none/no) semantically is a quantifier and syntactically a pronoun, and is also a determiner. As a quantifier, its domain is made of animate entities, cf. (3a), and not so easily of inanimate entities, see (3b).[1] As a determiner, it takes both types of domains, see (4), and combines only with countable nouns in the singular form and abstract mass nouns of the intensive type (Tovena 2001, 2003a), cf. (5).

(3) a. Nessuno salta sul letto
noone is jumping on the bed

b. #Nessuno ha cinque ruote
noone has five wheels

(4) a. Nessun bambino salta sul letto
no child is jumping on the bed

b. Nessun libro racconta la vera storia di Luisa
no book tells the true story of Louise

(5) nessuna bambola / *bambole / *acqua / pazienza
no doll / dolls / water / patience

The formal definition of the determiner *nessuno* is an open issue in itself. The standard definition of the English determiner *no* in Generalised Quantifier Theory, given in (6), captures the general meaning of a negative determiner, but does not take into consideration number information and differences in the structure of the domain. Rightly so, because *no* applies to singular and plural count nouns as well as to uncountable nouns.

(6) $\text{NO}\ (X)(Y) = 1 \text{ iff } X \cap Y = \varnothing$

But the data in (4) and (5) show that *nessuno* is sensitive to the structure of the domain of the restrictor set. Chierchia (1998) has proposed to distinguish the class of SINGULAR determiners, that require a domain composed only of atoms via a

[1] The '#' sign is used to indicate that the expression is pragmatically odd in the intended interpretation.

function that checks whether a predicate foregrounds a set of atoms or not. However, since this function is undefined when applied to a mass noun denotation, cases such as *nessuna pazienza*, cf. (5), are wrongly predicted to be impossible (Tovena 2001, 2003a). This point is very interesting, although not crucial for the issue under discussion, and further research would be desirable.

The other n-word entering the constructions under discussion is *niente*. In its standard use, it corresponds to the English negative pronoun *nothing*, in that its domain is made of inanimate entities, and it does not work as a determiner, cf. (7).

(7) a. Niente brilla nel cielo stasera
nothing twinkles in the sky tonight

b. *Niente stella/stelle brilla/brillano nel cielo stasera
nothing star/stars twinkles/twinkle in the sky tonight

However, the construction under examination allows an 'extension' in its use that, at least at first sight, bears similarities with the function of determiner, contrast (7b) with (2). In these cases *niente* can be translated into English as *no*, i.e. as a negative determiner. An open question is how to characterise this extended use. In this paper we strive to clarify the interpretation resulting from this use. The issue of how to get to it compositionally will not be tackled; we will only add some speculations at the end of the paper.

In a short aside, let us note that the construction in (2) is not the only case where one finds an extended use of *niente*. Tovena (2003b) provides two more cases, see the examples of lists in (8) and perception of some basic feelings in (9).

(8) a. Per questa torta ci vogliono tre etti di farina, un uovo, due mele e niente zucchero
for this tart one needs 300gr of flour, one egg, two apples and no sugar

b. Daniele mangia pesche, pere, niente mele e poca uva
Daniel eats peaches, pears, no apples and a few grapes

(9) a. Non ho niente voglia
I have no desire (i.e. I don't feel like it at all)

b. Non fa niente freddo
it is not the least bit cold

Tovena (2003b) observes that in all these cases, the noun after *niente* is an NP, as shown by the possibility of modifying it by an adjective in pre- and postnominal position and the impossibility of inserting a determiner.

She notes that by far the most common case is the one presented in (2), a point that raises the question of why this extended use of *niente* should be restricted almost exclusively to verbless sentences. The literature does not offer an

explanation for this behaviour. As we will see shortly, a previous analysis treats (2) as a case of verb ellipsis, hence it puts it together with tensed clauses.

In (8), *niente* occurs inside a conjunction.[2] Depending on the preferred analysis of coordination, these sentences might also be taken as more instances of verb ellipsis. As for the sentences in (9), this is a case where language alternates between 'have' and 'be'. Tovena (2003b) notes that these examples could be treated as cases where *niente* works as a degree adverb that strengthens the predication, in alternative to an analysis as a determiner. In other words, (10a) would be considered as a paraphrase for (10b).

(10) a. Non ho niente fame
I am not a bit hungry

b. Non ho affatto fame
I am not hungry at all

In sum, there are a few characteristics that split the collection of instances of the extended use of *niente* and set the use we are interested in aside from the other two. First, examples (8) and (9) are explicitly tensed clauses, unlike (2). They are not existential constructions. Second, in (8) and (9) bare nouns could occur in place of the *niente* + nominal sequences and the sentences would still be grammatical. Instead, (2) does not admit such a substitution. A reason for this behaviour is that bare singular nouns are excluded from argument positions in general in Romance languages. There are no bare singular countable nouns in Italian, except for occurrences in coordinated structures. It has to be noted that (8a), (9) and (10a), and their positive versions, exhibit mass nouns – which have been argued to be inherently plural – and have quasi idiomatic status.

2.2. Tensed Existential Construction

The basic tensed existential construction in Italian is constituted by the sequence *c'è/ci sono* (there is/there are), a determiner phrase and a coda, cf. (11).

(11) a. C'è una stella nel cielo
there is a star in the sky

b. Ci sono poche stelle nel cielo
there are few stars in the sky

This construction can be negated in the standard way, by adding the negative marker *non* (not), as in (12).

[2]The sentences in (8) are special insofar as they do not satisfy the constraint of negative concord. Simplifying a little, negative concord in Italian requires negation–i.e. the negative marker *non* (not) or an n-word–to be expressed in a preverbal position for the sentence to be allowed to contain more n-words in postverbal positions. This type of flouting negative concord marking is discussed shortly in (Tovena 1998).

(12) a. Non c'è nessuna stella nel cielo
there isn't any star in the sky

b. Non ci sono stelle nel cielo
there are no stars in the sky

As argued by Kim (2001) for English, and the same holds for Italian, the interpretation of (positive and negative) tensed existential sentences does not correspond to subject–predicate sentences without *there* (correspondingly, without *c'è* or the initial n-word in the constructions under examination), exemplified in (13).

(13) a. Una stella è nel cielo
a star is in the sky

b. Nessuna stella è nel cielo
no star is in the sky

In particular, the sentences in (13) presuppose the existence of stars, whereas (11) and (12) do not. In this respect, averbal sentences pair with tensed existential sentences. The contrast in the interpretation of these types of sentences suggests that in subject–predicate sentences the subject has topic status, whereas such a characterisation is not appropriate for the 'semantic' subject of existential sentences.

3. CLAUSAL STRUCTURE AND EXISTENTIAL INTERPRETATION

As said in the introduction, the averbal clauses that instantiate *niente*- and *nessuno*-constructions denote truth values like sentences.

3.1. Averbal Existentials

We account for the clausal interpretation of (1) and (2), repeated below, by exploiting the generalised quantifier's definition of determiners as operators that take restrictor and scope arguments and result in a sentence (Keenan 1996).

((1)) Nessun testimone intorno a lei
(there were) no witnesses around her

((2)) Niente processo per la truppa (13/9/2003IM)
(there will be) no trial for the troops

The n-word is able to trigger the tripartite structure commonly used in the representation of sentences. In particular, it can do the predicative job otherwise done by the verb, i.e. denoting a relation, and there is no need to delete or reconstruct a verbal form at some level of representation.

This step allows us to predict also that these sentences have assertive illocutionary force in their default interpretation. In the absence of overt indication of a different type of act, e.g. via a question mark, the n-word fulfils the role of the unique operator.

If we admit that it is the pronoun/determiner that has the effect of turning the averbal sequence into a clause, one might expect this possibility to be open to positive and negative determiners at large. This seems to be the case for weak determiners, cf. (14a–e), but not for strong ones. The sequences in (14a–e) have clausal interpretation beside their interpretation as DPs, whereas those in (14f–i) that are acceptable as modified nominals but do not have clausal interpretation.

(14) a. Una stella nel cielo
(there is) a star in the sky

b. Due stelle nel cielo
(there are) two stars in the sky

c. Qualche stella nel cielo
(there are) some stars in the sky

d. Molte stelle nel cielo
(there are) many stars in the sky

e. Poche stelle nel cielo
(there are) few stars in the sky

f. #Ogni stella nel cielo
every star in the sky

g. #Ciascuna stella nel cielo
each star in the sky

h. #Questa stella nel cielo
this star in the sky

i. #La stella nel cielo
the star in the sky

Specific indefinites are also not suitable to yield existential averbal clauses, see (15) and the English counterparts.

(15) a. #Una certa stella nel cielo
A certain star in the sky

b. #Una particolare stella nel cielo
Some particular star in the sky

Existential sentences are peculiar because they do not admit all types of DPs. This is the so-called definiteness restriction. Strong determiners (Milsark 1977 Reuland and ter Meulen 1987) cannot occur in averbal clauses, cf. (14), analogously to what

is observed in *there*-constructions. The data in (14) show that the definiteness effect is replicated in averbal clauses.

It has to be noted that the frequency with which the negative constructions exemplified in (1) and (2) are used does not compare with that of the examples in (14a–e). Averbal positive clauses of the type in (14) are mostly confined to instructional texts, e.g. for describing the setup of a scene in a play. An explanation for their uneven use can be put forth in terms of the difference between predicative vs. proportional characterisation of quantifiers (Partee 1995). The interpretation of simple cardinality quantifiers can be reduced to a property that is predicated of the set which is the intersection of restriction and nuclear scope. On the contrary, other quantifiers are essentially relational and require tripartite structure at some level. Universal quantifiers are typical proportional only quantifiers. Negative quantifiers are among those whose truth conditions can be expressed in terms of proportion as well as with an expression of number. The idea, then, would be that the reducibility of a potentially relational analysis to a predicational one for a given quantificational expression undermines the potential of this expression in bringing about a clausal interpretation, precisely because the relation no longer has high informational priority.[3] Relational only determiners are excluded because they are strong determiners.

In line with a relational perspective on determiners (Zwarts 1983), a link between the nature of the clause and the nature of the quantificational expression can be hypothesised, because the latter contributes the operator. The fact that a determiner expresses a relation of intersection, independently of constraints on the cardinality of the intersection, supports the existential interpretation of the quantificational structure in examples (1), (2) and (14a–e). Intersectivity is the property used by Keenan (1987) to characterise determiners that can occur in *there*-constructions. This point covers the data but possibly is not strong enough to predict them.

Next, given that *nessuno* and *niente* are negative, the constraint of emptyness they impose on the intersection yields negative existential clauses.

As for the syntactic structure of existential constructions, the DP and XP following the *there is* expression have been considered to be sisters of the verb (Milsark 1974) or forming a constituent. This constituent has received the structure of postnominal modification in (Williams 1984). Alternatively, the term of small clause has been introduced in general to refer to the structure of a subset of constructions expressing a predicative relation (Williams 1975, Stowell 1983) but where the predicate is not an inflected verb, and specifically it has been used to characterise the constituent composed by a DP and a coda. The term of small clauses also conveys the idea that this type of clauses is morphologically less complex than full clauses.

[3]However, it remains to clarify why (14d) also seems to be rarely used with clausal interpretation despite the fact that *molte* is genuinely ambiguous between cardinal and proportional readings, as claimed for its English corresponding *many* (Partee 1989).

(16) a. #Una bambina malata
a girl ill

b. *Luisa malata
Louise ill

It is a known fact that Italian is not a zero copula language, see (16). It is therefore plausible to assume that, syntactically, the constructions exemplified in (1) and (2) are matrix small clauses. We will not attempt an implementation of this hypothesis.

3.2. Comparing with Other Constructions and Across Languages

The constructions discussed in this paper appear to have received little attention in the literature. To the best of our knowledge, there has been only one proposal of analysis, by Manzotti (1991), that tries to relate them both to tensed clauses and to reduce their peculiarities. We discuss it first to show that these peculiarities are real and for the sake of completeness. We then point at possible parallelisms with constructions in other languages.

Manzotti has proposed to analyse averbal clauses containing *niente* such as in (17) as cases of sentential negation with ellipsis of the verb. If we understand his proposal correctly, the deep reason for postulating a verb ellipsis is to get a way to equate these cases to 'normal' clauses hence to account for their interpretation as full sentences. However, this type of analysis raises several questions. It does not explain why verb ellipsis would be obligatory in (17). These putative 'reduced' clauses cannot be paralleled with any corresponding 'full' clauses, since *niente* does not work as a determiner in verbal clauses. Furthermore, an ellipsis implies that the thing being omitted has already been expressed, which does not seem to be the case for the verbs in these clauses.

(17) a. Niente età limite per le adozioni (25/7/1996IM)
no maximal age threshold for adoptions

b. Niente pensione a chi risiede all'estero
no pension to the citizens living abroad

Moreover, *niente* and *nessuno* phrases in averbal clauses undergo a particular thematic restriction, noticed in Tovena (2003b). Neither of them can discharge what would be the agent role in the event described by the corresponding full clause. When needed, this role is discharged by a PP, see the portions in italics in (18) and (19), which makes us suppose that if one wants to reword the sequence into a full sentence, the use of a passive verb form may be more appropriate. But a thematic or voice restriction of this type does not follow from an analysis in terms of verb ellipsis.

(18) *Dal Csm* nessuna censura al procuratore Vigna (19/2/1998IM)
no reproof [is made] to attorney Vigna by the CSM

(19) Niente scherzi *dalla Bundesbank* (22/3/1998IM)
no tricks [were played] by the Bundesbank

Referential and thematic restrictions on the interpretation of the quantifiers in *nessuno-* and *niente*-constructions call to mind non-agentivity that typically characterises existential sentences, and the hypothesis of unaccusativity that has been invoked in their treatment. Recall that passive sentences have also been analysed as unaccusative in syntax, see Perlmutter (1983).

Finally, let us say a word on the nature of the verb that could be 'added' in interpreting these averbal clauses. If one tries to build full tensed sentences corresponding to these averbal constructions, as we have tried to do in our English renderings for (18) and (19) for instance, one enjoys a certain degree of freedom in choosing the predicate. The selection primarily depends on the lexical content of the noun following the n-word, but more than one option is often available. However, the main contribution of these predicates to the truth conditions of the sentence appears to be the same as that of an expression of existence. In a word, these constructions support the 'Presupposed Equivalence' Borschev and Partee (1998) establish between existence predicates and verbs occurring in negated existential sentences that exhibit the phenomenon of genitive of negation in Russian. Roughly put, these authors suppose that the variety of verbs concerned by the phenomenon contribute a presupposition according to which if an entity V-ed under certain circumstances, this implies that it WAS under those very same circumstances, where capital letters mean an abstract notion of existence. For instance, if something shines on the table, then it is on the table. The implication going in the opposite direction, from BE to V, is assumed to be a specific presupposition of the existential construction that allows genitive of negation and is not encoded in the lexical entries of the verbs. A similar case can be made for our averbal clauses. 'Reproofs' were not 'made' in (18) and 'tricks' were not 'played' in (19), but in both cases reproofs and tricks did not 'exist' in those very same spatio-temporal locations. The way in which events are associated with nominals varies according to the semantic class of the nominal and the information attached to the head noun.

The distinction between various negative existentials we work at calls to mind work on genitive of negation in Russian existential sentences (Babby 1980, Borschev and Partee 2002). In Babby's terminology, Negated Declarative Sentence (NDS) exhibit subjects in the nominative case and are sentences where the description is structured around the object named by the noun. In a Negated Existential Sentence (NES), the subject is in the genitive case and the perspectival centre is on the domain of existence. The idea that the variation between nominative vs. genitive case in negated existential sentences in Russian realises different perspective structures, has been recently taken up and developed by Borschev and

Partee (2002) and in this volume. Our proposal for Italian is inspired by similar intuitions.

Babby's analysis has been adopted by Heldner (1992) to account for the distribution of the French expressions *aucun* N (no N) and *pas de* N (no N, lit. not of N). These expressions occur in full as well as averbal clauses. As said below in section 4.2, *aucun* is a negative determiner and quantifier/pronoun. As for *pas de* N, *pas* is the negative marker that forms the embracing sentential negation *ne . . . pas* and the nature of *de* is open to discussion, whether it is a preposition or a determiner. Interesting to notice, in averbal sentences the two cannot be separated, see (Tovena 2004). Heldner claims that examples with *pas de* N are good parallels to those where Russian uses genitive case. Heldner's analogy is interesting for our discussion because *aucun* N and *pas de* N are frequently used in averbal sentences which are negative DPs like those under examination. Averbal sentences with *niente* usually have *pas de* N as French rendering, and those with *nessuno* have *aucun* N. We will come back to French at several points in the discussion.

Finally, as suggested by a reviewer, the *nessuno*- and *niente*-constructions might be compared with the *no* N/*not a* N pair in English. Example (20a) says that he is not a member of the denotation of doctor–and presumably implicates that this set is not empty–and (20b) that he does not have the typical properties of a doctor, but does not rule out that he might be one, adapting from (Huddleston and Pullum 2002).

(20) a. He is not a doctor

b. He is no doctor

The clearest difference between *no* N and *not a* N shows up in predicative position, elsewhere it seems to reduce to emphasis (Huddleston and Pullum 2002). Comparing them with the Italian constructions is problematic because *nessuno* and *niente* don't occur in predicative position. In the other contexts, *not a* N is a scalar expression and corresponds to Italian *non un* (*solo*) N.[4] This is an interesting case but also a different problem.

4. COMPARING *NESSUNO*- AND *NIENTE*-CONSTRUCTIONS

As mentioned in the introduction, the two Italian constructions are felt to be close as far as their main communicative goal of making a negative existential statement is concerned. But they also differ both in syntactic and semantic/pragmatic terms. This section compares the two constructions and attempts to pin down at least some of the shades that characterise their interpretation and hence their use and distribution in discourse. These shades are not unique to the Italian constructions under discussion, but are shared with French *aucun* N (no N) and *pas de* N (no N).

[4]French also has the combination *pas un* N.

Before we proceed, we should bring out a further distinction. The negated existential clauses introduced by *niente* come in two varieties, so to speak, as the noun that follows *niente* can be in the singular form, as in (2), repeated here, or in the plural, as shown in (21).

((2)) Niente processo per la truppa (13/9/2003IM)
(there will be) no trial for the troops

(21) Niente prove che l'Iraq possieda armi di sterminio (15/2/2003IM)
no evidence that Iraq possesses weapons of mass distruction

It is this second variety that is often perceived as near substitute for constructions with *nessuno*.

4.1. Restrictions on Possible Pairs of Substitutes

Tovena (2003b) discusses a number of cases where *niente* can be substituted by *nessuno* in averbal clauses, and vice versa, to a reasonable degree of acceptability and under certain constraints. Taking the perspective of each case in turn, we summarise her results in (22) to (24), where the symbol $\rightsquigarrow$ says that substitution is felt to be acceptable by native speakers and $\not\rightsquigarrow$ that it is not a viable solution.

(22) *nessuno* $\mathrm{N}_{singular}$
$\rightsquigarrow$ *niente* N_{plural}
$\not\rightsquigarrow$ *niente* $\mathrm{N}_{singular}$

(23) *niente* N_{plural}
$\rightsquigarrow$ *nessuno* $\mathrm{N}_{singular}$

(24) *niente* $\mathrm{N}_{singular}$
$\not\rightsquigarrow$ *nessuno* $\mathrm{N}_{singular}$

For instance, the sequence of type *nessuno* $\mathrm{N}_{singular}$ in (25a) could be reworded as shown in (25b) but not as in (25c). Next, most speakers accept to turn (26a) exhibiting the sequence *niente* N_{plural} into (26b). Finally, the sequence *niente* $\mathrm{N}_{singular}$ exemplified in (17b), repeated below, cannot be replaced by a construction with *nessuno*.

(25) a. Nessuna reazione invece dalla presidenza della Repubblica (19/4/1998IM)
on the contrary, no reactions from the presidency of the Republic

b. Niente reazioni invece dalla presidenza della Repubblica

c.?*Niente reazione invece dalla presidenza della Repubblica

(26) a. ONU Francia, Russia e Cina: niente mozioni contro l'Iraq (7/9/1996IM)
ONU: France, Russia and China [oppose any] motion against Iraq

b. ONU Francia, Russia e Cina: nessuna mozione contro l'Iraq

((17)) b. Niente pensione a chi risiede all'estero
no pension to the citizens living abroad

Recall that *nessuno* determiner does not combine with plural nouns. Its non-singularity allows it to combine with abstract mass nouns such as names of mental states. In (27), the n-word cannot be substituted simply because *nessuno* determiner does not combine with concrete mass nouns, leaving aside the taxonomic reading.

(27) Ieri è stata rispettata la tregua, niente letame sulle autostrade o trattori sui binari (29/11/1997IM)
yesterday the truce was respected, no manure on the motorways or tractors on the rails

A word of warning should be spent on these substitution schemata before we carry on discussing the results. Speakers' willingness to accept the substitutions listed above is inversely proportional to the amount of context or contextual information provided. Meaning shifts are often reported relatively to the type of reading, e.g. partitive readings alternate with non partitive ones, and to the type of speech act, i.e. assertion alternates with injunction in cooccurrence of names of mental states.

At least two conclusions can be drawn from the schemata and the data presented in this subsection. First, distributional restrictions typical of *nessuno* as a determiner closely match those observed in averbal constructions–namely the impossibility for it to combine with plural countable and (singular) concrete mass nouns–a point that provides support to an analysis of *nessuno* as determiner in *nessuno*-constructions too. Second, the relevance of morphological number in the interpretation of *niente*-constructions is highlighted.

In the remainder of this section we look first at interpretive peculiarities of the specific n-words before we move on to interpretive differences of the averbal constructions they enter.

4.2. N-words and Presupposition of Existence

Several major Romance languages have a double series of negative quantifiers. French, Portuguese, Spanish and Rumanian have two ways of expressing negative quantification over animate and inanimate entities, namely *nadie* and *ninguno* (S), *personne* and *aucun* (F), *nimeni* and *niciunul* (R) and *nenhum* and *ninguém* (P). This is not the case for Italian that has only one element, namely *nessuno*.

In (Tovena 2003c), negated existential sentences have been used to classify the elements of the two series. One element has the peculiarity of relying on information provided in the discourse domain or that must be accommodated, because it is associated to a presupposition of a non-empty domain for the restriction set. The other element does not convey any implications. It is this second type of element that occurs in existential sentences.

(28) a. F Il n'y a personne dans le jardin
there is nobody in the garden

b. S No hay nadie en el jardín

c. P Não há ninguém no jardim

d. R Nu e nimeni in grădină

(29) a. F *Il n'y a aucun dans le jardin
there is nobody in the garden

b. S *No hay ninguno en el jardín

c. P *Não há nenhum no jardim

d. R *Nu e nici un in grădină

In Italian, *nessuno* has properties of both series, compare (30a) where *li* functions as antecedent and *nessuno* has a context dependent reading, with (30b) where there isn't any dependency, from (Tovena 1998), and the existential sentence in (31).

(30) a. Li ho interrogati di persona e nessuno mi ha risposto.
them have questioned personally and nobody to-me has answered

b. Ho provato a telefonare e non mi ha risposto nessuno.
have tried to telephone and not to-me has answered nobody

(31) Non c'è nessuno in giardino
there is nobody in the garden

In all these languages, one of the pronominal forms also works as a determiner. In the languages that have a double series, it is the presuppositional quantifier that performs the double task. Note that when these elements function as determiners, it becomes possible for their restrictor to have an empty denotation domain, i.e. the presuppositional constraint is waived, cf. the French examples in (32). In (32a) there is no set of patience that was not shown, while in (32b) there is a contextually relevant set of colleagues whose patience was not tested.

(32) a. Il n'a fait preuve d'aucune patience
he didn't show any patience

b. Il n'a mis à l'épreuve la patience d'aucun collègue
he tested the patience of no colleague

Next, the form used as a determiner is also the one used in partitive constructions, e.g. **personne/aucun de tes étudiants* for French. The use of an overt partitive form pairs with an existential presupposition, cf. (33).

(33) a. ??Non ha letto nessun libro sulla tavola
s/he did not read any books on the table

b. Non ha letto nessuno dei libri sulla tavola
s/he did not read any of the books on the table

As just said, Italian does not lexicalise the difference in presuppositional status of the denotation in the domain of the restrictor. The possibility of having an empty denotation seems always open for *nessuno* determiner in full sentences, modulo lexical entailments imposed by the verb on some of its arguments. On the other hand, the data discussed in the next subsection suggest that the situation is more constrained when *nessuno* is used in averbal sentences. Yet, at this stage of the research it is not clear whether it is always a question of presuppositions on the denotation of the domain of quantification.

In sum, constraints on the empty/non-empty domain of denotation cannot be encoded directly in the representation of the determiner in Italian. A more promising solution is to associate them with the use of the item in the negative existential sentences.

4.3. Interpretive Differences

A description of the meaning of *nessuno*- and *niente*-constructions cannot be properly achieved without taking into consideration the informational structure of the surrounding text and the role of the utterances in discourse. In the following we discuss some of the relevant features.

At the first blush, the two constructions appear to differ in the presupposition of existence they associate to the domain of denotation of the noun. In clauses instantiating the *nessuno*-construction, the domain of denotation of the noun is expected to be non-empty. On the contrary, instances of the *niente*-construction do not carry this presupposition.

4.3.1. The speaker's point of view

The minimal pair in (34) shows that the use of *niente* makes it possible to deny the existence of something, and when emphasis is added, it can even convey the

notion of interdiction. Sentence (34a) was used to report Cernomyrdin's successful opposition to Lebed's getting an office of vice-president in Russia. It may be useful to recall that the office of vice-president does not exist in Russia. On the contrary, (34b) was used to say that the existing function of president of that particular committee had not yet been assigned. The members of the committee make up the set of candidates to such a function and the nomination will certainly single out one of them in the end. The set of potential presidents is given.

(34) a. Cernomyrdin a Lebed: niente vicepresidenza (05/07/1996LU)
Cernomyrdin [said] to Lebed: no vice-presidency

b. Commissione di Vigilanza: nessuna presidenza (06/08/1997RR1)
[as for the] Commissione di Vigilanza: no presidency [has been assigned]

The choice of a *niente*-construction may work as a hint that the speaker–in direct and indirect speech–is against the existence of entities of the N type in a particular situation. For instance, (35) was produced by a minister at a time when it was discussed whether to use the army to stop boats arriving illegally in Italy from Albania. The existence of an Italian army was not under discussion. It is not its coming into being that is negated in (35). What is negated is the stable presence of the army in the specific place and time and for a given understood purpose.

(35) ANDREATTA Niente esercito in Puglia, altri blitz se sarà necessario (7/3/1997IM)
Andreatta [said]: no army in Puglie, more interventions if needed

Even clearer cases are (36), where the restrictor is a proper name, and (37) that contains a sequence of instances of *niente*-constructions.

(36) Bossi: "Niente Lega alle elezioni padane" (20/7/1997IM)
Bossi said: No Lega at the elections in the Po valley

(37) Ma niente bermuda alle Bermuda, niente Galliani, Confalonieri e compagnia in calzoncini corti, come in passato. Niente jogging con i collaboratori più stretti. Nessun rischio di fotografi nelle vicinanze. (28/12/1996LS)
But no bermuda shorts at the Bermuda, no Galliani, Confalonieri and the company with short trousers, as in the past. No jogging with the closest members of his team. There won't be any risk of finding photographers nearby

In these cases, the existence of the entity/ies that constitute the denotation of N may be undisputed, but they are presented as not being already in the discourse domain and the domain of quantification is not contextually defined. Then, what is more

important, the entity is not introduced at that point through a given event, since the sentence is interpreted as denying existence to it in a spatio-temporal location. At that time and place there is no event of the described type that could introduce a discourse referent of the N type. Thus, the sentence asserts the non-existence or the complete absence of the entity spoken about relatively to a situation.

For positive existential indefinites such as *a*, the need of taking into consideration the epistemic dimension has been claimed at least as early as in (Fodor and Sag 1982) within the generative tradition. These indefinites have an epistemic specific construal when the speaker has a particular entity in mind when uttering a sentence that contains an indefinite. The analysis of constructions based on n-words we are discussing reveal the need of making room for an epistemic dimension also for negative items, with systematic appeals to psychological aspects of communication.

4.3.2. Differences in discourse transparency

Negative existential averbal clauses seem to be selectively opaque contexts. In *nessuno*-constructions the denotation of the N is discourse transparent. In (38), the context sentence introduces the antecedent that makes it possible for *settore* to be interpreted as bridging anaphora. The data show that this possibility is not open to *niente*-construction, with a singular or plural noun as restrictor.

(38) a. [Il maltempo colpisce l'industria del nord.] Nessun settore al riparo dalla tormenta
Bad weather hits the industry in the North. No sector [is] sheltered from the storm

b. [Il maltempo colpisce l'industria del nord.] *Niente settore al riparo dalla tormenta

c. [Il maltempo colpisce l'industria del nord.] *Niente settori al riparo dalla tormenta

Heldner (1992) proposes to test the discourse transparency of a negative quantified expression in French by substituting it with an overtly partitive rewording, as done in (39a) for Italian and (39b) for French.

(39) a. Nessuno dei settori dell'industria al riparo della tormenta
no sector of the industry sheltered from the storm

b. Aucun des secteurs de l'industrie à l'abri de la tourmente
no sector of the industry sheltered from the storm

However, this test can be used only for *aucun* and *nessuno*. In the case of the *pas de* N-construction, *de* cannot be modified since it is part of the construction itself. In the case of the *niente*-construction, the test cannot be applied because no material can be inserted between *niente* and the noun.

Number variation in *niente*-construction can be expected to have an impact on discourse transparency, but I have no clear way to test it at the moment.

4.3.3. A presupposition of plurality

A characterisation that concentrates all the discriminative power on the cardinality of the restriction may be too strong and not sufficient at the same time. First, in the case of *nessuno*-constructions the presupposition of existence of the entity spoken about seems to be better characterised as a presupposition of plurality. The use of the *nessuno*-construction is marginal with nouns that name unique entities in the real world, see the contrast in (40).

(40) a. Niente sole quest'estate
no sunshine this summer

b. #Nessun sole quest'estate
none of the suns this summer

Sentence (40b) strongly suggests that there is more than one sun. The presupposition of plurality, in order to be accommodated, forces an interpretation whereby the sentence conveys a claim about an astronomical situation that exceeds our galaxy. The fact that sentence (40a) is the standard way of talking about a given type of weather can be explained by considering the impossibility of *nessuno* to combine with mass nouns of this type.

It has often been said that singular forms are the unmarked option, being singular by default. In sentences instantiating *nessuno*-constructions the default association between morphologically singular nominals and an atomic domain is systematically overridden. The reason for this systematic overriding is not clear at the moment. Nevertheless, the property of non-atomicity imposed on the restrictor of *nessuno* in averbal sentences offers a clue for understanding the possibility of substitution between *nessuno* $N_{singular}$ and *niente* N_{plural} cases.

Second, the characterisation is too strong also because it does not seem possible to state the constraint of plurality just observed in sentences instantiating the *nessuno*-construction–which looks pretty sound–directly, or at least exclusively, in terms of a presupposition of non-empty domain for the denotation of the noun. To see this we can imagine the case of someone feeling nervous in a place that looks deserted and who shouts to check if anybody is hidden behind a cupboard. Suppose it is all quiet. The following text containing a *nessuno*-construction is felt to be appropriate, while the choice of *niente* would not do.

(41) "C'è nessuno lì dietro?". Nessuna risposta
Is there anybody behind there? No answer

In this case, it is hard to claim that there is a set of answers that is presupposed. It seems rather a case where someone was expecting an answer. The fact that it

is possible to have a point of view in which the existence of answers cannot be excluded seems decisive in the choice of the n-word.

This example also reveals that the parallelism between the Italian and French constructions is extensive but not total. First, the most natural translation of (41) in an analogous context is (42a), which breaks the parallelism. Second, the *pas de*-construction is also possible, see (42b) and despite the preference for (42a), no clear interpretive difference is reported, which reduces the impact of the first point but highlights another contrast. Indeed, the *niente*-construction is not possible, see (43).

(42) a. "Il y a quelqu'un?" Pas de réponse
Is there anybody? No answer

b. "Il y a quelqu'un?" Aucune réponse
Is there anybody? No answer

(43) "C'è nessuno?". *Niente risposta
Is there anybody? No answer

At the present moment, for wanting of an account of the difference between the two languages, we can only point out an additional piece of empirical evidence. The acceptability of (43) in context increases a little if the noun is marked for plural. On the contrary, the acceptability of (42a) seems to decrease if the noun is plural.

4.3.4. Deverbal nouns

Examples (41)–(43) exhibit deverbal nouns as restrictors. Sentences of this type are often interpreted as negating the coming into being of an instance of type N through an event situated at a given time and location. A precise set of events is not presupposed. However, it is not clear whether the noun necessarily gets an eventive reading in (41) and a result reading is ruled out.

The pair in (44) and (21), repeated below, confirms the substitution schema in (22) and (23), and blurs our attempt to tear the two constructions apart. There is no clear interpretive difference, in particular notice that the deverbal noun gets a result reading only, in both cases.

(44) Nessuna prova degli "inconfutabili" legami fra Saddam e al-Qaeda. (6/10/2004IM)
no evidence of the 'irrefutable' links between Saddam and al-Qaeda

((21)) Niente prove che l'Iraq possieda armi di sterminio (15/2/2003IM)
no evidence that Iraq possesses weapons of mass distruction

We do not get mixed data with all event nouns, from the distributional point of view. Consider once only events, as in example (45), used to report that the stoning

sentence against Amina Lawal had been quashed. Here, it is not possible to replace *nessuno* for *niente*.

(45) Niente lapidazione per la trentunenne nigeriana, assolta ieri in appello. (26/9/2003IM)
no stoning for the thirty-one years old Nigerian woman, dismissed yesterday in appeal

Had *nessuno* been used, the noun should have denoted in a non-atomic domain, but (45) explicitly mentions the potential patient of the event and only one event of stoning can be considered in relation to one specific patient. In (46) non-atomicity gets accommodated by forcing a taxonomic reading, but the sentence is pretty strange because it is not common to think about subtypes of this type of event.

(46) #Nessuna lapidazione per la trentunenne nigeriana
no type of stoning for the thirty-one years old Nigerian woman

Note that if there are no constraints on the possibility of considering several instantiations of the same type of event, i.e. a plurality of events of the same type, *nessuno* is perfectly fine, see (47).

(47) Nessuna lapidazione negli ultimi dieci anni
no stoning in the last ten years

In (45)–(47), the deverbal noun only gets an event reading. The data are consistent and equally clear-cut in French, where *aucune lapidation* is rejected and its taxonomic reading is judged implausible.

4.3.5. Proper names

Typically, existential sentences are not about any particular entity and are used to make assertions concerning only the fact that the set of entities with a particular property is empty or that it is not empty. Examples (36) and (37) illustrate that proper names can occur as restrictor in *niente*-constructions under the 'interdiction to be present' interpretation. The combination of *nessuno* and a proper noun is not acceptable or not possible when the noun is interpreted as a unique rigid designator, see the contrast between (48) and (49).

(48) Niente Gianni a lezione
Gianni (was) not (among those) at the lecture

(49) #Nessun Gianni a lezione
nobody (named) Gianni (was) at the lecture

The interpretation of proper nouns can be shifted into a property, like bare nouns. In (48) the noun is interpreted as providing a relevant description that does not apply

to entities in the spatio-temporal location. In the context of the lecture, there was nothing to which a characterisation as Gianni could apply. In (49) the requirement of non-atomic domain forces an interpretation whereby the proper name provides the criterion of membership for subsets in the restriction set over which *nessuno* quantifies. The sentence requires a very specific discourse context to be felicitous. Facts replicate in French.

4.4. Summary

In order to capture the different role these constructions can have in discourse, we may need to talk about the epistemic status of an agent. In the case of *nessuno*-construction, the denotation of the restrictor is associated with some degree of existence. However, it is too strong to assume that links with the preceding contexts may be assumed in all cases. The existence may not be presupposed with respect to the world, but relatively to the perception of the world of a given agent, as in the case of example (41) for instance.

In the case of *niente*-constructions, no presupposition of existence is associated with the restrictor, which is different from saying that the restrictor set is presupposed to be empty. The speaker may be characterised as the agent who believes to be responsible for the resulting situation described by the sentence, not only the one who believes its truth. Indeed, certain instances of *niente*-construction have a volitional flavour. Example (35) reports the words of the minister of home affairs. Similarly, the items in (37) for instance, be them things or people, are ruled out by the speaker himself and their presence is intentionally barred as a consequence of his will, all of them except for the last one which is beyond his direct control. In this particular case, the entity is introduced by *nessuno*. The existence of elements in the domain of denotation of the restrictor set looks like a conventional implicature associated with the negative existential construction realised by *nessuno*. Crucially, this does not apply to *niente*-constructions.

5. AVERBAL NEGATIVE EXISTENTIAL SENTENCES

The existential vs. locative interpretation of existential constructions has been repeatedly studied in the literature. The discussion above has shown that aspects of this distinction can be found also in negative existentials. The hypothesis discussed in this section is that *nessuno*- and *niente*-constructions are specialised ways to describe a situation and that it is the use of these different n-words that marks overtly different perspectives on the situation described. In *nessuno*-constructions the description is structured around the object named by the noun. In *niente*-constructions, the situation is looked at from the perspective of the domain of existence.

Formally, we propose to capture the shift in perspective by varying the constraint of conservativity that characterise generalised quantifiers. This step allows

us to take into consideration the question of the referential properties of the negated DP used to name what the negated existential broadly is about, cf. Cartwright (1960), Atlas (1988) among others.

5.1. The Role of Conservativity

In Generalised Quantifier Theory various claims have been made about universal properties of determiners in natural languages. *Conservativity* is one of such properties (Keenan and Stavi 1986). A determiner that satisfies conservativity, defined in (50), uses its first argument as its local universe.

(50) **Conservativity (on the left argument):**
A determiner D satisfies the constraint of conservativity on its left argument iff for all $A, B \subseteq E$:
$D_E\ AB$ iff $D_E\ A\ (A \cap B)$.

This constraint can be seen as a property of the syntax–semantic interface, as it constrains the relevant occurrences of determiners to have the form (Det N) Predicate. Intuitively, it says that entities that do not have the property determined by the N do not have to be taken into consideration to determine the meaning of a sentence of the form Det N VP.

This constraint has also been considered to encode the presupposition of non-empty domain usually associated with the first argument. Partee (1991) has noted that there is some correlation between the background of a sentence (the topic) and the restrictor on the one hand, and the focus and the nuclear scope on the other hand.

The hypothesis we explore says that in averbal negative existential sentences in Italian either argument may play the role of local universe, under specific circumstances. In case the set B has to play this role, the constraint of conservativity has to be satisfied on the right argument. The definition of this type of conservativity goes as follows.

(51) **Conservativity on the right argument:**
A determiner D satisfies the constraint of conservativity on its right argument iff for all $A, B \subseteq E$:
$D_E\ AB$ iff $D_E\ A \cap B\ (B)$.

Nessuno- and *niente*-constructions differ in the way information is conveyed. *Nessuno*-constructions exemplify a regular quantificational structure, where *nessuno* is the determiner, the common noun it combines with is the restrictor and the XP following it is the nuclear scope. Conservativity is satisfied in the traditional form defined in (50). The situation is different in the case of *niente*-constructions where, as mentioned above, *niente* is a generalised quantifier. Usually it does not behave as a determiner and does not take an overt left argument. The exceptional

use of *niente* as an element that triggers a tripartite structure in negative existential constructions is to be interpreted as marking overtly the fact that the noun following it is not a standard left argument and does not play the role of restrictor. Conservativity is satisfied in the form defined in (51) extended to operators expressing conservative functions.

This formulation of our hypothesis accounts for the basic facts. In *nessuno*-constructions the denotation of N is assumed to be non-empty and in *niente*-constructions no constraints apply to the denotation of N. However, the data discussed in section 4.3 suggest that it is desirable to reformulate this hypothesis and add an epistemic layer to it. It seems necessary to move from an opposition between empty or non-empty domain of entities spoken about to a range of epistemic states. An agent may believe the possibility of existence of the entities the sentence is about or believe their existence. The belief of existence implies the belief of possibility, but the reverse is not true. In this line of reasoning, what is presupposed in (41), repeated below, is the existence of an epistemic state in which the possibility of there being answers is envisaged. What is not presupposed is the existence of an agent who believes that there are answers. Adding this refinement to the current analysis will be a challenge for the future. The proposal sketched in section 5.3 is partly different. The belief of the possibility of existence is ascribed to an agent who is a participant in the conversation but who is not identified nor necessarily identifiable.

((41)) "C'è nessuno lì dietro?". Nessuna risposta
Is there anybody behind there? No answer

The idea behind the current hypothesis is that the constraint of conservativity may be satisfied in ways that interact with information articulation. A relevant example from the literature is the discussion of *many* as a possible counterexample to the universality of Conservativity by Westerståhl (1985). His example exploits the capacity of focus to affect the truth conditions of a sentence. When *Scandinavians* is interpreted as the restrictor in (52), the sentence means that the number of Scandinavians who are winners of the Nobel Prize in literature is large and *many* behaves as a conservative determiner. In order to get the interpretation that a large number of those who have won the Nobel Prize in literature are Scandinavians, *be a winner of the Nobel Prize in literature* has to be taken as the restrictor. In the case of this example, prosody signals the shift.

(52) Many Scandinavians have won the Nobel Prize in literature

A similar line of attack has been adopted by Keenan (2003) to account for the distribution of DPs in existential *there*-constructions in English. In his proposal, the distribution follows from a property pinned on the determiners, as commonly done.

However, it is claimed that the definiteness effect should not be explained in pragmatic terms by ascribing differing presupposition triggering properties to the determiners, but in semantic terms. The determiners that occur in *there*-constructions decide their truth by limiting their universe to the set denoted by the coda, hence they satisfy conservativity on the left argument. The discussion of the two Italian cases show that in *nessuno*- and *niente*-constructions the satisfaction of Conservativity on the right argument cannot be said to be a characteristic of certain determiners. Moreover, it cannot constitute a generalisation over negative existential sentences, because of the difference between *nessuno*- and *niente*-constructions, although all averbal clauses were shown to exhibit the definiteness effect.

5.2. More on Conservativity and the Definiteness Effect

It is a known fact that *there*-constructions may be interpreted in other ways that purely existential clauses. There is the locative interpretation, but also the so-called list, presentational. . . readings, see Ward and Birner (1995) among others. Interesting to notice, strong determiners and definite DPs, usually ruled out in existential readings of this construction, can occur in *there*-constructions under these other readings.

The satisfaction of conservativity on the right argument may be taken to characterise *there*-constructions in their existential interpretation. Possibly, in the other readings determiners satisfy the traditional form of conservativity. This hypothesis extends to *there*-constructions the proposal formulated for averbal sentences. Although it has some appeal, it is also very costly, because it severs the link between a property of the determiners and the construction. The old question of how to characterise the definiteness effect now would take the form of the question of which version of conservativity is to be satisfied and when. Hence, the power of the characterisation proposed by Keenan would be lost.

Conversely, the variety of interpretations for *there*-constructions triggers the question of whether the possibility of choosing between two lexical items to form averbal negative existential sentences is to be taken as a way to lexicalise a similar variety, at least the existential vs. locative interpretations.

The negative cases are not the simple mirror image of the positive ones. Indeed, asserting that an entity is at a particular location implies asserting that it exists. Hence, positive sentences such as *there*-constructions remain existential even in their locative interpretation. On the contrary, when one denies that an entity is to be found at a particular location, it does not follow that one asserts that such an entity does not exist, although this situation may be compatible. From there we may carry on and derive the extreme usefulness of having two distinct forms of negative existential sentences, one simply to reject a localisation and another utterly to deny existence. English shows that this option is not uniformly available.

An open issue is why regular negative determiners, i.e. *nessuno* and French *aucun*, are not the forms used to realise the more straightforward negative version

of existential averbal clause, and instead serve to produce sentences closer to the negation of locative statements. A correlate question is why these languages use what look like syntactically special forms for 'plainly' asserting non-existence. The third form 'not an N' is kept to negate the minimal quantity in both languages.

5.3. Sketch of a Discourse Oriented Analysis

The move from the situation where conservativity is satisfied on the first argument to a situation where it is satisfied on the second one, as in Keenan (2003), can be understood as a way to implement the view that the definiteness effect is in some way a novelty constraint, because it is the second argument that receives a topic status leaving the first free to convey focus information. The proposal of opening the possibility of using either argument in averbal constructions, though, should not necessarily be taken to contrast this view.

This section is very speculative. The sketch we present is an attempt to bring into the picture other agents than the speaker and to give them a role. The idea we are exploring invokes the need to distinguish between different discourse participants to whom to ascribe the commitment on the empty vs. non-empty denotation of the intersection and of the common noun in the restrictor. Their views are considered from the standpoint of the speaker who is the one who chooses how to shape the sentence. The proposal that the choice between the two n-words marks that a different perspective is adopted on the described situation remains valid.

In shaping her sentence with a *niente*, the speaker commits herself to the belief that the intersection between restrictor and nucleus is empty. Although this is formally imprecise, we can say that intuitively she claims that the denotation of the quantifier is empty. Furthermore and more importantly, she marks it as a point that is not open to discussion. In other words, the empty denotation is taken to be in the common ground. The notion of common ground we need extends the proposal of Stalnaker (1998) by taking into consideration the relevant stretch of discourse that precedes the utterance of a given sentence, is related to the same object of discourse and is present to the mind/attention of the participants in the conversation.

For instance, example (53) describes the journey back of an Italian hostage killed in Iraq. The averbal sentence reports on a situation that was the result of a decision by the authorities and as such could not be legally opposed. The absence of photographers is presented as a fact which is added directly to the common ground.

(53) E' atterrato all'aeroporto di Ciampino l'aereo che riportava in Italia il corpo di Quattrocchi. Niente fotografi. (25/5/2004IM)
the plane bringing back to Italy the body of Quattrocchi landed at Ciampino airport. No photographers

In shaping her sentence with a *nessuno*, the speaker also commits herself to the belief that the intersection between restrictor and nucleus is empty, but signals that

this may be a point open to discussion, or rather that this is the question under discussion. As a consequence, she must admit the possibility that a participant in the conversation entertains the belief that the denotation of the intersection is not empty and therefore that the common noun in the restrictor also has a non-empty denotation.

For instance, sentence (54) describes the stand taken by non-governmental organisations against the conference of donors in Madrid. Funds for the military occupation of Iraq were pledged by some countries even before the start of the conference, so it is clearly not the case that non-governmental organisations were deluding themselves about their non-existence. The sentence conveys the message that as far as their convictions and power of action was concerned, these organisations were opposing the inclusion of 'funding for the occupation' in the common ground of that discussion within the international community.

(54) Nessun finanziamento all'occupazione militare dell'Iraq (18/10/03IM)
zero funding to the military occupation of Iraq

This discourse oriented proposal has been developed on the basis of the Italian data. Whether it extends to French is a very delicate question to test. Empirical evidence brought up in section 4.3.3 revealed aspects of the complexity of the issue.

6. EXISTENTIAL CONSTRUCTIONS AND INCORPORATION

It has been noted (Bende-Farkas and Kamp 2001) that existential sentences and incorporating structures share a number of properties, e.g. incorporated nominals have an existential construal and a narrow scope, like weak NPs in existential sentences. Indeed, it has been proposed to treat existential constructions in West Greenlandic and Dutch as involving semantic incorporation (van Geenhoven 1998). This type of analysis has been generalised to English and Hungarian and existentials at large by Bende-Farkas and Kamp (2001).

The study of the properties of incorporated nominals and of analyses of existential constructions in terms of incorporation may be relevant for our study of negative existential averbal clauses for at least two reasons. First, as we noted, the two pairs of Italian-French constructions exhibit differences in discourse transparency. Manifestations of this type have been noticed in incorporated nominals. However, the question of the opacity of these contexts led us to record a wrinkle in the smooth parallelism between Italian and French.

The second reason is that incorporation phenomena may provide a key to unravel the compositional puzzle of *niente*-constructions. It could be hypothesised that some version of incorporation is involved in the semantic composition of these constructions. Noun incorporation is not a free option in Italian, but this specific case meets its standard requirements, e.g. the noun does not support discourse links. In the remainder of this section we sketch two options that can be explored.

In the first option, *niente* acts as an existential predicate and its internal argument gets incorporated. This could correspond to a case of 'doubling' in the classification discussed by Mithun (1984) if we decompose *niente* into its components non + ente (not + entity) where 'entity' is the covert restrictor which is doubled by the noun that acts as overt restrictor. Note that this sequence respects the increased specification observed by Mithun, since 'entity' is most likely to be the hyperonym of the following noun. In this view, the noun after it simply restricts the argument, as nouns can do when incorporating (Chung and Ladusaw 2003). Number differences may affect discourse transparency, see the possibility of substituting *niente*-constructions with a plural nominal for *nessuno*-constructions. Different shades of discourse transparency are reported for Hungarian incorporated nominals by Farkas and de Swart (2003), i.e. if the nominal is plural, it can be discourse transparent.

The second option builds on the analysis of existential sentences proposed by Bende-Farkas and Kamp (2001). These authors propose that existential sentences involve a form of binding by the verb or by the expletive + verb complex of *there*-constructions. This binding creates an opaque context, with exceptions. The internal argument DP is more like a secondary predicate to the verb than a proper argument. Following this perspective for Italian, the pronominal nature of *niente* would be reinterpreted as corresponding to an expression of negated existence plus an expletive, like in the positive form *there is*. The negation it introduces outscopes all the rest. It is also taken to expect a property type argument and its representation contains a placeholder variable P that is bound/unified with the predicate contributed by the bare noun.

7. SUMMARY AND CONCLUDING REMARKS

In this paper, first our attention has focussed on how to characterise *nessuno*- and *niente*-constructions, two averbal sequences in Italian. We claim that they are interpreted as negative existential sentences. It has been proposed that the sentential interpretation is possible because the negative expression requires tripartite structure at some abstract level of representation. The negated existential type of sentence has then been linked to the intersective relation imposed by the n-word and the constraint of empty intersection.

Second, we have tried to capture some of the interpretive differences between the two constructions. We propose to interpret the use of different n-words as a way to mark overtly that different perspectives are taken on the situation described. The change of perspective has been analysed as a different way of satisfying conservativity. We have pointed to the necessity of taking into consideration the existence of different epistemic states, an approach that is here left to explore.

Next, if we draw analogies with negated existential sentences that exhibit variation between nominative vs. genitive case in Russian, and the *aucun/pas de* alternation in French, we can notice that, first, Italian, Russian and French seem to exploit different strategies to produce linguistic objects whose interpretations can be linked

to two main types of negated existential sentences. Second, special linguistic solutions are devised in all of these languages to express the case where no commitment is taken on the existence of a referent for the noun of the entity the negative existence statement is about.

If these remarks are accepted, then a number of points may follow. First, we can assume that there are negative existential predications in Italian. Second, variation in the degree of what can be called specificity, familiarity, presupposition or referentiality of the entity spoken about, may be a feature characteristic of negated existential constructions independently of their realisation in a language. Third, this type of variation can be further constrained by the requirements of the lexical elements that realise negation of existence overtly in a construction. It can also be sensitive to information expressed in morphological terms, cf. the relevance of number in sentences instantiating *niente*-constructions, which has not been discussed in the paper.

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PART III

EXISTENCE AND THE INTERPRETATION OF NOUN PHRASES

FRANCIS CORBLIN

EXISTENCE, MAXIMALITY, AND THE SEMANTICS OF NUMERAL MODIFIERS

Abstract. This paper provides a new proposal for the semantics of *at least* and *at most.* This proposal takes these expressions as comparing two sets, the maximal set of individuals satisfying the NP & VP conditions, and a set of individuals satisfying the NP constraints. This approach assumes that these expressions introduce both sets in the semantic representation. Data involving anaphora (some of them initially introduced in Kadmon 1987) and new data involving apposition, are presented as arguments supporting this claim. The paper gives the representation of the meaning of *at least* and *at most* induced by this approach in a DRT framework.

1. INTRODUCTION*

This paper is about the semantics of complex expressions like *at least two books, at most two books, exactly two books*, and its relation to the semantics of noun phrases involving a bare numeral (*one book, two books*). The starting point is N. Kadmon's (1987) observation on discourse anaphora to these two kinds of antecedents, and especially what will be called in this paper the "maximalization effect" of expressions like *at least.*

Kadmon observes that in (1) the discourse pronoun *they* must refer to a set of (exactly) ten kids, although in (2) in the preferred reading of *they*, it denotes the maximal sets of kids walking in the room:

(1) Ten kids walked into the room.
They were making an awful lot of noise.

(2) At least ten kids walked into the room.
They were making an awful lot of noise.

I will also consider in this paper some new data involving apposition, i.e. sentences like (3) and show that they confirm Kadmon's observations.

*I am very grateful to Bart Geurts, Ora Matushansky, and Gennaro Chierchia for their comments on previous presentations. I have also greatly benefited from the comments of three anonymous reviewers of the paper. The first presentation of this material took place in 2002, in the Nancy workshop *Existence: Semantics and Syntax*. My main objective in this contribution is to present and motivate the "two-set" theory of *at least/at most* introduced in this workshop. A full discussion of all alternative proposals, including later works, would have exceed the imparted limits.

I. Comorovski and K. von Heusinger (eds.), Existence: Semantics and Syntax, 223–252.

(3) I quoted at least two papers, Lewis (1975) and Cooper (1979).

The claim will be that in order to accommodate the relevant data it is necessary to assume that complex expressions like *at least two books* introduce two sets into the discourse:

- a set having the cardinality expressed by the number;
- the maximal set of individuals satisfying the conditions expressed by the sentence.

Pursuing a line of investigation initiated in previous works (Corblin 1997, 2002), I will sketch a proposal which takes the "maximalization effect" as a direct product of the common semantics of the terms *at least, at most, exactly.* This proposal takes expressions like *at least n Ns* as expressing a relation between two sets: a set of cardinality *n* (exactly) and the maximal set of individuals satisfying the descriptive content of the modified noun phrase and the properties expressed by the sentence.

This view is in line with Krifka's (1999) analysis, which argues that *at least* is neither a determiner nor an expression building a complex determiner in composition with a numeral, but an expression taking scope over the whole modified noun phrase, which may lack a determiner, as in (4), or a numeral, as in (5):

(4) She invited at least John and Mary.

(5) At least some determiners are not determiners. (Krifka 1999)

In contrast to Krifka (1999), the proposal does not rely on the sensitivity to focus of these expressions and consequently, alternatives do not play any role in the analysis.

Although the solution introduced in this paper tries to accommodate Kadmon's (1987) insights, it differs from Kadmon's proposal in two important ways: it does not correlate a syntactic ambiguity of *at least* to the introduction of two sets, and it does not defer a role to the interpretation of the anaphoric pronoun. In my view, it is the semantics of expressions like *at least* themselves that is responsible for introducing the two sets, and a plural pronoun will simply have a choice, in principle, between a reference to the maximal set and a reference to a set of exactly *n* elements.

The proposal thus diverges also from Landman (2000) which takes "numeral modifiers" as forming complex determiners with numerals and "introducing cardinality relations (relations between numbers)" (Landman 2000: 239).

Moreover, while most approaches tend to bring expressions like *at least* closer to true comparatives (*at least three* = *more than two*), the present work shows that too many empirical properties oppose the two constructions for them to be considered mere variants of a single category.

This makes, consequently, the usual terminology "numeral modifier", or "complex determiner" impractical and rather misleading for the present analysis of the expressions *at least*, *at most*, and *exactly.*

As working terminology for the purposes of this paper, I will use the following convention, which preserves as far as possible the usual terminology:

Ranking indicators (RI), or numeral modifiers: *at least*, *at most*, *exactly*

Numerical comparatives (NC): *more than, less than, between . . . and . . . .*

So the labels "numeral modifier" or RI cover, up to now, *at least*, *at most, exactly*, but not *more than*.

Although differing from Landman (2000), the present study has many important features and objectives in common, especially concerning the derivation of existence and maximality claims involved, respectively, by indefinites (or bare numerals) and modified numerals. Our main goal is to propose a model for the existence claim and the maximality claim associated with numeral modifiers. In this respect, apposition offers very interesting data, illustrated by (6) and (7):

(6) She invited at least two persons, Pierre and Jean.

(7) He invited at most two persons, his father and his mother.

Most views of this kind of apposition hold that it needs a previously introduced set, the members of which are (exhaustively) enumerated by the list of appended expressions. Apposition can thus be taken as an argument showing that, in (6), "at least two persons" introduces a set of exactly two persons (the existence of which is thus asserted by the sentence), even though the sentence does not imply that the maximal number of persons she invited is two. But in (7) it just might be the case that he invited nobody. So what is the previously established set which licenses the interpretation of an apposed list involving exactly two persons? We will try to show that these data, as surprising as they may appear at first glance, are straightforwardly predicted by our proposal.

The paper is organized as follows. In section 2, arguments are given for sustaining a "two set" analysis of NPs modified by a numeral modifier. This analysis holds that an NP like "at least *n Ns*" introduces two sets in the discourse representation : a set of cardinality *n* (exactly), and the maximal set of *Ns* satisfying the predicate. These arguments are based on Kadmon's 1987 observation on anaphora and on new data involving apposition.

In section 3, I discuss Kadmon's proposal for deriving the observed effects, and I argue that her analysis based on an underlying syntactic ambiguity and on a specific analysis of plural anaphora, is not without problems and lacks independent support. In section 4, a new analysis is introduced, which derives the "two set" analysis as a direct consequence of the semantics of numeral modifiers themselves.

This proposal takes numeral modifiers as introducing a ranking between the set denoted by the modified NP and the maximal set. DRT representation for the postulated semantics of some examples are given, although the paper does not provide a formal algorithm for deriving the DRSs from the syntax. The last part of this section discusses some specific problems of the semantics of *at most*, and in particular the problem of deriving the sets needed by anaphora and apposition for examples like (7). In this discussion I pay special attention to existential sentences, which, as might be expected, raise special difficulties regarding the existence and maximality claims associated with modified numerals.

2. EXISTENTIAL INTERPRETATION, AND MAXIMALITY

2.1. Numerals, Existence, and Maximality

The analysis of indefinites (*a*) and numerals (*one*, *two*,. . .) put forward in dynamic frameworks like File-change Semantics and DRT amounts to the following features when applied to a sentence like (8):

(8) I read two novels by Gracq during the holidays.

A) Truth conditions: the intersection set[1] satisfying the noun phrase descriptive content properties and the verb phrase properties, contains at least two members.

B) Dynamics: (exactly) one such set of (exactly) two members, is introduced into the discourse and available for anaphoric links.[2]

The "at least" mention in A is a consequence of the existential interpretation of discourse referents: in DRT, for instance, the corresponding representation has a truthful embedding in a Model each time a set of two Gracq novels read by me is found.

The "exactly" mention in B is strongly supported, for instance, by the fact that successions like (9) are odd if *n* is different from *two.*

(9) I read two novels by Gracq during the holidays. These *n* books were wonderful.

(10) I read two novels by Gracq during the holidays. These *three books were wonderful.

Although this "exactly *n*" interpretation of a pronoun anaphoric to a noun phrase of the form *n N* has been claimed to have exceptions (see Sells 1985), I follow

[1] In this formulation, and in all this paper, I leave aside the distinctions between sets and plural individuals.

[2] An anonymous reviewer suggests that this kind of difference for "*nNs*" meaning between an "exactly *n*" reading, relevant for anaphora, and an "at least *n*" reading, relevant for truth conditions, might support a distinction between the *representation* of a term, and the *interpretation* of a term. I think this is a very fruitful way of interpreting the static/dynamic distinction represented by A/B.

Kadmon (1987) who takes it as the rule for such successions. In this context, the notion of "maximality", or "exhaustivity", will come into play in the following way: it is often understood from (8) that "two novels in all" were read, and hence, that the introduced set is the maximal set in the Model satisfying the conditions considered. But this cannot be a part of the *meaning* of the numeral, because in some contexts, the interpretation of *n Ns* is compatible with the existence of *m Ns* sets, with $m > n$. The classical view is that it is a "no more" implicature that is responsible for the default strengthening of *n* to "*n in all*" (Kadmon 1987). Krifka (1992, 1999) provides an approach in which the content of this implicature is derived in a framework making use of Rooth's (1985) notion of alternative. See also Landman (2000).

2.2. Modified Numerals: A Preliminary Typology

One can distinguish two kinds of modifiers in combination with a numeral:

A – Ranking indicators: *at least*, *at most*, *exactly*.

B – Numerical comparatives: *more than, less than, between . . . and . . . .*

I will focus on RIs, called here for convenience "numeral modifiers", and point out the features which distinguish them from numerical comparatives.

1) Numeral modifiers are floating expressions. I exemplify this with French:

(11) Au moins deux personnes sont venues. Deux personnes au moins sont venues. Deux personnes sont venues au moins.

At least two persons came. Two persons at least came. Two persons came at least.

2) They can be used is isolation, as exemplified by the following dialogue:

(12) A – David Lewis wrote five books.
B – At least (at most, exactly. . .).

Numerical comparatives do not float, although they can be used in isolation. In such absolute uses, numeral modifiers are typically preceded by "oui" (yes), while numerical comparatives can only be preceded by "non" (no).

(13) A – David Lewis a écrit cinq livres.
B – Non, (*oui) plus/moins.

(14) A – David Lewis a écrit cinq livres.
B – Oui, (*non) au moins/exactement/au plus.

Although I am convinced that this very strong contrast is a key data for understanding the semantic opposition between RIs and NCs, I will not try to provide a detailed derivation of it in this paper, partly because the focus here is on RIs, not on the contrast RI/NC. I hope nevertheless, that the analysis I give for the semantics of RIs will, at least, help to find less surprising the use of a positive answer in (14).

3) Combinatorial latitude of numeral modifiers.

As noticed by Krifka (1999), numeral modifiers can modify determiners like *some* (see (5) above). In this restricted context, it is hard to call them, strictly speaking, *numeral modifiers*. A closer look reveals that they cannot combine with all determiners.

(15) I have read at most *many books.

(16) I have read at least *no book.

(17) I have eaten at least *nothing.

Numerical comparatives are also ruled out with *many*, but they can combine with negative quantifiers (*less than nothing*).

In principle, it is even possible for RIs to combine with NCs, which is most often taken as a clue that two items do not belong to the same syntactic category,[3] as illustrated by (18) and (19).

(18) He makes at least more than 10,000€.

(19) He makes at least between 10,000 and 15,000€.

RIs can combine with proper names and definite NPs as shown by (20).

(20) I will invite at least John and Mary.

RIs can be used with nominal predicates as in (21).

(21) Mary is at least an ASSOCIATE professor. (Krifka 1999)

All these properties show that the analysis of RIs as functors giving complex determiners when applied to (numeral) determiners is problematic (for similar arguments see Krifka 1999). Such a "complex determiner" analysis might work for numerical comparatives, but we have shown that comparatives and RIs have different properties. The syntactic distribution of RIs indicates that, at least in many occurrences, they take scope over a whole noun phrase, not over a determiner.

[3]The combinability of x and y is not a *proof* that they do not belong to the same syntactic category, as Ora Matushansky pointed out to me (p.c.), but it is most often taken as an invitation to conjecture that they do not.

Moreover, the semantic analysis of a numeral modifier as forming a complex determiner with a numeral, even in some occurrences, raises many problems listed in Krifka (1999): in this approach, adopted in most classical texts on generalized quantifiers since Barwise & Cooper (1981), the difference between the semantics of *n* and *at least n* is difficult to explain, and it is moreover difficult to explain why *n* generates scalar implicatures, whereas *at least n* does not.

2.3. The Maximalization Effect of RIs

Kadmon (1987) notes the following contrast:

(22) Ten kids walked into the room. They were making an awful lot of noise.

(23) At least ten kids walked into the room. They were making an awful lot of noise.

She observes that:

A. in (22), *they* must refer to a set of ten kids (exactly-FC);

B. in (23) *they* can refer to the set of all the kids who walked into the room even if more than ten did (p. 85). The most prominent, if not the only, reading of (22) is that the set of ten is the set of all kids.

I shall take this duality of readings (exactly *n* / the maximal set of *Ns*) for a pronominal anaphora to an RI, to be a direct consequence of the semantics of RIs that I call the "maximalization effect" of RIs.

A simple presentation of the maximalization effect, strongly inspired by Kadmon herself, is roughly as follows.

If one takes anaphoric pronouns as picking up previously introduced sets, a noun phrase like *at least n N*:

1) introduces the maximal set of individuals satisfying the conditions of the sentence;

2) introduces a set of exactly *n* elements;

3) cannot introduce any set of intermediate cardinality, whatever one can imagine about the speaker's mind.

I think that Kadmon is perfectly right about the data. I have just a small divergence from her, although the point is not discussed for itself in her dissertation. She says that what holds for *at least* could be generalized to: *about n CN*, *no more than n CN*, *between n and n CN*, etc., and especially *at most n CN* (p. 91), and she adds *more than n CN* (p. 101). I will try to establish, in contrast, that the maximalization effect is restricted to RIs, and does not hold for numerical comparatives like *more than two* and *between n and n CN.*

2.4. The Maximalization Effect as an Attribute of RIs

The maximalization effect arises precisely when both a set of *n* elements (exactly) and the maximal set are parts of the picture, and no set of intermediate cardinality is. It seems that this is a property of modified numerals, not of numerical comparatives. Compare (24) and (25):

(24) She published at least three papers in *Language.*

(25) She published more than two papers in *Language.*

These sentences have similar truth conditions, but there is an important difference if one looks at the dynamics of the sentences, i.e. their capacity to license anaphoric references in the discourse which follows. Compare (26) and (27):

(26) X published at least three papers in *Language.* They are all in my bibliography.

(27) X published more than two papers in *Language.* They are all in my bibliography.

In (26) we expect either three references, or more. If we have more than three, we infer that the list given is, for the speaker, the exhaustive list of X's papers in *Language*. If the list contains three items, no such inference is warranted. In (27), any list will license the inference that, for the speaker, this list is the exhaustive list of X's papers in *Language* that she is aware of.

The following contrast can be used as a confirmation:

(28) X a publié au moins trois articles dans *Language*. Ils sont tous les trois dans ma bibliographie.
X published at least three papers in *Language*. They are all-def-three in my bibliography.

(29) X a publié plus de deux articles dans *Language*. Ils sont tous les *deux (?trois) dans ma bibliographie.
X published more than two papers in *Language.* They are all-def-*two (?three) in my bibliography.

The relevant fact is that no number will produce a natural succession for (29). This can be taken as evidence that no set of definite cardinality is introduced by numerical comparatives.

One could think that the difference is due to the difference between the "$>$" semantics of *more* (as opposed to the "$\geq$" semantics of *at least*), but this is not the case. Consider for instance the complex *three papers or more*: it looks

compositionally like a numerical comparative (at least it contains one), it contains a numeral n, and has a '$\geq n$' semantics.

(30) X published three papers or more in *Language*. They are all in my bibliography.

For many speakers, the pronoun in (30) must refer to the maximal collection of the papers, not to a set of three papers and the test already used in (29) gives the expected result:

(31) X a publié trois articles ou plus dans *Language*. Ils sont tous les
X published three papers or more in *Language.* They are all-def-
*quatre (?trois) dans ma bibliographie.
plur *four (?three) in my bibliography.

2.5. The Maximalization Effect and Apposition

Apposition data strongly confirm that modified numerals introduce a set of exactly n elements and the maximal set in the representation. They are not brought up very often in the literature, it seems to me, probably because the analysis of the construction is far from clear. The relevant data are exemplified by sentences like (32) and (33):

(32) There is a woman each Frenchman admires: Marie Curie.

(33) There were two men standing in front of the picture: Pierre and Jean.

Although I do not want to be committed to a particular analysis of this kind of apposition, some properties of the construction will be used as a test.

Consider only cases were the appended material is a list of proper names, and the anchor is a numeral (modified or not) NP. A plausible view of the construction is as follows:

– the first part of the sentence introduces a set in the Discourse Representation.
– the appended list is an exhaustive enumeration of the elements of this set.

This requirement concerning exhaustivity is exemplified by (34):

(34) I invited three persons: *Pierre and Jean.

(34) is ill-formed and cannot be used, even for saying that Pierre and Jean were among the persons I invited. We can thus conclude that the appended list must be an *exhaustive* enumeration of a set introduced in the first part of the sentence. This rather uncontroversial and theory-independent property of apposition is a more

reliable test even than anaphoric data that a set has actually been introduced in a given sentence.

For most speakers, it seems that there is a clear difference between (35) and (36):

(35) I invited more than two persons: Pierre and Jean.

(36) I invited at least two persons: Pierre and Jean.

(36) is good for all speakers, but (35) is awkward for most.[4] If our analysis of apposition licensing is correct, it shows that modified numerals introduce a set of (*exactly*) *n elements*, while numerical comparatives do not.

Apposition by means of a list of more than *n* elements is licensed in both cases. In both cases, it is understood as an enumeration of the maximal set of elements satisfying the conditions of the previous sentence:

(37) I invited more than two persons: Pierre, Jean, Max and David.

(38) I invited at least two persons: Pierre, Jean, Max and David.

It was found that while some speakers express a preference for (37) over (38), no-one judges either as incorrect.

Apposition thus confirms that modified numerals (*at least n*) introduce two sets in the discourse: a set of *n* elements, and the maximal set, while numerical comparatives (*more than n*) introduce only the maximal set.

The fact that this "two sets" interpretation is a specific property of modified numerals (as opposed to numerical comparatives) might indicate that there are two different strategies for stating the extension of the maximal set. Numerical comparatives might be operators on numbers, whereas modifiers might be operators on sets. This suggests that semantics should provide two different analysis for RIs and NCs. The focus of this paper is on RIs, and we will take no position on the analysis of NCs.

Negation offers also sharp contrasts between the two constructions.[5] For space consideration, I can only mention some examples without discussing the question at length. If they are in the syntactic scope of a negation, RIs can only be interpreted with wide scope and exactly *n* readings:

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[4]NB: for many speakers, there is no good solution for apposition in (35) and even something like: 'I invited more than two persons: Max, Albert and André' is not fully natural.

[5]I am grateful to an anonymous reviewer for this remark about negation and for a very interesting example:

(i) I invited more than two persons: Pierre and Jean.

(ii) I did not invite more than two persons: Pierre and Jean.

(i) is odd, as already said, but (ii) is fine; this would deserve an explanation, which I cannot go into here for space consideration. Note, as a possible clue, that in (ii), *Pierre and Jean* is interpreted as the maximal set of persons I invited.

(39) I did not invite at least two persons.

This is why the sentence is odd if the kind of objects considered makes a specific interpretation unavailable:

(40) I did not eat at least two cookies this morning.

In contrast, in the same context, NCs can easily be interpreted in the scope of the negation:

(41) I did not eat more than two cookies this morning.

3. DERIVING THE MAXIMALITY EFFECT: KADMON'S PROPOSAL AND ITS PROBLEMS

The main problem Kadmon (1987) tries to solve is the following: suppose *at least n Ns* means "*m Ns*" with $m \geq n$; then any set of m members (that the speaker might have in mind) should do for an anaphoric reference; but this is not what happens. What we get as a reference for an anaphoric pronoun, is either a set of n elements, or the maximal set.

3.1. Why is the Maximal Set Introduced by Modified Numerals?

- because of the modifier itself?

Kadmon says that any derivation from modifiers themselves would be *ad hoc* and does not correspond to any intuition about the semantics of items like *at least*, or *at most*, etc.

- because of the vagueness induced by the modification of a number?

Kadmon insists that vague indefinites like *some* do not behave this way:

(42) Some friends of mine live in Massachusetts. They play music all night (from Sells 1985).

Does not imply that *all* my friends living in Massachusetts play music all night.

Kadmon concludes roughly as follows: maximality (i.e. the accessibility of the maximal set) is a matter of semantics, not a strict matter of pragmatics; if it were a matter of pragmatics, it would be defeasible in favor of a smaller set, which is not the case. But maximality can be motivated pragmatically: it is in order to satisfy the unicity requirement of definite NPs that we select the only unique collection (i.e. the maximal collection).

Her dilemma is that either one defers the selection of the maximal set to a later mechanism like a uniqueness requirement of definite NPs, or one needs a semantic selection of the maximal set against other correct alternatives, which seems desperately *ad hoc*.

There is, I believe, a way out and will myself conclude with a proposal for generating the maximal set *in situ*, rather than by a later mechanism.

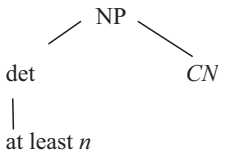
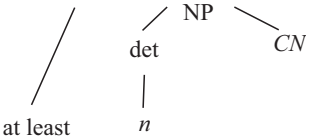
3.2. Why is a Set of (Exactly) n Elements Introduced by Modified Numerals?

Up to this point, Kadmon gives a way of explaining why the maximal set is selected by an anaphora to *at least n CN*. But she has also to explain why a set of exactly *n* members is also made available for an anaphoric pronoun.

Kadmon argues that this is the case because*at least* is syntactically (and hence semantically) ambiguous (p. 102):

- *at least* can be a part of a complex determiner: it only introduces then the maximal set;
- *at least* can have scope over the NP as a whole: the NP then provides a set of *n* elements (exactly).

The following table is a schematic view of Kadmon's solution:

Analysis A	*Analysis B*
Modifier as building a complex Det	Modifier taking scope over the NP
	
The NP always introduces any set such that $\lvert X\rvert \geq n$, including the maximal set.	The NP introduces a set of (exactly) *n* elements as a numeral would do.
Accessible for anaphora: only the maximal set Why? Because of the unicity constraint on definites.	Accessible for anaphora: only a set of *n* elements Why? Only a variable $\lvert X\rvert = n$ is introduced
at least n is given a syntax/semantics very close to comparatives (FC).	The semantics of the whole is inherited from an inside indefinite (bare numeral) (FC).

For Kadmon, there is a one to one projection from the different syntactic structures to the different potential antecedents: "The anaphora to a set of exactly *n* members with *at least CN* is allowed iff the structure is [B]" (p. 103). She argues that there are independent arguments in favor of the alleged syntactic ambiguity:

1) *at least* can modify NPs. See (4) and (5).
   For Kadmon, this indicates that the B analysis may be necessary. Note however that this argument does not necessarily support the idea of ambiguity but could

rather show that *at least* can never be analyzed as a part of a complex determiner, or in other words, that the B analysis is sufficient for *at least.*

2) Only items which can modify NPs (i.e. *at least*, *at most*) give rise to the introduction of a set of exactly *n* members.

In Kadmon's text, *at least*, *at most* contrast in this respect with *more than two*, *about three*, *not less than three*, *less than four*, *no more than three*. All the expressions put in contrast to *at least/at most* are what we call here numerical comparatives. We fully agree that NCs do not introduce a set of exactly *n members* (see section 2). Kadmon's observation is thus very close to: "only RIs, and not NCs, can combine with an NP, and can introduce a set of exactly *n*members". This is not an argument in favor of a double analysis of *at least*, but in my view, at first glance, an argument in favor of a different analysis for RIs and NCs. Once a double analysis for RIs is assumed, as in Kadmon's view, the fact that RIs license the *exactly n* set and can combine with NPs does not prove that they license the *exactly n* set iff they combine with an NP.

In other words, Kadmon might be right is assuming that RIs can take different syntactic scope (determiner, NP), but she has no knock-down argument for assuming a one to one correspondence between the different postulated syntactic representations and the contrast maximal set/exactly *n* set.

There are also intrinsic problems with Kadmon's generation of the *exactly n* set.

First of all, a theory postulating a double syntactic analysis for a given lexical item and assuming a correlation between the syntactic structures and the semantic interpretations should be supported by independent syntactic correlates. For instance, it should be plausible to assume that *at least* can only have the A analysis when it immediately precedes the numeral, and cannot when it is in another position. This would lead us to expect that when *at least* is in floated positions, the maximal set cannot be referred to by a plural pronoun. This however is not supported by the facts. Consider (43):

(43) Deux personnes au moins m'ont écrit
'two persons at least me wrote'

It seems that both the *n exactly* set and the maximal set are made accessible by (42) which is not predicted if the floated position is associated with the B analysis. A compelling argument in favor of the one to one correspondence would be a case were the syntactic analysis is, with no doubt, A (or B) and for which only the expected kind of anaphora is licensed. All I can say is that, to my knowledge, no such case has been provided.[6]

[6] An anonymous reviewer brings to my attention cases like:

1) At least, I will invite two persons.
2) I will invite two persons, at least.

It seems to me that they license only the *exactly n* interpretation. They would be an argument in favor of Kadmon's view if they are a realization of the B structure. But I am not sure this is so. In this kind of structure, *at least* has scope over the whole sentence, and has no special connection to the interpretation

It can also be observed that this analysis gives more than is needed for generating the interpretations. Consider the B analysis. It seems that its full specification could make accessible all that is needed, and would make the A analysis unnecessary. The B analysis inherits the introduction of a set of exactly *n members* from an "inside" NP of the form *n Ns*, which is what such an NP would do in any case.

At least is then considered as an operator having scope over the NP. It is difficult to state its contribution to the interpretation without stating something like: *at least* asserts that the maximal set satisfying the conditions of the sentence is equal to or greater than n. What I mean here is that once the need for making a set of exactly *n members* a part of the representation is recognized, the consequence that the maximal set is another ingredient follows almost necessarily. If this is true it means that both sets are made accessible, providing all we need. Once the two sets are made accessible, the interpretation of a plural pronoun will be just a matter of choice between two candidates when more than one antecedent is accessible. The need for the A analysis then becomes questionable.

This is precisely the track followed in the rest of this paper. I reject the double analysis of modified numbers and adopt a variant of the B analysis for them.

In this new proposal for modified numerals, both the maximal set and a set of exactly *n members* are made part of the representation and are consequently accessible for anaphora and apposition. No other set is made accessible, which derives straightforwardly Kadmon's observation on the absence of intermediate cardinality sets.

The fact that the maximal set comes into play will be seen as a common semantic property of RIs (*at least*, etc.) and NCs (*more than*, etc.). It is my version of the notion of "maximalization trigger" introduced by Landman (2000).

Although I shall not go into detail here for NCs, I will take them to be operators taking two arguments, the cardinal of the maximal set, and n, and expressing a relation between these two numbers. The only introduced set is the maximal set, whence the observed properties for anaphora and apposition.

In contrast, I will analyze RIs as expressing a ranking relation between two sets: the maximal set and a set of exactly n elements.

4. A PROPOSAL FOR THE SEMANTICS OF "NUMERAL MODIFIERS"

4.1. Some Desiderata for a Proposal

A – Against a syntactic ambiguity as a basis for the two sets analysis.

Contrary to Kadmon's proposal, it would be nice to assume a single syntactic analysis for RIs, and to provide an analysis where the duality *maximal set/exactly n members set* is not a correlate of a syntactic ambiguity. This duality should be

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of a given NP. A confirmation of this comes from the fact that this initial/final *at least* can be used with clauses deprived of any argument:
(iii) At least, it rains.

seen as a reflection of the existence of two components in the representation among which anaphora and apposition can choose an antecedent.

B – Numeral modifiers are maximalization triggers.

If the maximal set is not a (semantic) part of the representation of indefinites and numerals (see section 1), the presence of the maximal set with RIs is part of their interpretation. Although some authors like Kadmon find such an approach *ad hoc*, it seems that this conclusion is the only one available, unless the explanation of the anaphoric properties is deferred to a property of definite NPs themselves (as in Kadmon's approach of definite anaphora). Note that Kadmon indeed generates any set of cardinality greater than n, and gives the responsibility of picking up only the maximal one to a property of definite anaphora. It is surely worthwhile trying to avoid an explanation based on another part of the linguistic system. Note that, in addition, this assumption about unicity would have to be extended to apposition, yet another linguistic category.

It will be assumed, then, that the introduction of the maximal set in the representation, and in the semantic calculus of truth conditions, is associated with the semantics of RIs.

C – Numeral modifiers are not determiners (nor determiner modifiers).

The arguments in Krifka (1999) based on the floating nature of these expressions, together with their ability to combine with different syntactic categories, make it plausible to exclude them, like *only*, from the class of determiners or determiner modifiers.

A deeper comparison reveals that RIs have many features in common with *only*, not just the fact that they are not determiners. Like *only*, numeral modifiers need two arguments: a noun phrase, and the whole predication in which the noun phrase is inserted. Consider a sentence and an NP in a sentence corresponding to a set in the semantic representation; a RI having these two elements as arguments states that the set corresponding to the argument is in a certain ranking relation to the maximal set of individuals which satisfies the conditions expressed in the sentence.

D – The same analysis should work for the modification of definite NPs and indefinite ones.

The previous desiderata will help to get a uniform analysis. In the case of a definite NP, the set introduced in the representation by the NP is the set it refers to. The maximal set relevant for the interpretation is the set of all individuals satisfying the predicate.

4.2. The Modification of Definite NPs

RIs can take scope over a definite NP as in (44)

(44) I will invite at least Pierre, Jean and Marie.

The interpretation of (44) is: the whole set of people I will invite includes the set {*Pierre*, *Jean*, *Marie*} The underlying semantics is thus based on the set-theoretic relation "$\supseteq$". But it would be more general to state that *at least* expresses a ranking relation between two sets: the set of all x's such that I will invite x, and the set provided by the NP, i.e. {*Pierre*, *Jean*, *Marie*}. Set inclusion, then, would be a particular case of a more general meaning. Krifka (1999) shows convincingly that a hypothesis of this kind is needed if one wants to take cases like (4) as exemplifying the same lexical item as cases where the modified NP includes a numeral.

In the following DRT representation, I will label the maximal set Σx because it is close to the abstraction operator of Kamp and Reyle (1993). This set is defined as follows: if the scope of *at least* is the definite NP argument A in a sentence $P(A)$, Σx is the set of all x such that $P(x)$ is true. I will assume that the conjunction *Pierre, Jean and Marie* introduces an entity of the same type represented by a capital X. The symbol "$\supseteq$" is to be interpreted as usual. (44) will thus have the representation (45):

(45)

X, Σx
X = {Pierre, Jean and Marie}
$\boxed{\Sigma x : x : \text{I will invite x}}$
$\Sigma x \supseteq X$

This representation gives the correct truth value of the sentence. It is worth comparing the representation (45) with the classical representation of *I will invite Pierre Jean and Marie.* The careful reader will have noticed that the representation of this sentence is not a proper part of (45). The relevant difference is that the condition (*I will invite X*) is not present in (45), as it would be in the representation of *I will invite Pierre*, *Jean and Marie*. Although this paper is mainly an exploration about the correct representations, and does not intend to give a detailed algorithm for deriving these representations, a few words are in order about the underlying analysis of RIs. Basically, RIs will be conceived as functions with two arguments: the NP of the sentence and its VP. In this approach, *at least* is not a function applying to the NP–VP combination, and it is not surprising, then, that the condition *I will invite X*, does not appear as a component of (45). Note that in the present case, adding this condition would just produce a redundant DRS, but it will become clear very soon that doing so would make impossible to provide a general analysis for *at least* and *at most.*

In fact, (45) gives more than what is needed for the anaphoric potentialities of the sentence. As it is, it predicts that both discourse referents can be referred to by a plural pronoun, which is not true, at least for this sentence. All speakers agree that if *they* occurs in the following sentence, it can only pick up the set X.

A possible explanation would be to assume that Σx is very weak in referential force, as compared to a definite NP like *Pierre, Jean and Mary*, and that, as a consequence of this referential inequality, it cannot be picked up by a plural pronoun.

An anonymous reviewer pointed to me that although (45) has correct truth conditions, it looks more close to the quasi-equivalent sentence: "Pierre, Jean and Marie are among the x I will invite". For this reviewer, (45) cannot be taken as the correct representation, one reason being that the Σx set has no syntactic counterpart in the sentence, and possibly because that set is constructed by the interpretation of the pronoun, not by the interpretation of the *at least* sentence. This view expresses very clearly an alternative to the one I follow here: this alternative view considers the Σx set as being: (i) not a part of the meaning of *at least*; (ii) derived by synthesis by the interpretation of the pronoun. I already gave some arguments for not choosing this alternative defended by N. Kadmon. One argument is that in general we need the Σx set not only for interpreting pronouns but also for interpreting appositions. But the main argument is that we need this set for stating what is the semantics of *at least* itself. It is not clear what semantics the alternative view would give to *at least* without making use of the maximal set somewhere. It is true that this Σx set has no syntactic counterpart, but there are other parts of natural language description in which one must assume semantic constituents which are synthesized on the basis of explicit syntactic information.[7] The underlying intuition guiding the present approach is that RIs are some sort of "comparative" operators: the first term of the comparison is a set explicitly introduced in the sentence by an NP, and the second one, the maximal set, is a set synthesized by abstraction over the conditions expressed in the sentence.[8]

An other reviewer of the paper raises an important related question about the two sets analysis. The point is that although we make the assumption that two sets are introduced by the *at least* NP, there is no way to refer back to *both* sets in the next sentence. What the data show is that either the exactly *n* or the maximal set can be picked up by a pronoun, but not both in the same sentence. In other words, if a pronoun finds one of the sets accessible, another pronoun of the same sentence cannot take the other set as its source. And the same is true if one of these sets is selected at first by an apposition. As suggested by this anonymous reviewer, it might be the case that once one of these sets has been made salient by an apposition or a pronominal anaphora, the other one is no longer salient enough for remaining accessible.[9]

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[7]The various operations postulated in order to explain how plural pronouns can find their antecedent in the previous context is a good example of such a case. See, for instance, the discussion of *abstraction* and *summation* in Kamp and Reyle (1993: 344).

[8]Note that the expressions *at least* and *at most* are built on *superlative* expressions in English, and that their French counterpart is built on lexical items used in comparatives and superlatives. As it is well known, it is difficult to make the semantics of superlative without ressorting to some maximal set.

[9]Note that our analysis creates a special case: if we are right, *one* and only one NP triggers the introduction of *two* discourse referents. A natural hypothesis would be that once selected by a pronoun as a reference to one of these sets, no other anaphoric link can come back to the very same NP for picking up another set. What we have in mind is that anaphora is a relation to a discourse referent introduced by an NP, and that a single NP cannot be the source of two anaphoric chains involving more than one discourse referent.

4.3. The Modification of Numeral NPs

We want to maintain that the semantics is the same set relation between a set of type Σx and a set provided by the modified NP argument. Let us try to keep as close as possible to what is needed for definite arguments. A sentence like (46) would thus have the representation (47):

(46) I will invite at least one person (: Pierre)

(47)

X, Σx
person X
Σx: [x : I will invite x person x]
|X| =1
$\Sigma x \supseteq X$

This representation says that the maximal set of persons I will invite includes a set of persons X containing one person.

The way the relevant sets X and Σx are constructed and the relation which is stated between them, makes the representation (47) redundant: in other words, some shorter DRSs would have the same truth conditions.[10]

For instance, the DRSs (48) and (49) are equivalent to (47):

(48)

X, Σx
Σx: [x : I will invite x person x]
|X| =1
$\Sigma x \supseteq X$

(49)

X, Σx
person X
Σx: [x : I will invite x]
|X| =1
$\Sigma x \supseteq X$

But if one wants to preserve the dynamic properties of the representations, it can be shown that some reductions should be avoided.

Consider for instance the kind of simplification illustrated by the DRS (51) for the sentence (50):

(50) I will buy at least two apples.

(51)

X, Σx
apple X
Σx: [x : I will buy x *x : apple x*]
|X| = 2
$\Sigma x \supseteq X$

[10] I am grateful to Bart Geurts (p.c.) for his comments on this.

Intuitively one might think that the presence of the condition in italics makes a difference. If present, the sentence would mean: the set of apples I will buy will contain at least two apples. If absent, the sentence would mean: the set of things I will buy contains at least two apples. A closer look reveals that the two versions are strictly equivalent, at least if one only considers the truth conditions of the sentence. The maximal set of things I will buy contains two apples iff the maximal set of apples I will buy contains two apples.

But if one considers the potential for anaphoric reference created by the sentence, things look different. For most speakers, it seems that if they can interpret a plural pronoun as a reference to the maximal set in (50), they can only interpret this set as a set of apples. This is an indication that the representation (49) is not the kind of representation we need for capturing both the truth conditions and the dynamic properties of the expression.

But these data based on anaphora do not help for choosing between (48) and (47) since although the condition *person (x)* is not present in (48) the relation of inclusion implies that X is a set of persons, and that X is a set of entities that I have invited.

Nevertheless, a case like (49) shows that it can be necessary to consider a redundant DRS as a representation which is needed for dynamic reasons. In other words, this provides an argument that redundancy is not by itself an argument that a semantic representation is inadequate.

For reasons that will become clear soon, when discussing *at most,* I suggest that the correct representation for (47) is the redundant representation (52):

(52)

$$\begin{array}{|l|}\hline X,\ \Sigma x \\ \text{person } X \\ \Sigma x: \boxed{\begin{array}{l} x : \text{I will invite } x \\ \qquad \text{person } x \end{array}} \\ |X| = 1 \\ \Sigma x \supseteq X \\ \hline \end{array}$$

This paper does not provide a formalized derivation of the postulated representation from the syntactic structure of the *at least* sentences; this task must be deferred to further works. Moreover, the semantics of the DRS, especially regarding the discourse referent Σx, is not formalized in this paper. The reader should thus take the provided DRS as an intuitive illustrations in favor of a new analysis. The main focus here is to argue for a plausible strategy and some general principles for a formal derivation of the representation.

The general strategy is that for deriving an *at least* sentence analyzed as (*at least* $(X)_{NP}VP$), one derives first a set X constrained by the NP descriptive content, then a maximal set Σx by abstraction over the conditions expressed by the NP and the VP, and then asserts the relation $\Sigma x \supseteq X$.

For definite NPs, abstraction returns the maximal set of individuals satisfying VP, and for numeral NPs, abstraction returns the maximal set of individuals satisfying VP and the conditions expressed by the NP.

Let us consider the way an apposition like *Pierre*, is interpreted in (46). Apposition is licensed by the presence of a set in the representation of the sentence. I will not discuss in detail the constraints on the form under which this set must be introduced in order for apposition to be licensed. Proper names, or conjunctions of them do not license apposition, while definite NPs having a lexical descriptive content and indefinites do license apposition. Since RIs share with definite and indefinite NPs the property of introducing sets, it is expected that they will license apposition, and they do.

The proposal provides two such sets: X, the standard representation of the NP (I will call it the reference set), and the maximal set, Σx. If apposition must be interpreted as the *exhaustive* enumeration of a previously introduced set, the set of cardinality 1 must have been introduced by (46) for *Pierre* to be interpreted. If one takes seriously the idea that it should be possible to know whether an enumeration is exhaustive or not, it predicts that apposition to the set having a precise cardinality will be strongly preferred, which seems to be the case.

In the particular example (46), where there is a potential contrast between singular (the cardinality of X is 1) and plural (the maximal set can be bigger), we note that apposition to the bigger (hence plural) set is impossible, and anaphora is very odd, as illustrated by (53) and (54):

(53) I will invite at least one person : *your parents.

(54) I invited at least one person. ?They were sitting here.

I think that it is a special case, due to the fact that the reference set and the maximal set are (possibly) of different types (atom/plural individual). What we observe is that in such cases, only the reference set is accessible for apposition and anaphora. Note that this could be taken as an argument for the presence of an *exactly n* set in the representation of *at least* sentences, and for the focalization of this set over the maximal set, even if one has no real explanation for the constraint being so strong that the maximal set is not accessible.

In the general case (both sets being of cardinality greater than one), our prediction is that both antecedents are accessible for apposition, with a clear preference for the set of definite cardinality (i.e. X, the reference-set), especially for apposition appending a list with a final conclusive tone, and no items like "etc.". In those cases, the matching between the cardinalities imposes the interpretation that the reference-set is being enumerated. In contrast, in cases where a list is appended with such explicit markings of non-exhaustiveness, it is the maximal set which is preferred.

(55) I met at least five people: Pierre, Nicolas, etc.

What apposition reveals in cases like (46) above is that it is a case of a specific interpretation of *one N*, the speaker having in mind an individual (identified by apposition), and asserting that the maximal set, whatever it is, will include this individual. What one has in this case, is the composition of an indefinite interpretation (assertion of existence, introduction of an individual satisfying the conditions) and an explicit statement that this individual might not be unique.

But it is not true that the use of (46) need be a specific one. One can use (46) with no individual in mind, just as a way of stating the number of persons one wants to invite. This duality (specific/non-specific) exists also for indefinites and numerals and is not a problem for this particular analysis of modified numerals. One could just say that if the small set is not specific, then the modified numeral will amount to a mere cardinality relation: the sentence just says that the number of individuals satisfying the predicate is greater than or equal to n.

For anaphora potentialities, we predict that in the general case, both the reference set and the maximal set are accessible. The fact that, if the reference set is a specific reference, it takes priority over the maximal set seems rather natural. In a succession like (56) there is a preference for interpreting *they* as referring to a set of two persons, especially if you think that the speaker has two specific persons in mind.

(56) I will invite at least two persons. I will phone them tomorrow.

We do not exclude that the maximal set can be accessible for an anaphoric reference.

Questions following such expressions are ambiguous:

(57) A. I met at least two colleagues in this workshop.
B. Who?

Even if one thinks that an answer must be exhaustive, it is difficult to decide whether B is asking about this set of two persons, or about the set of all colleagues A met. Again, the notion of exhaustivity might lead to preferring an interpretation of the question as being about the reference-set (B would then be able to see that the answer is exhaustive), but the other option is open as well (B might want to get the list of all colleagues A met).

4.4. Monotonicity and Existence Claim

Let us try to apply mechanically what has been done for *at least* to a decreasing operator like *at most*. What we want to preserve is that the sentence expresses a relation between two sets, X and Σx, Σx being derived by abstraction over the conditions of the sentence. To say that *at most* is a decreasing operator means precisely that the maximal set is stated to be included into another set, and possibly null.

When applied to (58) the derivation rules used up to now would product (59):

(58) I will invite at most Pierre, Jean and Marie.

(59)

X, Σx
X = {Pierre, Jean and Marie}
Σx : [x : I will invite x]
X $\supseteq$ Σx

The only change we have made is a permutation of X and Σx for $\supseteq$.

What the representation (59) says is that the maximal set of x I will invite is a subset of X, X being the set {Pierre, Jean, Marie}.

There are at least one new problem. The sentence (58) is compatible with a no-invitation situation. This could be seen as contradicting the occurrence of a variable for Σx at the top level of the representation, which implies in classical DRT that the set exists. For sets in the scope of a decreasing operator like X $\supseteq$ Σx, any theory will have to assume some sort of conditionalizing ("I introduce Σx, if this set is not empty, which might be the case. . ."). As a mere notation of sets so specified, I will use $*\Sigma x$.[11]

Note that the key-decision is the decision to constrain X without asking that it satisfies the VP conditions (see section 4.2). As long as one considers an increasing operator like *at least*, it may just look as a matter of redundancy. But the possibility that the set of invited x be smaller than X is not compatible with a specification of X as a set of invited persons. If X is an existing set of invited persons, the maximal set of invited persons cannot be smaller than X, it can only be equal or greater. So if one considers a decreasing operator like *at most*, this decision is what makes the representation strictly parallel to the representation of *at least* sentences, and moreover correct for truth conditions and dynamic properties.

When applied to numeral NPs as in (60), this simple algorithm predicts that (60) is correctly represented by a DRS like (61):

(60) I will invite at most one person (: Pierre)

(61)

X, *Σx
person X
$*\Sigma$x: [x : I will invite x x : person x]
|X| =1
X $\supseteq$ $*\Sigma$x

What (60) shows is that although the maximal set might be empty, the existence of a set having the specified cardinality (1) is entailed by the sentence, since apposition

[11] As pointed out to me by an anonymous reviewer, the semantics of the variable Σ, an extension of classical DRT of Kamp and Reyle (1993), would remain to be done explicitly. One possibility would be to consider this variable as covering sets of any cardinality (including the null set) which would dispense of distinguishing a starred version. The specific feature of the starred version is that the speaker is associating properties to a discourse referent in case such discourse referent exists.

is licensed. If apposition works as usual, a set has been introduced, and *Pierre* is the exhaustive enumeration of the elements of this set. Of course, this set is not *the set of persons I will invite*, since the modifier explicitly says that this number might be zero. This set is specified in the representation just as a set of exactly one person.

Note that the set made accessible for apposition *must* be a set satisfying the condition introduced by the numeral NP. The following sentence, for instance, is very odd:

(62) *I will represent at most one person in the picture: a table

This indicates that the computation of the reference-set X for the decreasing operator *at most* preserves, at least in cases we are examining, the nominal content of the NP. The empirical counterparts of this assumption are the constraints on apposition illustrated in (62), and more generally the content of the existence claim since in the theoretical framework we are working with, the set X is assumed to exist in the Model. In the next section, we will discuss some special cases.

In cases like (60) it can be the case that the speaker, when saying that she will invite at most one person, has a specific person in mind, say *Pierre.* Apposition corresponds to this case, and is interpreted as an enumeration of this set.

But it can also be the case that the speaker has no specific referent set in mind. In this case, it is the cardinality of the set X, which is in focus, not the identity of its members. These two cases are illustrated respectively by (63) and (64):

(63) I will invite at most two persons, my parents.

(64) I will eat at most three cookies this morning.

In the case of a non-specific reading of X, highly preferred in (64), the interpretation is very close to the corresponding numerical comparative. For a comparison between numerical comparatives and RIs, see Corblin (2006).

4.5. The Problem of (*Some*?) *Existential Sentences*

Consider sentences like:

(65) There are at most three solutions to this problem.[12]

It is not obvious that the strategy which gives good results for (60) will be enough here. The main problem, of course, is that if we mechanically transpose the analysis, the sentence should claim that there is a set of three solutions, and at the same time, it should make the claim that there is zero, one, two, or three solutions to this problem.

[12] I am grateful to Gennaro Chierchia for having pointed out to me that these sentences deserve special attention.

The main point, it seems, is that (65) does not claim there are three solutions to the problem. But note that one still needs to assume that a set of cardinality 3 is introduced in the sentence to accommodate apposition, as (66) shows:

(66) There are at most three solutions: leaving, asking for an explanation, and fighting.

Any other test previously used in this paper, leads to the conclusion that (66) claims that there is a set of cardinality 3, and introduces this set in the discourse representation.

I begin by indicating what a correct representation might be, and then make suggestions as to why and how this representation can be obtained. At first glance, what a sentence like (65) says and makes available for the following discourse is something like (67):

(67)

$$\begin{array}{|l|}\hline X, *\Sigma x \\ |X| = 3 \\ {}^{*}\Sigma x : \boxed{\begin{array}{l} x : \text{is a solution} \\ \quad \text{to this problem } x \end{array}} \\ X \supseteq *\Sigma x \\ \hline \end{array}$$

Roughly speaking, (67) means: there is a set of three entities such that the maximal set of solutions to this problem, if there is a solution, is contained in this set.

This correctly gives the interpretation of apposition in (66): the three actions mentioned are the set of three "things" among which the maximal set of solutions, if there is any solution, is to be found. This might also give the correct solution for anaphora in sentences like (68):

(68) There are at most three solutions to this problem. I will present them successively.

In (68), it seems that there are two interpretations:

A. I will present the three things among which is a solution, if there is any. X is the antecedent of *them*.

B. I will present the maximal set of solutions. ($*\Sigma x$) is the antecedent of *them*.

There is a strong preference for the A interpretation (anaphora to the reference-set) which can be justified by features we have already mentioned: *they*, in principle, requires a plural referent, but $*\Sigma x$ is not necessarily a set of cardinality greater than one (and possibly does not exist), while X exists and is plural.

If this representation of (65) is accepted, we should try to explain why existential sentences trigger this special mapping from the syntactic structure to the semantic

components of the DRS. But first, we need to state the peculiarities of this mapping more precisely. What obtains is that the content of the NP, which is otherwise a constraint on the existing set X, is not, this set X being left unconstrained except for cardinality.

How can this mapping be correlated to the very notion of existential sentences? I have no detailed and fully motivated answer to this question because the semantics of existential sentences is a notoriously difficult issue. I will only make some suggestions. A simple existential sentences like "There are three solutions" is taken to be, in the framework we are working with, the mere existence claim of a set of (at least) three solutions, something like (69):

(69) There are three solutions

X
$\lvert X \rvert = 3$
solution (X)

Roughly speaking, this is distinguished from non-existential sentences like *a man came in* by the fact that the content of the noun phrase in existential sentences, is not intersected with other properties stemming from the VP. This is a way of saying that "is" transmits no semantic information to the DRS (69).

If one prefers to give a representation to the verb, as one could try to do for a sentence like (70):

(70) Three solutions exist

the representation (71) might be proposed:

(71)

X
$\lvert X \rvert = 3$
solution (X)
exist (X)

But, obviously, this is a very odd DRS, because the last condition, so to speak, "expresses" the existential semantics which defines the interpretation of variables. It might be seen as ill-formed per se, because it would be verified if there is a set X such that X exists. So if one wants it as a condition in order to be compositional, one must provide a special way of interpreting this condition; it will have as a result that this condition has no semantic content, which makes (71) and (69) very close. Let us consider, then, that (69) is the correct representation.

The construction algorithm of the *at least*/*at most* DRSs sketched up to now works as follows:

1) It builds the reference-set X as the set constrained by the NP content, i.e. a set of cardinality n of entities of category c, where c is the descriptive content of the NP. For (65) this gives a set of 3 solutions.

2) It builds the maximal set Σx of entities satisfying the conjunction of the conditions expressed by the NP and by the VP. For (65) it gives the set of all solutions to this problem.
3) It states that Σx, if it exists, is contained in X.

One must first observe that for some existential sentences, this algorithm provide correct results. Consider for instance (72):

(72) There are two men in the garden.

The standard representation is (73):

(73)

$$\boxed{\begin{array}{l} X \\ \text{Men } (X) \\ \text{In the garden } (X) \\ |X| = 2 \end{array}}$$

Consider now (74):

(74) There are at most two men in the garden.

The proposal will derive the following representation:

(75)

$$\boxed{\begin{array}{l} X, *\Sigma x \\ \text{Men } (X) \\ |X| = 2 \\ *\Sigma x : \boxed{\begin{array}{l} x : \text{In the garden } x \\ \quad \text{Man } x \end{array}} \\ X \supseteq *\Sigma x \end{array}}$$

The existence claim is limited to a set of two men, and this representation derives correctly apposition, as well as anaphora data of (76) and (77):

(76) There was at most two men in the garden: her father and his brother.

(77) There was at most two men in the garden. I know them both.

As already said, $*\Sigma x$ is not the best candidate for apposition or anaphora, in our view because of its very nature (possibly non-existent). But apposition in (76), and anaphora in (77) are predicted once a set of two men, possibly not is the garden, is made available, which (75) provides, and the difficulty to have access to $*\Sigma x$ can be explained just as a matter of concurrence between the two sets.

If analyzed this way, existential sentences are not per se an exception to the general principles governing the computation of the reference-set X, but are perfectly in line with the general case.

A consequence of the proposal is that, in the general case, any *at most n N* sentence generates an existence claim for an *at least n N* set.[13] Let us consider examples like

(78) There are only three women in the island. So I will invite at most three women.

This succession is perfectly natural. It would not be the case for any *n* in the second sentence if *n* is greater than three.

If the problem with sentences like (65) is not triggered by existential constructions as such, it can only be triggered by the specific semantic properties of the lexical material involved, namely *solutions to this problem.*

I will briefly consider some lines of investigations.

A solution suggested to me by an anonymous reviewer is to consider that there is no problem at all. The general idea is that the content of the NP is *solution,* and the abstraction operator builds the maximal set of solutions to this problem. It would be perfectly correct then to maintain that the sentence asserts that there are three solutions, because to assert that something is a solution does not imply that it is a solution to this problem. This gives the maximal parallelism between *There are at most three men in the garden* and *There are at most three solutions to this problem.* Both would directly be derived by our proposal.

But I do not feel entirely convinced by this line of explanation, because there is a strong intuition that it is impossible to see something as a solution without saying of which problem it is a solution. In that case, the problem with the general algorithm would be that it would have to split and compute separately two inseparable parts of a constituent. This is one might call the "relativity" problem.

Another relevant property of the semantics of the considered lexical items is that there is a strong implicature that some problems have no solution, which could be called the "existence" problem.

It seems that these two problems can play a role for explaining why lexical items like *solutions* in existential *at most* sentences, are not directly (or not uncontroversially) derived by the regular algorithm introduced in this paper, but I have no detailed explanation to offer for this.

5. CONCLUSIONS

5.1. Summary of the Proposal

RIs (*at least*, *at most*) are seen as operators having scope over NPs. They are analyzed as ways of stating the cardinality of a set Σx by a comparison to a set provided by the NP, the reference-set X. This reference-set X plays the role of a standard

[13] Krifka (1999) says that *at most n N*-VP generates in many cases the *presupposition*: *One N at least*- VP. This is a very different matter that we cannot discuss here for space considerations.

of comparison for evaluating the maximal set Σx by way of set relations. The existence of the reference set is entailed by the sentence.

The maximal set Σx introduced in the representation by RIs is the set of entities satisfying the conjunction of the conditions expressed by the NP and the VP and is derived by abstraction. The reference-set X constrained by the lexical content of the sole NP.

The proposal is intended to deliver both the truth conditions of sentences containing RIs and the data regarding apposition and anaphora to such sentences. If the underlying reference-set X has a specific interpretation, this gives rise to readings in which the set inclusion interpretation is prominent and in which apposition is licensed. In case the underlying reference-set does not receive a specific interpretation, this gives rise to readings which specify only the cardinality of the maximal set. The maximalization effect of RIs, is thus triggered by the category RI, not by the semantics of individual items like *at least*, *at most*, etc. The proposal is not intended to cover numerical comparatives (e.g. *more than n*) and holds that there is a strong contrast between the two categories of forms.

5.2. Comparison with Other Approaches

Kadmon (1987) is to my knowledge the only approach to RIs focusing on their potential for anaphoric references. This study takes Kadmon's insight as a starting point and adds new data about apposition which confirm them. I give some arguments in the paper for proposing a different analysis, and I hope that the reader can now make up her mind. The main features of my proposal contrasting with Kadmon's are: two sets are generated by the semantics of RI, and the sets are not correlated with a structural ambiguity. In my proposal, both sets are parts of the representation for any use, while in Kadmon's approach, only one of them can be. It is difficult to find conclusive empirical evidences establishing that the two sets are both available or establishing that they are not. In principle, one of them, say X, should be taken as an antecedent by an apposition while the other one, the maximal set, should be the antecedent of an anaphoric pronoun. But many factors complicate the picture: for instance, once chosen as an antecedent for apposition, a discourse referent is made much more salient, which makes the accessibility of the other one less likely for anaphora.

Krifka (1999) is not concerned with the dynamic properties of RIs, but with a compositional semantics deriving the truth conditions of RIs and NCs. My proposal shares with his the view of RIs as having scope over NPs, not as combining with a numeral to produce a determiner, and the basic intuition that RIs and particles like *only* look alike in many respects. I think nevertheless that a detailed comparison is very difficult because Krifka introduces in the course of his paper many innovations which makes his theoretical framework much more sophisticated than the classical conception of semantics used in my proposal. Krifka formulates his analysis of RIs in an extended version of Rooth (1985) alternative semantics, which was

first applied to the semantics of *only.* It is thus interesting to make some suggestions about a possible extension to *only* of an analysis making use of a notion of maximality related to the one used in this paper. The analysis of *only* is far beyond the scope of this paper, but since we noticed similarities between RIs and *only*, one might think that we should have to give some more substance to this observation. Consider the example:

(79) Only John works.

At first glance, a plausible analysis of (79) is something like: the set {*John*} is the maximal set such that *x works.* Leaving all details aside regarding the way the two sets are computed, and considering that the representation is given under this form, it seems that the meaning of *only* in terms of alternatives is easily deduced: if the relevant (possibly contextual) domain of discourse contains, say Mary, the representation of the sentence implies that Mary do not work. Note that if *only* is analyzed as an *identity* between a reference-set and the maximal set two consequences follow: (i) a similarity of interpretation with the RI *exactly n* is predicted, which seems observed, at least in some contexts; (ii) there is no way to distinguish the two sets, for anaphora, for instance. These few remarks are of course only tentative; they are just a way of showing that the analysis we propose for RIs do not prevent to capture the observations sustaining the intuition that RIs and *only* have common properties.

Landman (2000) is another approach mainly concerned with the compositional derivation of RIs and NCs truth conditions and implicatures. An important difference is that Landman takes RIs as combining with the numerals and gives a great importance in his proposal to the scalar properties of numerals. But since he derives what he calls the "existence claims" and the "maximality claims" at the event type level, and because he takes the maximality claim to be a property of RIs, there are nevertheless many points of convergence with the present proposal. Given the ambition and the complexity of Landman's work (see especially Landman 2000, Lecture 7) it is very difficult, and possibly hopeless, to make a detailed comparison with the present proposal in a limited space, and I let this task for further work.

Recent work by Geurts and Nouwen (2005) is based on the the assumption that *at least* and *at most* embodies modal operators. A detailed comparison with this very different approach will remain to be done.

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BART GEURTS

EXISTENTIAL IMPORT*

Abstract. Notwithstanding various attempts at explaining existential import in non-presuppositional terms, it is argued that the Strawsonian view remains the best: existential import is a matter of presupposition. More accurately: it is argued that Strawson's *mature* view, as expressed in his paper of 1964, provides the best account of speakers' intuitions. This entails that the semantic approach to presupposition, associated with Strawson's earlier work, goes by the board. It also entails that the presuppositional requirements of an expression are never purely existential in nature. A strong quantifier does not merely presuppose that its domain is non-empty; rather, the purpose of its presupposition is to *recover* a suitable domain from the context.

1. INTRODUCTION

Supposing that there are no Swiss bullfighters, what are we to make of statements like the following?

(1) a. Every Swiss matador adores Dolores del Rio.
b. Most Swiss matadors adore Dolores del Rio.

(2) a. Some Swiss matadors adore Dolores del Rio.
b. No Swiss matador adores Dolores del Rio.

Lappin and Reinhart (1988) observe that informants respond to these sentences in different ways: whereas to most native speakers sentences like (1a, b) just sound odd, many speakers unhesitatingly judge (2a) false and (2b) true. There are speakers for whom the latter sentences are infelicitous, as well, but this is not the majority view. More generally, the pattern suggested by Lappin and Reinhart's observations is that, for most informants, sentences with strong quantifiers are infelicitous if the quantifier's domain is known to be empty, whilst sentences with weak quantifiers are either judged infelicitous or assigned a classical truth value.

This is the basic pattern. But the empirical facts do not rigidly conform to this pattern. First, and most importantly, if an existential *there*-sentence contains a weak quantifier whose domain is empty, the sentence will seldom be found infelicitous; it will just be true or false, depending on the facts of the matter:

(3) a. There are no Swiss matadors in the drawing room.
b. There are some Swiss matadors in the drawing room.

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I. Comorovski and K. von Heusinger (eds.), Existence: Semantics and Syntax, 253–271.

The incidence of informants rejecting these sentences as infelicitous is considerably lower than in the case of (2a,b). Knowing that there are no Swiss matadors, people don't insist on checking the drawing room before concluding that (3a) is true and (3b) false. Of course, strong quantifier phrases are barred from occurring in *there*-sentences by definition, so this effect is restricted to weak quantifiers.[1]

If a *there*-sentence biases the hearer towards one interpretation of a weak quantifier phrase, he can be led in the opposite direction, too, for example by stressing the quantifier. If (3b) is pronounced with an accent on 'some', there will be more people inclined to say that the sentence is infelicitous.[2]

The foregoing observations can be summarised as follows:

	Strong Q	Weak Q
Neutral context	Infelicitous	True/false or infelicitous
There-sentence	Ungrammatical	True/false
Focus on Q	Infelicitous	Infelicitous

There is a small but obstinate group of persons who insist that, for them, a sentence like (1a) is vacuously true. If there are no Swiss matadors, they argue, then of course all Swiss matadors adore Dolores del Rio. One may wonder to what extent such judgments are based on undiluted linguistic intuition, as opposed to considerations of (non-natural) logic, and it is tempting to simply ignore this minority of smart alecks (as Abusch and Rooth, to appear, call them). However, even if we don't share their intuitions, we have to admit, I believe, that the smart alecks' position is not an unreasonable one, and deserves some sort of explanation. Interestingly, it seems that smart alecks are considerably more confident that (1a) is true than they are about the truth value of (1b) or (4), for example:

(4) Both Swiss matadors adore Dolores del Rio.

To the extent that informants report robust intuitions about vacuous truths at all, it appears that they are confined to universal statements.

2. EXISTENTIAL IMPORT WITHOUT PRESUPPOSITION

According to Lappin and Reinhart, empty-domain effects are determined by the way speakers assess a quantified sentence for truth or falsity, and speakers'

[1] Although existential *there*-sentences will have an important supporting role in this paper, I will not propose an analysis of this construction. I will presuppose that the correct analysis is pragmatic rather than semantic in nature, but whether it is in terms of presupposition, novelty, topicality, or something else, is immaterial (see Hannay 1985 and Comorovski 1995 for discussion of some of the issues). It is relevant to my purposes that *there*-sentences tend not to admit presuppositional noun phrases, but I don't claim that this is invariably the case, let alone by definition.

[2] To say that a mere accent that will do the trick is probably a simplification. See Jäger (1999) for discussion.

assessment strategies are contingent upon the type of quantifier involved. Lappin and Reinhart assume standard definitions of the meanings of quantifiers, along the following lines:

(5) a. 'All A are B' is true iff $\|A\| \subseteq \|B\|$
b. 'Most A are B' is true iff $\text{card}(\|A\| \cap \|B\|) > \text{card}(\|A\| - \|B\|)$
c. 'Some A are B' is true iff $\|A\| \cap \|B\| \neq \varnothing$
d. 'No A are B' is true iff $\|A\| \cap \|B\| = \varnothing$

An important difference between strong quantifiers, like 'all' and 'most', and weak quantifiers, like 'some' and 'no', is that the latter are intersective while the former are not. This means that, for any weak quantifier Q, we can determine the truth value of 'Q A are B' by inspecting only $\|A\| \cap \|B\|$; the extension of A need not be examined. For strong quantifiers this procedure is not valid. It is this difference, Lappin and Reinhart maintain, that explains the observations given above. For example, the truth or falsity of (2a) may be determined simply by checking the cardinality of the intersection between the set of Swiss matadors and the set of individuals that adore Dolores del Rio. If the intersection is empty, the sentence is false; if not, it is true. Either way, we do not have to inspect the set of all Swiss matadors in order to obtain the sentence's truth value. If, on the other hand, we have to evaluate a sentence of the form 'All A are B', we have to examine all A's until we either find one that is a non-B or run out of A's. Thus, in order to determine if (1a) is true, we must start with the set of Swiss matadors, and as this set is empty the assessment procedure is frustrated from the outset, which explains why this sentence is felt to be infelicitous:

> Whenever the assessment of a sentence must start with a scan of an N′ set of a given noun phrase, assessment is stalled if this set is empty. In this case, the sentence is marked as anomalous, empirically irrelevant, or undefined, regardless of its semantic interpretation. (Lappin and Reinhart 1988: 1031)

Of course, we can use the same style of assessment strategy with weak quantifiers as we have to with universally quantified sentences, checking the entire quantificational domain, but for weak quantifiers this is merely an option; it isn't forced upon us by the semantics of the quantifier. Thus, it is explained, according to Lappin and Reinhart, why an empty domain renders a sentence with a strong (non-intersective) quantifier infelicitous, while sentences with weak (intersective) quantifiers are judged infelicitous by some speakers and true/false by others.

There are a number of problems with this proposal.[3] First, and most importantly, it is essential to Lappin and Reinhart's account that the assessment procedure grinds to a halt if it hits upon the empty set. It is not clear why this should be so, but it is clear that it isn't always true. For example, if Q is a weak quantifier and the intersection of its argument extensions is empty, we don't want to have to conclude

[3]For more discussion of Lappin and Reinhart's analysis, see Lasersohn (1993) and Abusch and Rooth (to appear).

that the assessment procedure is aborted. For, as we have seen, 'Some A are B' will normally be judged false, and 'No A are B' true, if $\|A\| \cap \|B\| = \varnothing$. Apparently, it is only if the first argument of a strong quantifier is found to be empty that assessment becomes frustrated, and this doesn't follow in any way from the semantics in (5).

Another problem is brought up by Lappin and Reinhart themselves, who note that the definition in (5a) does not really require that verifying 'All A are B' start with the set of A's. Alternatively, its truth value may be determined by inspecting $\|A\| - \|B\|$. Given the definition in (5a), if this set is empty, the sentence is true, and otherwise it is false. So there is really no need to investigate $\|A\|$. Lappin and Reinhart seek to counter this objection by claiming that the alternative procedure would be computationally inefficient, and therefore dispreferred, but it is not clear why that should be so. In particular, it is not clear why scanning $\|A\| - \|B\|$ is less efficient than scanning $\|A\| \cap \|B\|$, which is standard practice with weak quantifiers, according to Lappin and Reinhart.

These problems are related in the following way. Although Lappin and Reinhart's main idea, that truth-value judgments are correlated with the pragmatics of verification, is intuitively plausible, it seems that the classical generalised-quantifier semantics does not sufficiently constrain the range of potential verification strategies. In particular, this semantics doesn't require that verification of 'Q A are B' start with $\|A\|$ only if Q is strong, not if it is weak. An obvious suggestion at this point is that this asymmetry is due to the fact that strong but not weak quantifiers presuppose their domains. However, Lappin and Reinhart consider and reject this possibility (for reasons that will be discussed below), so this option is not open to them. But then it is unclear how the asymmetry between weak and strong quantifiers can be accounted for.

Abusch and Rooth (to appear) present a proposal for explaining empty-domain effects that resembles Lappin and Reinhart's in certain respects. In particular, they too pursue the idea that the semantics of weak quantifiers makes it possible to factor out information about the quantifier's domain, which is not possible (or, at least, much harder) with strong quantifiers. But here I will focus on another aspect of Abusch and Rooth's analysis. If we accept a semantics along the lines of (5), many quantifiers have existential import by virtue of their truth-conditional meaning alone. For example, 'Q A are B' entails that $\|A\| \neq \varnothing$ if Q = 'most', 'some', 'at least *n*', and so on. But the universal quantifiers, 'no', and other downward entailing quantifiers do not require that their domains be non-empty. In these cases, Abusch and Rooth maintain, we observe a weak form of existential import, which is the result of a quantity implicature. For example, an utterance of (6a) or (6b) implicates (7):

(6) a. Every Swiss matador adores Dolores del Rio.
b. No Swiss matador adores Dolores del Rio.

(7) The speaker considers it possible that there are Swiss matadors.

(8) There are no Swiss matadors.

This implicature comes about as follows. If 'every' and 'no' mean what they mean according to (5a) and (5d), respectively, then (8) expresses a stronger proposition than either (6a) or (6b). Or, in other words, (8) unilaterally entails (6a) and (6b). Therefore, adopting the familiar Gricean style of reasoning, the hearer is entitled in both cases to infer that the speaker does not believe the stronger proposition, which is to say that (7) is implicated by (6a) as well as by (6b).

On Abusch and Rooth's account, a sentence of the form 'Q Swiss matador(s) adore(s) Dolores del Rio' has either strong or weak existential import. For certain instances of Q, the sentence entails that there are Swiss matadors (strong existential import), while for others there is an implicature to the effect that the speaker considers it possible that there are Swiss matadors (weak existential import).[4]

This analysis creates a somewhat peculiar dichotomy which is orthogonal to more established distinctions, especially that between weak and strong quantifiers. According to Abusch and Rooth, all quantifiers have some sort of existential import. If a quantifier is strong it may have weak or strong existential import ('all' vs. 'most'), and the same goes for weak quantifiers: 'some' and 'three' have strong existential import, while 'no' and 'less than three' have weak existential import. This is somewhat disturbing because the main distinction we are after should align with the division into weak and strong quantifiers. Furthermore, the notion that (7) should be a conversational implicature licensed by (6a) and (6b) is not tenable. For it is fairly obvious that this inference doesn't behave as an ordinary implicature.

(9) a. Many of the orphans are sick – in fact, all of them are.
b. Many of the orphans are sick, and maybe all of them are.

Intuitively, 'Many A are B' is weaker than 'All A are B', and (9a, b) illustrate two of the ways in which this intuition manifests itself. (10a, b) attempt to emulate these examples, and it is obvious that both attempts fail.

(10) a. ?All Swiss matadors are sick – in fact, there are no Swiss matadors.
b. ?All Swiss matadors are sick, and maybe there are no Swiss matadors.

These observations suggest that, contrary to what Abusch and Rooth presuppose, 'There are no A' is not felt to be stronger than 'All A are B'. Whatever existential import may be, it is not an implicature.

[4]The terminological distinction between weak and strong existential import is my invention, not Abusch and Rooth's.

3. INTRODUCING PRESUPPOSITIONS

One important feature the theories of Abusch and Rooth and Lappin and Reinhart have in common is that they treat quantifiers as non-presuppositional expressions. But ever since Strawson (1950) it is widely held that some quantifiers presuppose that their domains are non-empty, and it is fairly obvious, if only in outline, how this might explain speakers' intuitions about quantifiers with empty domains. Suppose that a strong quantifier always triggers the presupposition that its domain is non-empty, whereas a weak quantifier is ambivalent in this regard: sometimes it comes with a presupposition, and sometimes it doesn't. Suppose furthermore that presupposition failure causes a sentence to be infelicitous. Then we predict exactly the main pattern observed by Lappin and Reinhart: whenever $\|A\| = \varnothing$, 'Q A are B' should be odd if Q is a strong quantifier, whereas if Q is weak the sentence should be either odd or have a standard truth value, depending on whether Q is construed as presupposing its domain or not.

In my view, this story is correct as far as it goes, though it is as yet incomplete because the distinction between presupposing and non-presupposing quantifiers does not suffice to explain all the facts under discussion. In the remainder of this paper I will take the presuppositional account a bit further, and defend it against various kinds of criticism.

The notion that a universal statement like (11a) does not entail the corresponding existential statement in (11b) is one of the key stones of modern logic:

(11) a. All gryphons have floppy ears.
b. Some gryphons have floppy ears.

Before the advent of predicate logic it was standardly assumed that the universal quantifier has existential import: someone who utters (11a) therewith implies that gryphons exist, and therefore that (11b) is true, as well. It testifies to the intuitive appeal of this doctrine that it went virtually unchallenged for over 2000 years. And when logicians finally decided that it should be given up, it was by no means to universal acclaim. In a sense, the torch of traditional syllogistic logic was taken over, at about the same time when modern logic was beginning to take hold, by psychologists interested in the kinematics of human reasoning. Syllogistic reasoning has been one of the mainstays in this field, and here, too, there has never been any doubt about the existential import of the universal quantifiers. To give just one example, in an experiment conducted by Rips (1994), 65% of the participants endorsed the following argument, which is valid only on the assumption that 'every' has existential import:

(12)
$$\frac{\begin{array}{l}\text{Every A is B}\\ \text{Every B is C}\end{array}}{\text{Some A is C}}$$

In a similar vein, though I don't know of any experimental evidence one way or the other, I conjecture that most people would be very strongly tempted to say that the following inference is valid, which requires again that the traditional view is right:

(13) Everybody is sick.
If anybody is sick, the meeting will have to be cancelled.

The meeting will have to be cancelled.

In the philosophy of language, the traditional view was reaffirmed but at the same time modified by Strawson (1950, 1952) and Hart (1951), who were the first to argue that existential import is a matter of presupposition. As the latter put it,

> ... any one who in normal discourse asserts such as sentence as, e.g., 'All taxi drivers are well-read', and appears to be making on this occasion a serious assertion will be properly taken to believe the corresponding existential sentence to be true. For otherwise he could have no reasons for asserting it ... If we want a word we can say that the [universal] form in the absence of a special indication 'presupposes' or 'strongly suggests' the truth of the existential form. But these psychological terms ill convey the conventional character of the connection. (Hart 1951: 207)

(Note, incidentally, that the concept of presupposition seems to initially have had a psychological flavour that is often lacking in the more recent literature on the subject.) Strawson and Hart's claim that existential import is to be explained by way of presupposition is motivated by the intuition that a universal sentence whose subject term is empty is infelicitous rather than simply true or false – a description that fits at least some speakers' intuitions quite well, as we have seen.

The presuppositional view on existential import is buttressed by the fact that the inference under discussion exhibits the projection behaviour that is the hallmark of true presuppositions:

(14) a. It would be fun if all Swiss matadors would enter the tournament.
b. Do you think all Swiss matadors will enter the tournament?
c. See to it that all Swiss matadors enter the tournament, will you?

Each of these sentences suggests quite strongly that (according to the speaker) there are Swiss matadors, which is precisely what one should expect if 'all' triggered the presupposition that its domain is non-empty. Of course, if this is a presupposition it should be 'blocked' under certain circumstances, and it is:

(15) a. If it is after 10 PM, then Fred's wife is in bed.
b. If Fred has a wife, then Fred's wife is in bed.

(16) a. If it is after 10 PM, then all Swiss matadors are in bed.
b. If there are Swiss matadors, then all Swiss matadors are in bed.

The pair of sentences in (15) serves as a reminder of the familiar fact that a presupposition triggered in the consequent of a conditional (in this case, by the definite

noun phrase 'Fred's wife') will be 'inherited' by the main sentence unless it is blocked in the antecedent; which is exactly what we see in (16), too. These observations confirm the Strawson–Hart diagnosis, and at the same time present a formidable challenge to anyone denying that existential import is of a presuppositional nature.

In an attempt to capture the presuppositional effect of strong quantification, de Jong and Verkuyl (1985) propose to replace the standard meaning clauses in (17) with partial definitions along the lines of (18):[5]

(17) a. 'All A are B' is true if $\|A\| \subseteq \|B\|$, and false otherwise.
b. 'Most A are B' is true if $\text{card}(\|A\| \cap \|B\|) > \text{card}(\|A\| - \|B\|)$, and false otherwise.

(18) 'All A are B' and 'Most A are B' are defined iff $\|A\| \neq \varnothing$.
a. If defined, 'All A are B' is true if $\|A\| \subseteq \|B\|$, and false otherwise.
b. If defined, 'Most A are B' is true if $\text{card}(\|A\| \cap \|B\|) > \text{card}(\|A\| - \|B\|)$, and false otherwise.

Lappin and Reinhart (1988) object against this analysis on several counts. First, they point out that de Jong and Verkuyl's semantic treatment of presupposition implies that many sentences that are tautologous or contradictory on a classical construal of the quantifiers turn out to be neither on a partial interpretation. Referring to the examples in (19)–(20), Lappin and Reinhart state that '[t]his result does not seem well motivated, and it would be very difficult to support on the basis of linguistic intuitions' (p. 1026):

(19) a. Every unicorn is a unicorn.
b. Every unicorn is not a unicorn.

(20) a. Most American Kings are American Kings.
b. Most American Kings are not American Kings.

Lappin and Reinhart maintain that, though speakers' intuitions about these sentences may be somewhat confused, there is nonetheless a strong tendency to endorse the (a)-sentences and reject the (b)-sentences, and therefore it would be wrong to predict, as the presuppositional analysis seems to do, that all of these sentences lack truth values.

This argument is flawed in two ways. First, I am not convinced that Lappin and Reinhart's observations are correct. Personally, I find the sentences in (20) especially dubious, and Lappin and Reinhart's claim that (19a) is plainly true is

[5] De Jong and Verkuyl don't discuss 'most' but it is clear that this is what their definition would have been.

up against the entire body of medieval schoolmen, who took it to be obvious that sentences like this are false (Kneale and Kneale 1962). Secondly, if Lappin and Reinhart's intuitions about (19)–(20) contradict the presuppositional analysis of quantification, they contradict the classical analysis, as well. For according to the latter (19a) and (19b) are both true, while (19a) and (19b) are both false. This holds if the negations in the (19b) and (20b) take narrow scope. With wide scope for the negation, the sentences come out false and true, respectively, which still doesn't square with Lappin and Reinhart's intuitions. Hence, examples like these do not show that the classical analysis of strong quantifiers is superior to the partial analysis endorsed by de Jong and Verkuyl.

Lappin and Reinhart's second objection concerns weak quantifiers. There are speakers for whom any form of quantification over the empty set results in infelicity. This would seem to imply that, for such speakers, weak quantifiers are presuppositional, too. But if we extend de Jong and Verkuyl's analysis to 'some', 'no', 'at least seventeen', and so on, weak quantifiers lose the properties that are essential to the class: they cease to be intersective and symmetrical. So, treating all quantifiers as presuppositional in effect means giving up on the weak/strong distinction.

It is rather unlikely, of course, that some speakers consistently interpret weak quantifiers as presuppositional, and therefore miss out on the weak/strong distinction, while others consistently interpret them as non-presuppositional. Fortunately, however, there is no need for the presuppositionalist to assume anything like this. Weak quantifiers generally allow of presupposing and non-presupposing readings, the choice between which is usually determined by contextual factors. Hence, the strong/weak distinction applies primarily to occurrences of quantifying expressions; it is just that some quantifiers always select a strong reading while others can have weak as well as strong construals. If this much is right, it is only to be expected that some speakers may have a stronger preference for presuppositional construals than others. (Compare the case of lexical ambiguity: the fact that a word has two senses does not entail that both senses will be equally salient to all speakers.) I fail to see, therefore, that the variation in speakers' judgments poses a problem for the presuppositional account of existential import.

Another objection raised by Lappin and Reinhart, and the last on my list, concerns sentences like:

(21) Every unicorn has exactly one horn.

Lappin and Reinhart maintain, and I concur, that there is a perfectly good sense in which this sentence can be said to be true, even if there are no unicorns in this world: the sentence can be 'interpreted as an implication which is true in every world in which unicorns exist. Whether the subject N′ set is empty or not in the actual world plays no role in determining the truth value of sentences like [(21)]' (p. 1026).

The notion that universal statements like (21) should be exempted from presuppositional treatment originates in Strawson's work, too (Strawson 1952), and has

been elaborated at length by Horn (1997), who uses the distinction between what he calls 'empirical' and 'lawlike' universals to argue that existential import is not a semantic but a pragmatic phenomenon.

Following Strawson, Lappin and Reinhart and Horn assume, as a matter of course, that lawlike universal statements lack existential import. This seems plausible at first, but on reflection it is not so plausible at all. Suppose we accept Lappin and Reinhart's suggestion that (21) is read as an implication, and flesh it out as follows: 'For any possible world *w*, if unicorns exist in *w*, then every unicorn in *w* has exactly one horn'. This is fully compatible with a presuppositional analysis, unless it is stipulated that the existence presupposition triggered by a strong quantifier is indexical in the sense that it must be true in the actual world – which would be an odd thing to stipulate. Moreover, there are other ways of analysing lawlike readings. For example, one might consider the possibility that, on the intended reading, the quantifier in (21) ranges over possible individuals, which is to say that its domain is never empty, be it in this world or anywhere else.

The view on lawlike universals propagated by Lappin and Reinhart and Horn (among many others) rests on the tacit assumption that existential presuppositions must be satisfied in the actual world by ordinary individuals. I see no reason to accept that this is true. For one thing, given that quantifying expressions can range over a wide variety of entitities – from groups and events to properties and kinds – why should their presuppositions be confined to concrete individuals? For another, the assumption that existence presuppositions must be satisfied in the actual world is at odds with the prevailing opinion that presuppositions in general need not be true here and now. For example, all major theories of presupposition agree that the presupposition triggered by 'the king of France' in (22) need only be satisfied by worlds in which France is a monarchy:

(22) Had France been a monarchy, the king of France would have been bald.

There is an existence presupposition here, and it is satisfied, though not in the actual world.

The upshot of the foregoing remarks is that, pace Lappin and Reinhart and Horn, lawlike universal statements do not force us to abandon a presuppositional analysis of quantification along the lines indicated by de Jong and Verkuyl.

4. BEYOND SEMANTIC PRESUPPOSITION

Although I have tried to dispel a number of objections against de Jong and Verkuyl's presuppositional analysis of quantification, I don't believe that their proposal can be upheld as it stands. My argument is based on a point made by Strawson 40 years ago, namely, that presupposition failure does not invariably result in infelicity. In his 1964 paper, Strawson partly disavows the position he had defended 14 years earlier in 'On referring', having come to doubt in the meantime that presupposition failure entails lack of truth value:

> The sense in which the existence of something answering to a definite description used for the purpose of identifying reference, and its distinguishability by an audience from anything else, is presupposed and not asserted in an utterance containing such an expression, so used, stands absolutely firm, whether or not one opts for the view that radical failure of the presupposition would deprive the statement of a truth-value. (Strawson 1964: 85)

Taking a closer look at how speakers actually assess a sentence, Strawson now observes that presupposition failure may but need not cause a sentence to be infelicitous. Two of his examples are the following:

(23) a. Jones spent the morning at the local swimming pool.
b. The Exhibition was visited yesterday by the king of France.

If there is no swimming pool locally, it is 'natural enough', according to Strawson, to say that (23a) is false, and since the king of France doesn't exist, the same applies to (23b). And if it is false that Jones spent the morning at the local swimming pool, it must be true that he did not spent the morning there; the same, mutatis mutandis, for (23b). So these are cases in which presupposition failure does not prevent us from saying that a sentence is true or false. But Strawson has not changed his mind about Russell's example:

> Confronted with the classical example, 'The king of France is bald', we may well feel it natural to say, straight off, that the question whether the statement is true or false doesn't arise because there is no king of France. (Strawson 1964: 90)

Strawson goes on to observe, however, that speakers who subscribe to this judgment may want to reconsider their verdict if the context is set up the right way. For instance, if Russell's sentence is used to answer the question, 'What examples, if any, are there of famous contemporary figures who are bald?', we may be more inclined to say that the answer is simply false.

Strawson's explanation for these facts is given in terms of what a sentence, as uttered on a certain occasion, is about – its topic. (Strawson's notion of topic is rather sophisticated, and not to be conflated with any of the coarser concepts for which the name has since been appropriated.) The idea is straightforward and, I think, intuitively sound. The most likely purpose of a sentence like (23a) is to describe what Jones has been doing in the morning, rather than, say, who the local swimming pool was visited by. That is, in the absence of further information about the context in which this sentence is uttered, its topic will be Jones's exploits. Similarly, a sentence like (23b) will normally be used to convey information about the Exhibition. If so, although the sentence purports to refer to the king of France, it is not about him; the king of France is not the topic of discourse, nor part of it. Strawson's suggestion is that this circumstance influences the way presupposition failure is dealt with. Not to put too fine a point on it, presupposition failure results in infelicity only if it affects the topic of a sentence; otherwise the sentence will be judged true or false, as appropriate. If (23a) addresses the question where Jones spent the morning, we know that the answer cannot be true, since ex hypothesi

there is no local swimming pool. Whereas if Jones didn't exist, there wouldn't be anything for the sentence to be about, and it would be infelicitous as a consequence.

One of the features that make this an appealing analysis is that it accounts for the context dependence of speakers' intuitions. As Strawson notes, Russell's famous example will by default be construed as being about the king of France, whence a strong tendency to judge the sentence infelicitous.

(24) The king of France is bald.

With his usual linguistic acumen, Strawson notes that there are two conspiring reasons why the king of France should be the default topic of (24). On the one hand, 'it often is the case that the topic of a statement is, or includes, something referred to by a referring expression'. (p. 95) On the other hand, 'it often is the case that the placing of an expression at the beginning of a sentence, in the position of grammatical subject, serves, as it were, to announce the statement's topic'. (ibid.) But the king of France doesn't have to be topic. If the discourse is about royal baldness in general, for example, the grammatical subject of (24) is used to say something about that topic, and Strawson's account predicts that the sentence is more likely to be judged false, which seems correct.

Another observation that neatly falls into place is that word order may have an effect on speakers' intuitions about presupposition failure. As Strawson observes, if we compare (23b) with (25), where the defective description is in subject position,

(25) The king of France visited the Exhibition yesterday.

we would be 'a shade more sqeamish' to say that the sentence is simply false (p. 91). This is precisely what one should expect if speakers' intuitions were topic-dependent.

Strawson's explanation has been lambasted by Neale (1990):

> But surely the truth value of what one says depends upon whether the world is as one has said it is; to let the decision as to whether one has said something false or said nothing at all depend upon such things as what is the primary or overriding focus of the discourse at any given moment – to the extent that such a notion is even theoretically manageable – is to give up this idea. Indeed, it is to give up doing serious semantical work altogether, or else to give up the idea that presupposition is a semantical phenomenon … all sorts of factors may conspire [to] deter the native speaker from *saying* that a given utterance is true or false, but that is hardly enough to show that the utterance lacks a truth-value. (Neale 1990: 28)

This passage mainly demonstrates Neale's failure to appreciate what Strawson was up to in his 1964 paper, and if I have cited it nonetheless it is because I believe the failure is instructive. Contrary to what Neale implies, it was not part of Strawson's brief to defend this or that theory of presupposition. Instead, his aim was to explain what prompts a native speaker to say that a given utterance is true, false, or odd. Unlike Neale, apparently, Strawson was concerned with speakers' intuitions rather than the question whether and when presupposition failure results in a truth-value

gap. Still, Neale is right in claiming that the views expressed by Strawson in 1964 sit uneasily with the notion that presupposition is a semantic phenomenon. For it is implausible, though not perhaps outright impossible, to maintain that presupposition has truth-conditional effects that are modulated by such pragmatic factors as what is the topic of discourse. In this point Neale is right, but then it was evident for quite independent reasons already that presupposition is not a semantical phenomenon.

Whereas Neale attacks Strawson on a priori grounds, others have criticised him for empirical reasons. Lasersohn (1993) discusses sentences like the following:

(26) The king of France a. is sitting in that chair.
b. is knocking on the door.
c. ate that sandwich.

Lasersohn maintains that Strawson's analysis fails to explain why these sentences would normally be judged false:

> One need only look at the chair or sandwich, or listen at the door, to determine that [(26a–c)] are false … it makes little difference whether we regard these statements as 'about' the king of France on the one hand, or the chair, door and sandwich on the other. (Lasersohn 1993: 114)

I don't think this is correct, but to explain why we have to develop Strawson's analysis a bit further. In Strawson's view, reference failure will prompt a speaker to judge a sentence infelicitous provided the defective term is interpreted as topical. It should be clear, however, that such judgments are always made in an 'empty' context; that is to say, a context in which the referent is not given (for if it were given there wouldn't be an issue). The problem, then, is to interpret sentences like (24)–(26) 'out of the blue', which involves determining what, according to the speaker, the sentence is about. According to Strawson, as we have seen, this process is influenced by linguistic factors: definites and subjects are more likely to be topics than indefinites and non-subjects, respectively. But it is also plausible, I believe, that salient objects in the context are more topic-worthy than others. If this is so, then the definite subject in (26a–c) will have to compete for topic status with the chair, the door, and the sandwich. More accurately, since topics aren't objects but questions under discussion, there is competition with the question who is sitting in that chair, who is at the door, and who ate that sandwich.

This line of reasoning explains why the definite subject may have to relinquish its topic status to the predicate, but it will not suffice to explain Lasersohn's observation that (26a–c) will nearly always be judged false. What is needed in order to round out our Strawsonian analysis is an appeal to the principle of charity. People interpret each other's vocalisations charitably. A corollary of this principle, in the case at hand, is that people prefer to avoid interpreting an utterance such that it

becomes infelicitous. Making an assertion that turns out to be false is less embarrassing than saying something inappropriate or odd (unless the falsehood was deliberate, of course). Therefore, whenever different parts of a sentence compete for topic status, as in (26a–c), the sentence will be construed, if at all possible, in such a way that it becomes felicitous.

To return to the main topic of this paper, it shouldn't be too difficult to see how the Strawsonian view on definite descriptions can be extended to quantifying expressions. For it is natural to assume that different (interpretations of) quantifiers may constrain the choice of topic in different ways. In particular, I want to suggest that strong, i.e. presupposition-inducing, quantifiers are more likely to be interpreted as topical, especially when they occur in subject position. If this is so, the following pair of sentences should mirror the contrast between (23b) and (25), which according to my intuitions they do:

(27) a. The Exhibition was visited yesterday by all Swiss matadors.
b. All Swiss matadors visited the Exhibition yesterday.

Moreover, if the Strawsonian analysis is correct, there is no reason why it should be restricted to strong (construals of) quantifiers.

(28) a. Five Swiss matadors hijacked a sightseeing bus today.
b. Today a sightseeing bus was hijacked by five Swiss matadors.

Here a weak quantifier occurs as subject and prepositional object, respectively, and it seems to me that the former example is more likely to be judged infelicitous than the latter, though the contrast is admittedly subtle. Another observation we can account for now is that an existential *there*-sentence is seldom infelicitous, even if it contains a quantifier whose domain is empty. For example, most informants would say that the following are simply true and false, respectively:

(29) a. There are no Swiss matadors in the drawing room.
b. There are some Swiss matadors in the drawing room.

There are two factors that explain this observation. On the one hand, existential *there*-sentences don't admit presuppositional noun phrases, as the following well-known paradigm illustrates:

(30) There is/are
no lawyers
some lawyers
three lawyers
*most lawyers
*all lawyers
*my lawyer
*Heidegger
on the beach.

On the other hand, the quantified noun phrases in (29) are difficult to interpret as topics in Strawson's sense. Weak noun phrases are less suitable as topics than strong noun phrases, because they aren't presuppositional, and weak noun phrases in existential sentences are especially unlikely to be topical, and therefore the sentences in (29) are proportionally more likely to be judged true or false.

5. BEYOND EXISTENTIAL PRESUPPOSITION

It was noted already that a Strawsonian account of empty-domain effects is difficult to reconcile with a semantic theory of presupposition, simply because Strawson's analysis is pragmatic through and through. But there is a further reason as well. To explain this, let us have another look at the definitions proposed by de Jong and Verkuyl:

(31) 'All A are B' and 'Most A are B' are defined iff $\|A\| \neq \varnothing$.

a. If defined, 'All A are B' is true if $\|A\| \subseteq \|B\|$, and false otherwise.
b. If defined, 'Most A are B' is true if $\mathrm{card}(\|A\| \cap \|B\|) > \mathrm{card}(\|A\| - \|B\|)$, and false otherwise.

In these clauses presuppositions are treated as definedness conditions: in order for 'All A are B' or 'Most A are B' to have a truth value it must be true that $\|A\| \neq \varnothing$. But this is not how Strawson thinks of presuppositions. For Strawson, the problem with (24), for example, is not just that France doesn't have a king. The real problem is that there is nothing for the predicate to be about; the statement cannot be anchored in the context:[6]

> I have explained identifying reference – or the central case of identifying reference – as essentially involving a presumption, on the speaker's part, of the possession by the audience of identifying knowledge of a particular item. (p. 79)

It is Strawson's notion of reference failure, not the semantic notion of presuppositions as definedness conditions, that needs to be extended to quantifying expressions. It so happens that there is a theory of presupposition that already does this. It is called the 'binding theory' of presupposition (van der Sandt, 1992, Geurts, 1999).

[6] Although in this passage Strawson speaks of 'identifying reference' rather than presupposition, he makes it clear that for him the two expressions are equivalent:

> All this can be put, perfectly naturally, in other ways. Thus, that there exists a particular item to which the name or description is applicable ... is no part of what the speaker *asserts* in an utterance in which the name or description is used to perform the function of identifying reference; it is, rather, a *presupposition* of his asserting what he asserts. (p. 80, emphasis in the original)

The binding theory is based upon the observation that there are close parallels between the interpretation of anaphora on the one hand and presupposition projection on the other. In fact, anaphora in the usual sense of the word is viewed as a special case of presupposition, and theories of dynamic interpretation that were originally conceived for dealing with anaphoric pronouns can easily be extended so as to account for presuppositions in general. A few examples will serve to clarify what this means. Consider how a sentence like (32a) might be represented in Discourse Representation Theory (Kamp 1981):

(32) a. If Barney has an elk, then Barney's elk is in hiding.
b. [: [x: x is B's elk] ⇒ [z: z is B's elk, z is in hiding]]

(32b) is intended as a schematic but nonetheless complete representation of (32a), except for one thing: the presupposition induced by the definite noun phrase, whose counterpart in (32b) is underlined, hasn't been processed yet.[7] Now suppose that we attempt to treat this presupposition as one would normally treat an anaphor in DRT. This implies that the presuppositional discourse marker z is on the lookout for a suitable antecedent, which in this case isn't hard to find: x is accessible from the sub-DRS in which z is sitting, and its description matches that of z. So the presupposition can climb up to meet its antecedent, as a result of which we obtain (33a), or equivalently, (33b):

(33) a. [: [x, z: x is B's elk, z is B's elk, z = x] ⇒ [: z is in hiding]]
b. [: [z: z is B's elk] ⇒ [: z is in hiding]]

Thus, the presupposition that Barney has an elk is bound in the antecedent of the conditional, just as an ordinary anaphor might have been bound, and consequently the resulting DRS doesn't entail that Barney has an elk. It is in this sense that sentence (32a) doesn't 'inherit' the presupposition that Barney has an elk.

In this example, a presupposition is bound just like an anaphor, but presuppositions cannot always be so bound (recall that the binding theory views anaphora as a species of presupposition), and in general if a presupposition cannot find a suitable antecedent, it will be accommodated. This is what happens in examples like the following:

(34) a. If Barney's elk is in hiding, then his reindeer is too.
b. If Barney is in hiding, then his elk is too.

Here our initial semantic representations are (35a) and (35b), respectively:

(35) a. [: [z: z is B's elk, z is in hiding] ⇒ [: B's reindeer is in hiding]]
b. [: [: B is in hiding] ⇒ [z: z is B's elk, z is in hiding]]

[7] Here and in the following only one or two presuppositions at a time will be selected to illustrate the theory. In (32b) the presupposition associated with the proper name 'Barney' is ignored, and the same fate awaits 'Barney's reindeer', to be introduced below.

As in these two cases the presupposition cannot be bound, it will have to be accommodated, which means that it is to be inserted in some DRS accessible to it. So, in (35a) the presupposition could in principle be accommodated in the principal DRS or in the antecedent of the conditional, while in (35b) it might also be accommodated in the consequent. However, it is assumed that, ceteris paribus, global accommodation is preferred to local accommodation, and therefore the interpretations of (34a) and (34b) that we end up with are (36a) and (36b), respectively:

(36) a. [z: z is B's elk, [: z is in hiding] ⇒ [: B's reindeer is in hiding]]
b. [z: z is B's elk, [: B is in hiding] ⇒ [: z is in hiding]]

These DRSs both entail that Barney has an elk, and thus the theory accounts for the intuition that both (34a) and (34b) carry this presupposition.

To see how this account can be extended to quantified expressions and their presuppositions, consider how the discourse in (37) might be handled:[8]

(37) Fred owns three sheep. He had two sheep vaccinated in the spring.

(38) a. [x, Y: Fred(x), sheep(Y), card(Y) = 3, x owns Y]
b. [$\underline{v}$, $\underline{W}$, Z: $\underline{\text{sheep}}(\underline{W})$, card(Z) = 2, Z ≤ W, v had Z vaccinated]
c. [$\underline{x}$, Y, Z: Fred(x), sheep(Y), card(Y) = 3, x owns Y,
card(Z) = 2, Z ≤ Y, x had Z vaccinated]

(38a) represents the interpretation of the first sentence in (37), where 'three sheep' is construed as a weak quantifier (capital reference markers represent groups or sets of individuals). The preliminary representation of the second sentence in (37) is shown in (38b). Here the noun phrase 'two sheep' is interpreted as strong, and therefore equivalent to 'two of the sheep'. This means that, on top of the standard weak construal, there is a presupposition to the effect that some set of sheep is contextually given. This presupposition is bound to the set of sheep introduced in the first sentence, while the presupposition triggered by the pronoun is bound to Fred. The resulting interpretation is (38c).

This brief exposition of the binding theory will suffice to explain the main differences between it and the semantic view espoused by de Jong and Verkuyl. In accordance with Strawson's ideas, the binding theory views a presupposition as a discourse entity, which is presumed to be present in the context. The semantic view, by contrast, construes presuppositional givenness in terms of definedness. If a presupposition isn't satisfied it is not because the context fails to provide an object that was expected to be there, but rather because it doesn't contain the required information. In a sense, therefore, an expression like 'Barney's elk' triggers different presuppositions according to the two theories: whereas for the binding theory it is that an elk must be given that is owned by Barney, for the semantic theory it must

[8]The following is intended merely as an informal illustration of the general ideas under discussion, not as a full-blown treatment of quantification.

be true that Barney isn't elkless. The same holds for the presuppositional reading of 'two sheep' in (37). According to the binding theory the presupposition boils down to a requirement that a set of sheep is to be picked up from the context; for the semantic theory the requirement is just that there are sheep.

According to the view I am defending, the term 'existential import' is really a misnomer, or at the very least, highly misleading. A strong quantifier doesn't merely require that its domain be non-empty. Rather, what its presupposition does, or is supposed to do, is recover a suitable referent from the context. And if this function fails because it is known that a suitable referent doesn't exist, then Strawson's story applies.

There remains one problem, which is the existence of smart alecks maintaining that an empty domain renders a universally quantified sentence vacuously true. As I hinted at the outset, I don't believe this objection should be given too much weight, but I nonetheless want to show how we can get around it, because I believe this problem is related to the issue discussed in the last few paragraphs. As I said there, it is a mistake, strictly speaking, to say that a quantifier triggers the presupposition that its domain is non-empty. What we should say instead is that the quantifier signals, among other things, that the speaker presents its domain as given. Taken by itself this does not imply that the quantifier's domain cannot be empty. True, most quantifiers happen to require that their domains be non-empty. It follows from the meaning of 'both', for example, that its domain consists of two individuals. But it could be argued that this does not hold for the universal quantifiers, and that in these cases the non-emptiness requirement has an external source, such as an across-the-board default presumption that the empty set is an uninteresting, and therefore less likely, topic of conversation. It is this intuition, presumably, that motivates Lappin and Reinhart's account.

If this is correct, we can justify the smart aleck's position, up to a point at least, as follows. His judgment that universally quantified sentences can be vacuously true is consistent not only with the meaning of 'every' et al., but also with their presuppositional requirements. What the smart aleck does is just ignore the default presumption that speakers aren't expected to dwell on the properties of the empty set. The smart aleck may be uncooperative, but he is at least truthful. He would go wrong if he extended his claim to sentences with 'both' or 'most', for example, because these quantifiers entail that their domains aren't empty. But, as we have seen, the smart aleck diverges from more cooperative speakers only in his judgments on universal sentences.

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KLAUS VON HEUSINGER

REFERENTIALLY ANCHORED INDEFINITES

Abstract. Specific indefinite noun phrases are prototypically referential expressions, show wide scope, are presuppositional, and indicate discourse prominence or "noteworthiness". However, not all specific indefinites show these properties. The existence of so-called "narrow scope specific" or "relative specific" indefinites demonstrates that specificity cannot be explained by the wide scope of specific indefinites or by their referential properties. This paper argues that the accusative case suffix in Turkish marks specificity, including that of narrow scope specific indefinites. Enç's (1991) semantic representation of specificity is modified and a more general representation is formulated in terms of file change semantics. Specific indefinite noun phrases are taken to introduce a new discourse item that is anchored to an already established discourse item. This underspecified semantics accounts for the different aspects of specificity.

1. INTRODUCTION*

Semantic theories generally focus on four main aspects of specific indefinites: A prototypical specific indefinite is assumed to have wide scope, a referential reading, an existential presupposition, and to indicate discourse prominence. These aspects are mirrored in the informal description of "having a referent in mind". Depending on the theoretical perspective, the one or the other aspect may be emphasized, which has lead to many theories of specificity. The classical scope approach disambiguates examples like (1a) by scope interaction of the indefinite with other operators like negation (or verbs of propositional attitudes, questions, conditionals, modals, future, intensional verbs, etc.), as in (1b) and (1c) (see Ludlow and Neale 1991). However, the contrast between a specific and non-specific reading can also appear in the absence of any other operator, such as in (2). Here, the lexical ambiguity approach (Fodor and Sag 1982) assumes two lexical meanings of the indefinite: a referential (or rigid) term, as illustrated by the continuation (2b), and a plain existential interpretation, as illustrated by the continuation (2c).

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(1) a. Bill didn't see **a misprint**.

b. There is a misprint which Bill didn't see.

c. Bill saw no misprints.

(2) a. **A book** is missing from my library.

b. It is the Principia Mathematics of Russell.

c. There is a gap between the books on the shelf.

However, there are specific indefinites that have neither wide scope nor can they be assigned a simple referential reading. Example (3a) adapted from Farkas (1981), with two operators besides the indefinite, show three different scope constellations: a narrow scope reading for the indefinite, as in (3b), an intermediate scope reading, as in (3c), and a wide-scope reading, as in (3d).

(3) a. Each student has to come up with three arguments that show that **a condition** proposed by Chomsky is wrong.

b. each student > three arguments > **a condition**

c. each student > **a condition** > three arguments

d. **a condition** > each student > three arguments

The intermediate reading (3c) shows that specificity cannot be reduced to scopal behavior of indefinites nor to the simple opposition of a referential vs. an existential reading. The scope behavior in (3) cannot be explained by simple existential indefinites either, since they cannot leave the scope island created by the relative clause. Cases like (3c) have been subject to an intensive discussion on 'long distance indefinites', i.e. on indefinites which show scopal properties that cannot be explained by the canonical constraints on quantified NPs (see Chierchia 2001, Jäger 2004 for an overview). Different types of theories have tried to solve these problems: Reinhart (1997), Winter (1997), Kratzer (1998), and Winter (2005), give an analysis in terms of choice functions; Krifka (2001), Yeom (1998), Geurts (to appear) propose a presuppositional analysis, while Bende-Farkas and Kamp (2001) analyze such specific indefinites as functional or dependent expressions, to name only some families of approaches.

Hintikka (1986) made a related observation on narrow scope readings of specific indefinites (if we take *a certain* as a clear indication of specificity). Sentence (4) has a reading according to which the indefinite *a certain woman* refers to some specific individual for each man. The particular relation between the man and the woman is given by the function of being his mother:

(4) According to Freud, every man unconsciously wants to marry **a certain woman** – his mother.

It has been a controversial issue whether such cases are good examples for specific indefinites or not. However, I will show, on the basis of data from languages that mark specificity morphologically, that they are good instances of specific indefinites. I call this kind of specificity "relative specificity"[1] and assume that it is the most general case of specific indefinites. A specific indefinite noun phrase comes with an index that is referentially anchored to another referential expression (a mechanism to be explained later). Wide-scope, referential, and presuppositional indefinites are special (or "absolute") instantiations of relative specific indefinites: they are bound by the speaker, the context of utterance, or the speech act. However, starting from instances of "relative specificity", I develop an underspecified semantics of specificity or a theory of "referentially anchored indefinites".

The paper is organized as follows: In section 2, I present a semantic typology of specific indefinites: (i) scopal specific indefinites, (ii) epistemic specific indefinites, (iii) partitive specific indefinites, (iv) discourse prominent or "noteworthy" indefinites, and (v) relative specific indefinites. I argue that relative specific indefinites are the most general type of specific indefinites and therefore they should be the prototypical type for any analysis.

In section 3, I discuss specificity under a cross-linguistic perspective, based on data from Differential Object Marking in Spanish, Romanian, and Turkish. While the direct case markers in Spanish and Romanian depend on a variety of other parameters and show specificity effects only in certain contexts, the case marker in Turkish is a more reliable marker for specificity. The Turkish data indicate that all instances of relative specificity are case-marked. In section 4, I develop a sketch of a theory of referentially anchored indefinites and in section 5 I give a short summary of the approach.

2. THE SEMANTIC TYPOLOGY OF SPECIFICITY

In the literature on specificity, different kinds of specific indefinites have been distinguished. Following Farkas (1995), I present the following semantic typology: (i) scopal specific indefinites, (ii) epistemic specific indefinites, and (iii) partitive specific indefinites. I add (iv) specificity as *noteworthiness* (Wright and Givón 1987, Ionin 2006), and then introduce an additional group (v) which I call "relative specific indefinites".[2]

[1] See von Heusinger (2002); I am not aware whether this particular term has been previously used. However, Hans-Martin Gärtner pointed out to me that Ruys (1992, 115ff) uses the term "relativized specificity" for an additional syntactic indexing rule. Owing to space limitations I cannot discuss this very interesting proposal here.

[2] One reviewer noted that specificity is not necessarily restricted to indefinites, but is a property that may also apply to definite noun phrases (cf. Donnellan's referential vs. attributive distinction). I fully agree with this observation, even though it is controversially discussed in the literature. However, for the present exposition we do not need to extend specificity to definite noun phrases.

2.1. Scopal Specificity

Classically, the contrast between a specific and a non-specific reading of an indefinite is configurationally represented by scope interaction between the indefinite and some other operator. Example (5a) has two readings, which can be illustrated by the continuation in (5b) and (5c). A simple scope theory accounts for this contrast by assuming that the indefinite can take scope over the *want*-operator, as in (5d') or scope under that operator, as in (5e'):

(5) a. John wants to marry **a Norwegian**.

b. He met her last year.

c. He will move to Norway to try to achieve this goal.

d. There is a Norwegian$_1$, and John wants to marry her$_1$.

e. John wants that there be a Norwegian$_1$ and that he marry her$_1$.

The interaction of indefinites with other operators can also be illustrated with negation, as in (1), repeated as (6), or they can interact with more operators, as in (7a), from Karttunen (1976), and (7b), from Kasher and Gabbay (1976). In these cases we expect three readings, which the reader can easily work out.

(6) a. Bill didn't see **a misprint**.

b. There is a misprint which Bill didn't see.

c. Bill saw no misprints.

(7) a. Bill intends to visit **a museum** every day.

b. Luce expects Pinch to ask him for **a book**.

2.2. Epistemic Specificity

The ambiguity described in the last section arises in the presence of other operators such as negators, universal quantifiers, or verbs of propositional attitudes. An analysis in terms of scope seems to work well. However, there are examples that show a contrast between two readings of indefinites in the absences of other operators that is similar to the contrast discussed in the last section. The specific reading of (2a), repeated as (8a), can be continued by (8b), while the non-specific reading can be continued by (8c).

(8) a. **A book** is missing from my library.

b. It is the Principia Mathematics of Russell.

c. There is a gap between the books on the shelf.

There is, however, no clear truth-conditional difference between the two readings. Therefore, the pragmatic approach (e.g. Ludlow and Neale 1991, Zamparelli 2005) assumes that the difference is due to the amount of information that is available to identify a referent. However, there is a clear contrast between the specific reading in (8b) and the non-specific one in (8c), which becomes stronger with an animate noun, as in (9a) and the continuation (9b) and (9c) from Fodor and Sag (1982).

(9) a. **A student** in Syntax 1 cheated on the exam.

b. His name is John.

c. We are all trying to figure out who it was.

2.3. Partitives

Milsark (1974) argues that indefinite NPs can either receive a weak (or existential) interpretation or a strong (or presuppositional) interpretation. In (10a) the indefinite *some ghosts* receives a weak interpretation, but it gets a strong interpretation in (10b), i.e. it presupposes that there are other ghosts. The reading in (10b) is generally called "partitive".

(10) a. There are **some ghosts** in this house.

b. **Some ghosts** live in the pantry; others live in the kitchen.

Enç (1991) develops the idea of specificity as partitivity and argues, based on examples like (11), that the accusative case in Turkish marks exactly this type of specificity. (11a) introduces a set of children, and the accusative marked direct object *iki kızı* in (11b) must refer to a subset of the previously introduced set of children. The unmarked direct object *iki kız* in (11c), however, cannot refer to a subset of the introduced children, but must refer to another not mentioned set of two children.

(11) a. Oda-m-a **birkaç çocuk** gir-di
room-1.sg.-Dat. several child enter-Past
'Several children entered my room.'

b. **İki kız-ı** tanı-yor-du-m
two girl-Acc. know-Prog.-Past-1.sg.
'I knew two girls.'

c. **İki kız** tanı-yor-du-m
two girl know-Prog.-Past-1.sg.
'I knew two girls.'

2.4. Specificity as Noteworthiness

Specificity can also express the discourse prominence of an indefinite noun phrase. A specific indefinite is used if the speaker intends to signal that the associated discourse referent is important and will be referred back by anaphoric expressions in the subsequent discourse. Ionin (2006) calls this *specificity as noteworthiness*. This discourse effect is often the trigger for the grammaticalization of the numerals expressing "one" towards specific indefinite articles (Wright and Givón 1987) for Hebrew and Hawaiian Creole). Ionin (2006) uses this concept to account for the English specific indefinite article *this*, which has a different semantics from the homonymous demonstrative (see Maclaran 1980, Prince 1981). The wide-scope reading with respect to the verb *want* is shown in the contrast in (12), from Ionin (2006, 180).

(12) a. Sarah wants to read ✓a/✓this book about butterflies, but she can't find it.

b. Sarah wants to read ✓a/#this book about butterflies, but she can't find one.

Ionin (2006, 181) illustrates the concept of noteworthiness with (13), quoted from Maclaran (1982, 88). (13b), which contains the specific indefinite article *this* is felicitous since it signals a discourse referent that has an important or prominent property.

(13) a. He put on ✓a/#this 31 cent stamp on the envelope, so he must want it to go airmail.

b. He put on ✓a/✓this 31 cent stamp on the envelope, and only realized later that it was worth a fortune because it was unperforated.

Ionin (2006, 187) defines noteworthiness I terms of felicity conditions, rather than presupposition, which she only uses for definite noun phrases. I paraphrase her definition in (14):

(14) An specific indefinite noun phrase of the type [spe α] is felicitously used if the speaker intends to refer to exactly one individual x and there exists a property φ which the speaker considers noteworthy and x is both α and φ.

2.5. Relative Specificity

The term 'relative specific' or 'intermediate scope specific indefinites' or recently 'long distance indefinites' describes specific indefinites that depend on other expressions, and therefore show flexible scope behavior. This observation was

already made in early investigations of specificity. Contrary to Fodor and Sag (1982), Farkas (1981) shows with a (slightly modified) example like (3a), repeated below as (15a), that indefinite NPs can have more than only a narrow scope non-specific reading (15b) and a wide-scope specific reading (15d). They can also receive an "intermediate" scope reading (15c). On to this reading of (15a), the indefinite *a condition proposed by Chomsky* has wide scope with respect to *three arguments* and narrow scope with respect to *each student*.

(15) a. Each student has to come up with three arguments that show that **a condition** proposed by Chomsky is wrong.

b. each student > three argument > **a condition** narrow scope

c. each student > **a condition** > three argument interm. scope

d. **a condition** >each student > three argument wide scope

Hintikka (1986) made a related observation in his discussion of the expression *a certain*. In (16), he shows that the specific indefinite *a certain woman* can receive narrow scope with respect to the universal quantifier and still be specific (if one assumes that *a certain* marks specificity): there is a specific woman for each man. Hintikka suggests that the specific indefinite NP is to be represented by a Skolem-function that assigns to each man the woman who is his mother. Once the reference for man is fixed (during the process of interpreting the universal quantifier), the reference for the specific indefinite is simultaneously fixed. In (16c), we informally mark this by indexing the indefinite NP with its anchor, here the variable for *man*.

(16) a. According to Freud, every man unconsciously wants to marry **a certain woman** – his mother. (Hintikka, 1986)

b. $\forall x$ [Man(x) $\rightarrow$ Wants(x, marry(x, f(x))]
with f: Skolem function from men onto their mothers

c. $\forall x$ [Man(x) $\rightarrow$ Wants(x, marry(x, [a woman]$_x$]

A combination of epistemic and relative specificity can be found in the following example from Higginbotham (1987, 64). He describes the different readings as follows:

> In typical cases specific uses are said to involve a referent that the speaker 'has in mind.' But this condition seems much too strong. Suppose my friend George says to me, 'I met with a certain student of mine today.' Then I can report the encounter to a third party by saying, 'George said that he met with a certain student of his today,' and the 'specificity' effect is felt, although I am in no position to say which student George met with

(17) a. George: "I met a certain student of mine."

b. James: "George met a certain student of his."

These observations motivate a revision of the pretheoretical description of specificity in terms of obligatory wide-scope or referential expression. It is shown that a specific indefinite NP need not depend on the speaker or the context of utterance; it can also depend on other linguistic entities, like the universal quantifier *each student* in (15) or every man in (16). This dependency will be formally reconstructed by an anchoring function in section 4.3. Before we start the formal analysis, we make a brief cross-linguistic digression to get a descriptively broader picture about the range of occurrences of specific indefinite NPs, in particular of those indefinites with intermediate scope behavior. It is quite controversial whether *a certain woman* in (16a) constitutes a good case of specific indefinite or whether it is just a non-specific indefinite with particular functions.

3. A CROSS-LINGUISTIC APPROACH TO SPECIFICITY

In many Indo-European languages, (in)definiteness is marked by the definite and indefinite articles, but specificity is not systematically marked in the article system (English *this* being an exception). Other means to grammatically encode specificity are indefinite pronouns (see Haspelmath 1997), negative determiners like German *kein* 'not a', which determine the (non)specificity of a noun phrase, adjectives such as *certain*, *specific*, *particular*, *etc*. In the remainder of this section, I discuss case markers as indicators of specificity. In languages that show Differential Object Marking, case can signal specificity (among other referential properties). This will be illustrated on data from Spanish, Romanian, and Turkish. While all these languages show case alternation, Spanish and Romanian show a specificity contrast only in certain contexts, whereas Turkish seems to encode specificity in the case marker quite systematically.

Bossong (1985) coins the concept of "Differential Object Marking" ("differentielle Objektmarkierung") or DOM for the observation that the direct object in various languages may be marked or not. Cross-linguistically, there are at least three parameters that determine whether the direct object is marked or not (Bossong 1985, Aissen 2003): (i) animacy, (ii) referentiality, and (iii) information structure ("topicality"). In what follows, we will focus on contrasts that derive from different positions on the definiteness scale (18).

(18) Definiteness Scale:
pers. pron > proper name > def. NP > spec. indef. NP > non-spec. indef. NP

3.1. Differential Object Marking (DOM) in Spanish

Peninsular Spanish exhibits DOM by the marker *a* on the direct object if it is specific and denotes an animate (or human) referent. In (19a) the marker is obligatory, while in (19b) it is ungrammatical.

(19) a. Vi *(***a**) **la / una mujer**.
see.Past-1.sg. A the / a woman
'I saw the / a woman.'

b. Vi (**a*) **la / una mesa**.
see.Past-1.sg. *A the / a table
'I saw the / a table.'

The distribution of the marker *a* is optional for animate non-specific indefinite noun phrases. In (20), the noun phrase *un ayudante* is clearly non-specific, since the verb in the relative clause is in the subjunctive; still the marker *a* is possible. In (21), the presence of the marker *a* makes the sentence ungrammatical under the given reading (see Leonetti 2003 for discussion). We summarize these observations in table (22), which shows that the absence of the marker *a* is indicative of non-specificity, while the presence of *a* is not necessarily an indication of specificity.

(20) Necesitan **(a) un ayudante que sepa** **inglés**
(they) need (A) an assistant that speaks$_{\text{SUBJ}}$ English
'They need an assistant that speaks English.'

(21) Necesitan ***a camarero**
(they) need A waiter
'They need a waiter/waiters.'

(22) Conditions for DOM in Standard Spanish

Full NP	**[+Specific]**	**[−Specific]**
[+Animate]	+	±
[−Animate]	−	−

The absence of the marker *a* in Spanish forces a non-specific interpretation. This is illustrated by the contrast of possible readings in the following two examples, where we find scope interaction with the universal quantifier. The marker *a* in Spanish allows for a wide or narrow scope reading of the indefinite noun phrase in (23a), while its absence forces a narrow scope reading in (23b) (cf. Leonetti 2003, 73).

(23) a. Cada estudiante entrevistará **a un personaje conocido**
every student will interview A a celebrity
'Each student will interview a celebrity.' (wide and narrow scope)

b. Cada estudiante entrevistará **un personaje conocido**
every student will interview a celebrity
'Each student will interview a celebrity.' (only narrow scope)

3.2. Differential Object Marking (DOM) in Romanian

Romanian has the marker *pe* to mark certain direct objects. *Pe* is obligatory for definite pronouns and proper names, as in (24); it is obligatory for definite human noun phrases and optional for specific human noun phrases; (25) is an instance of the latter. *Pe*-marking is ungrammatical for non-specific indefinite noun phrases, as in (26), where the relative clause is in the subjunctive (see Farkas 1978, Farkas and von Heusinger 2003). Thus we can summarize the conditions for human full noun phrases in Romanian, as in (27):[3]

(24) Maria *(l)-a desenat *(**pe**) **Matei / el**.
Maria *(CL) has drawn *(PE) Matei / him
'Maria drew Matei / him.'

(25) Maria (l)-a desenat **(pe) un băiat** **din faţa ei.**
Maria (CL) has drawn (PE) a boy in front of her.
'Maria drew a boy in front of her'

(26) Maria (*o) caută (*__pe__) **o studentă** **care să stie** **româneşte**.
Maria (*CL) look for (*PE) a student who know$_{SUBJ}$ Romanian
'Maria is looking for a student who knows Romanian.'

(27) Conditions for DOM in Romanian

Full NP	**[+Specific]**	**[−Specific]**
[+Animate]	±	−
[−Animate]	−	−

The marker *pe* is optional for specific noun phrases and ungrammatical for non-specific ones.[4] This means that the presence of the marker forces a specific interpretation. In Romanian we find the reverse situation to the Spanish contrast in (23): The presence of the marker *pe* accompanied by the doubling clitic forces a wide-scope reading in (5a), while the absence of the marker allows for both readings in (5b) (Dobrovie-Sorin 1994, 229–230):[5]

[3] "CL" indicates a doubling clitic linked to the direct object. The conditions for clitic doubling in Romanian are similar to, but not identical with, the ones for *pe*-marking. Therefore, clitic doubling and *pe*-marking often co-occur. See Comorovski (1983) for an analysis of clitic doubling as object agreement.

[4] There are certain exceptions: *nimeni* ('nobody') and *cineva* ('somebody'), which are obligatorily introduced by *pe*, even if non-specific.

[5] While the given judgments are from Dobrovie-Sorin, Ileana Comorovski (p.c.) informs me that the readings she gets are different. Both (28a) and (28b) have only a narrow scope reading. An explicit partitive expressed by *dintre* in (28a') makes a wide scope reading possible. A wide-scope reading for (28b) is possible if '*fiecare*' is replaced by *to†i* ('all').

(28) a. Fiecare professor îi va examina **pe zece elevi**.
every teacher CL will examen PE ten students
'Every teacher will examen ten students.' (only wide scope)

b. Fiecare profesor va examina **zece elevi**.
every teacher will examen ten students
'Every teacher will examen ten students.' (wide and narrow)

3.3. Turkish Object Marking and Specificity

DOM in Turkish is realized by the accusative case suffix for specific direct objects. Turkish does not have a definite article, but an indefinite one, which has the same form as the numeral for 'one', but differs in its distribution (see Kornfilt 1997 for discussion). Definite (Kornfilt's demonstrative) and specific indefinite direct objects are case-marked, as in (29a) and (29b), while non-specific indefinite direct objects, as in (29c), and bare nouns in that position, as in (29d), are not case-marked (Enç 1991, Kornfilt 1997, von Heusinger and Kornfilt 2005). We can summarize the conditions in (30):[6]

(29) a. (ben) **bu kitab-ı** oku-du-m [definite/demonstr.]
I **this** book-**acc** read-past-1sg
'I read this book.'

b. (ben) **bir kitab-ı** oku-du-m [indef. spec.]
I **a** book-**acc** read-past-1sg
'I read **a certain** book.'

c. (ben) **bir kitap** oku-du-m [indefinite]
I **a** book read-past-1sg
'I read **a** book.'

d. (ben) **kitap** oku-du-m ["bare"]
I book read-past-1sg
'I was book-reading'

(30) Conditions for DOM in Turkish

Full NP	**[+Specific]**	**[−Specific]**
[+Animate]	+	−
[−Animate]	+	−

(28) a' Fiecare professor îi va examina **pe zece dintre elevi**.
every teacher CL will examen PE ten of students
'Every teacher will examen ten of the students'. (wide and narrow scope)

[6]Turkish also shows obligatory accusative case marking with strong quantifiers, such as *her* "every", while it is optional with weak quantifiers, such as *birkac*; 'several' etc. (Enç 1991, 10–11).

The examples show that the contrast between (epistemic) specific and non-specific indefinites is encoded in the morpho-syntax of Turkish. As for scopal specificity (see section 2.1), a case-marked animate direct object under a verb of propositional attitude blocks a non-specific reading, while an unmarked one is ambiguous (Dede 1986, 157). In this context, Turkish patterns with Romanian (cf. (26)), rather than with Spanish (cf. (20)).

(31) **Bir ögrenci-yi** arı-yor-um. Bul-a-mı-yor-um
a student-Acc. look+for-Prog.-1.sg. find-Neg.Abil-Neg.-Pr.Prog.-1.sg.
'I am looking for a student. I can't find him.' [specific]
'I am looking for a student. (*'I can't find one') [*non-specific]

(32) **Bir ögrenci** arı-yor-um. Bul-a-mı-yor-um
a student look+for-Pr.Prog.-1.sg. find-Neg.Abil-Neg.-Pr.Prog.-1.sg.
'I am looking for a student. I can't find him.' [specific]
'I am looking for a student. I can't find one.' [non-specific]

Turkish also allows to mark the difference between a partitive and non-partitive reading of an indefinite – this was the starting point of Enç's (1991) theory of specificity as partitivity. I repeat example (14) as (33). The case-marked direct object *iki kızı* in (33b) must be interpreted partitively, while the non-case-marked form *iki kız* in (33c) cannot interpreted in such a way, but must refer to two not already mentioned girls.

(33) a. Oda-m-a **birkaç çocuk** gir-di
room-1.sg.-Dat. several child enter-Past
'Several children entered my room.'

b. **İki kız**-ı tanı-yor-du-m
two girl-Acc. know-Prog.-Past-1.sg.
'I knew two girls.'

c. **İki kız** tanı-yor-du-m
two girl know-Prog.-Past-1.sg.
'I knew two girls.'

Enç's approach of specificity first links the accusative case marker with partitivity and second partitivity with specificity. Both links are controversial. There are more complex conditions for the use of the case marker in Turkish, including purely morpho-syntactic conditions (see von Heusinger and Kornfilt 2005 for an extensive discussion), and second the assumption that partitive readings are always specific

can be disputed on the grounds of the given example: in (33b), *iki kızı* refers to two girls that are in the set of mentioned children – however, the identity of those girls is not given (only restricted). We cannot give justice to the whole discussion of Enç's approach (see von Heusinger and Kornfilt 2005).

3.4. Relative Specificity in Turkish

The problem of relative specific indefinites (see section 2.5) is that it is controversial whether they are epistemic specific indefinites or existential indefinites with additional scopal properties. The data from Turkish show that they pattern with other specific indefinites (with the epistemic and scopal indefinites). Enç presents (34a) that shows two readings for the specific indefinite *a certain athlete*: a wide-scope reading (34b) and a narrow scope reading (34c):

(34) a. Her antrenör **belli** **bir atlet-i** /***atlet** çalıştıracak.
every trainer certain one athlete-Acc. will train
'Every trainer will train a certain athlete.'

b. all the same athlete (specific, wide scope)

c. each one a different one (specific, narrow scope)

Note that Enç uses here the modifier belli '(a) certain'. This contributes to the specificity of the indefinite expression and thus to the well-formedness of the accusative marker. It is interesting to note that if we front the indefinite to sentence initial position (which is a topic position), then we receive only the wide-scope specific reading, as in (35). We will come back to this weak-crossover effect in section 4.4:

(35) a. **belli** **bir atlet-i** her antrenör çalıştıracak.
certain one athlete-Acc. every trainer will train
'Every trainer will train a certain athlete'

b. all the same athlete (specific wide scope)

c. *each one a different athlete (specific narrow scope)

Enç (1991: 19) accounts for the use of the accusative case by assuming that the direct object is "somehow distinguished. It is distinguished because it stands in the contextually salient relevant relation to some other object". She sketches a formalization of this idea by using Skolem-functions (or what she calls "assignment functions") for the specific indefinite, following a proposal by Hintikka (1986), which will be presented in the next section.

4. SPECIFICITY AS REFERENTIAL ANCHORING

The main thesis of this paper is that specificity indicates that an expression is referentially anchored to another argument expression in the discourse. 'Referentially anchored' means that the referent of the specific NP is functionally dependent on the referent of another expression. This idea can be spelled out by extending Heim's (1982: 369f) Familiarity Condition and modifying Enç's partitive condition for specific indefinites.[7]

4.1. Familiarity for Definiteness

Enç formalizes her view of specificity in terms of Heim's (1982) familiarity approach to discourse structure. Heim defines definiteness in terms of familiarity, or more formally, in terms of identity of the indices of file cards for noun phrases (NPs), as defined in (36), and illustrated by (37)–(38):

(36) **Heim's Familiarity Condition**

An NP_i in a sentence ψ with respect to a file D and the Domain of filenames Dom(D) is

(i) [+definite] if $i \in Dom(D)$, and it is
(ii) [−definite] if $i \notin Dom(D)$

Heim (1982) reconstructs definiteness with respect to the already established discourse. Every NP comes with an index i, which represents the discourse referent (or Heim's "file card") associated with that NP. If the discourse referent i is already introduced in the discourse – or more formally if the index i is an element of the set of all established discourse referents Dom(D), then the NP must be definite. If, however, the discourse referent i is not among the already established discourse referents, i.e. if $i \notin Dom(D)$, then the NP must be indefinite. Definiteness signals the familiarity of the discourse referent associated with the NP.

(37) a. A man_1 meets a $woman_2$. $Dom(D) = \{1, 2\}$
b. The man_1 talks to her_2. $1, 2 \in Dom(D)$

(38) a. A man_1 meets a $woman_2$. $Dom(D) = \{1, 2\}$
b. A man_3 talks to a $woman_4$. $3, 4 \notin Dom(D)$

In (37a) the two indefinite NPs introduce new file cards or discourse items, which we indicate by the two indices 1 and 2. These indices form the domain of filenames

[7]Even though the approach is formulated in file change semantics, it adapts also insights from Farkas' (2002) concept of "dependent readings" and Bende-Farkas and Kamp's (2001) discussion of functional readings.

Dom(D) and they are accessible for the evaluation of the definite NPs in (37b). The two indices in (37b) can be linked to the already established indices in the domain for indices (or the domain of established discourse items), which licenses the definiteness of the two NPs. In contrast, in (38b) the two NPs are indefinite, which means their indices cannot be linked to already established indices or discourse items. Therefore, the indefinite NPs introduce new discourse items.

4.2. Enç's Partitive Specificity

Enç modifies the Familiarity Condition of definite vs. indefinite NPs to the partitivity condition for the contrast between specific/partitive vs. non-specific/non-partitive indefinite NPs. Like definite NPs, specific NPs signal that the associated discourse referent is linked to the already established discourse. Other than with definites, this link is not direct but it is the *part of*-relation or the partitive relation. Here she has to distinguish between the plural case (i) and the singular (ii). In the plural case (*several children... two of the girls*) the formal reconstruction (i) says that the partitivity is licensed by the fact that the index i (standing for a group of entities, such as *two of the girls*) is part of an index j that stands for an already established group of entities (*several children*). In the singular case (ii), the partitivity of the NP is licensed by the fact that the group consisting of that one discourse referent (therefore a set with just one index: {i}) is part of the already established group j. (39) is a reconstruction of Enç's (1991, 7 ex. (22)) condition for partitive NPs.[8]

(39) **Enç's Specificity/Partitivity Condition (adapted version)**

An NP_i in a sentence ψ with respect to a file D and the Domain of filenames Dom(D) is

(i) for NP_i plural: [+ specific] if there is a j such $i \subseteq j$ and $j \in Dom(D)$ or
(ii) for NP_i singular: [+ specific] if there is a j such $\{i\} \subseteq j$ and $j \in Dom(D)$

Sentence (40a) introduces a new index (or discourse item), a set of several children. The (implicit) partitive *two girl(s)* in (40b) is related to this set by the subset relation. This means that the index or discourse item 1, i.e. a set of two girls, is a subset of index 3 standing for the set of several girls already established. Since this set of two girls is new it is indefinite, but because of its relation to an already

[8] Enç's (1991:7) own reconstruction is more difficult to read: "All NPs carry a pair of indices, the first of which represents the referent of the NP. The indices themselves bear a definiteness feature. The feature on the first index determines the definiteness of the NP, as usual. The definiteness feature on the second index determines the specificity of the NP by constraining the relation of the referent of the NP to other discourse referents.

(i) Every [NP α] $\langle i, j\rangle$ is interpreted as $\alpha(x_i)$ and
$x_i \subseteq x_j$ if $NP_{\langle i,j\rangle}$ is plural
$\{x_i\} \subseteq x_j$ if $NP_{\langle i,j\rangle}$ is singular

established set it is partitive (and specific – according to Enç). It is also obvious that the partitive has wider scope with respect to other operators in the sentence, since it is related to an established set.

(40) a. Several children_1 entered my room_2.
Dom(D) = {1, 2} (with 1 denoting a set)

b. I knew two girls_3. $3 \subseteq 1$ and $1 \in \text{Dom(D)}$

4.3. Relative Specificity

In order to account for specificity in terms of relative specificity, we formulate the condition (41) in similar terms. An NP is specific if its index (or filename) can be linked to an already established index. An additional restriction is that the already established index must be from the current sentence, rather than from the whole discourse.[9] In this sense, specificity is sentence-bound, while definiteness is discourse-bound. The formal reconstruction of this view of specificity states that a specific NP_i signals that the associated index i is linked by a salient (natural or 'reconstructable') function (or relation) to another index j from the same sentence ψ.

(41) **Relative Specificity Condition**
An NP_i in a sentence ψ with respect to a file F and the Domain of filenames Dom (ψ) is [+ specific] if there is a contextual salient function f such that $i = f(j)$ and $j \in \text{Dom}(\psi)$

Let us illustrate the definition on our examples (17), repeated below as (42a) and (42b). The speaker of the direct speech in (42a) introduces a new index 1, such that the index 2 of the specific indefinite can be linked to it by a contextually salient function f. This function could be spelled out by saying that George can identify that student or that there was a temporal point at which both individuals were at the same location, etc. The function only indicates that once we have fixed the identity of the anchor (George) we can also identify the identity of the anchored indefinite. In (42b), we have two potential anchors such that we can relate the index of the specific indefinite to either one of them, yielding the two representations (i) and (ii), which stand for the two accessible readings: in (i) George is the anchor and "responsible" for the specific indefinite, while in (ii) James is the anchor:

[9] A reviewer noted that this restriction is not precise enough, since it would predict that in (i) the specific indefinite could take narrow scope, which is not an available reading of (i). A more elaborate restriction seems necessary (e.g. in terms of c-command).

(i) If every trainer arrives on time, a certain athlete will sing.

(42) a. George: "I_1 met [a certain student of mine]$_2$"
$2 = f(1)$ and $1 \in Dom(\psi)$

b. James$_3$: "George$_1$ met [a certain student of his]$_2$"
reading (i) $2 = f(1)$ and $1 \in Dom(\psi)$
reading (ii) $2 = f(3)$ and $3 \in Dom(\psi)$

In (43) the universal quantifier introduces an index 1 and a new domain for each value for 1, such that inside that domain the index 2 for the specific indefinite is functionally dependent on the index for *every trainer*.[10] Again the contextually salient function could be spelled out as *his favorite athlete*, or *the athlete who pays the most money*. The index i introduced by the speaker can also be understood in a more general way as the speech act index of the hearer in the sense of Speas and Tenny (2003):[11]

(43) (speaker$_i$:) Every trainer$_1$ will train a certain athlete$_2$.
(i) all trainers the same athlete (specific wide scope)
$2 = f(i)$ and $i \in Dom(\psi)$ (if i stands for the speaker)
(ii): each trainer a different athlete (specific narrow scope)
$2 = f(1)$ and $1 \in Dom(\psi)$ (if 1 stands for the trainer)

4.4. Weak-Crossover Effects

This sketch of a theory of "referentially anchored indefinites" indicates that the specific indefinite contains some index or free variable that must be bound by some other operator. So one would expect binding effects such as the weak-crossover effect (see Chierchia 2001 for a detailed discussion). The Turkish variant (44) of (43), with the indefinite direct object scrambled over the subject, can only receive the reading with wide scope. Here, we could argue that the referential index of the indefinite (specific) object, cannot be anchored by *her antrenör*, the universally quantified subject, for configurational (binding-theoretical) reasons:

(44) [belli bir atlet -i]$_2$ [her antrenör]$_1$ çalış-tır-acak.
certain one athlete-Acc. every trainer work-CAUS-FUT.
'Every trainer$_1$ will train a certain athlete$_2$.'

a. all trainers the same athlete (specific wide scope)
$2 = f(i)$ and $i \in Dom(\psi)$ (if i stands for the speaker or the speech act)

b. *each trainer a different athlete (specific narrow scope)
$2 = f(1)$ is not possible

[10] The conditions for a universal quantifier are somewhat more complex (see Heim 1982: 352.)
[11] Ileana Comorovski (p.c.) made me aware of this connection.

The example demonstrates that the indexing mechanism is dependent on the configuration, and the formulation in (41) needs some addition. An open question is, however, whether this weak-crossover effects hold only for specific indefinites with a particular adjective such as *certain*, or other specific indefinites, too.

5. SUMMARY

The general wisdom assumes that specific indefinite noun phrases signal that "the speaker has a particular referent in mind", while the hearer does not know its identity. This intuition should capture the prominent properties of specific indefinites: they have (often) wide scope, they are (often) referential expression, they are (often) presuppositional, and they are (often) noteworthy, i.e. they signal discourse importance. However, I have shown that the mentioned properties are rather superficial in nature and not necessary for specific indefinites. This was illustrated with narrow scope specific indefinites or "relative specific" indefinites, which show typical features of specific indefinites (choice of the lexical item *certain*, choice of a case marker in Turkish etc.). Analyzing these instances of specific indefinites, I have demonstrated that specificity expresses an anchoring relation between an indefinite noun phrase and an argument. Building on Enç's (1991) analysis and generalizing it, the proposed analysis is formally reconstructed in terms of file change semantics. While a definite noun phrase indicates that the referent is already given in the context, a specific indefinite introduces a new discourse item that has a (pragmatically salient) link to an already given discourse item. A non-specific indefinite just introduces a new discourse item (which is not linked to the established discourse). This general semantic form for specific indefinites can be understood as an underspecified representation that needs an anchor in the context. Depending on the type of anchor and the scopal behavior of the anchor, the specific indefinite shows some of the above-mentioned properties.

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ON SINGULAR EXISTENTIAL QUANTIFIERS IN ITALIAN

Abstract. The paper discusses the paradigm of singular quantifiers in Italian (*qualche*, *ogni*, *qualsiasi*, etc.), focusing on the syntactic and semantic properties of the existential *qualche*. In different domains, *qualche* seems to correspond to the English *a few*, *one or more*, *some or other*. The analysis tries to derive the polisemy of this expression from two distinct positions of interpretation, a basic logical meaning and the effect of pragmatic scales. *Qualche* is then contrasted with English *some*, Spanish *algun* and Italian *qualsiasi*. In the second part of the article the theory is tested against the scope possibilities of *qualche*, and the quantificational status of this indefinite is evaluated.

1. INTRODUCTION*

This paper is about the Italian word *qualche*, an existential determiner with various unusual properties: in different contexts, *qualche* can be singular or plural in meaning; its scope tends to be narrow, and it can coexist with an indefinite article (*un qualche*). In the first section I will present in some detail the meaning and distribution of this determiner in the context of other Italian singular determiners, since these interesting data are relatively little–known in the generative semantic literature. I will then argue that the properties of *qualche* follow from the proposal that *qualche* is positionally ambiguous: in one position, it roughly behaves like English singular *some*, or Spanish *algun*; in the other, it is a plain existential determiner which acquires its plural meaning by scalar inferences. I will then compare *qualche* with the English determiner *some*, factoring those aspects in which the two forms diverge, and finally address the question whether *qualche* should be considered a biargumental existential quantifier, or rather an indefinite.

The paper will assume an extended DP structure and a direct mapping between functional layers and meaning types, as in Zamparelli (2000) and Heycock and Zamparelli (2005). However, the focus of the explanation will be on the effects of pragmatic comparison among determiners in the same syntactic positions.

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I. Comorovski and K. von Heusinger (eds.), Existence: Semantics and Syntax, 293–328.

In the Italian-English dictionaries I have consulted, *qualche* is translated as *some* or *a few* followed by a plural nominal. In this paper I will transliterate *qualche* as SOME, and *un qualche* as A SOME (often glossed "some" plus singular N, for reasons given below). *Un qualche* is formed by the indefinite article *un* plus *qualche*, a combination also found in other complex Italian determiners, i.e. *un qualsiasi*+N, lit. "a whichever-it-may-be N" and *un qualunque*+N, lit. "a whichever N". Etymologically, *qualche* is composed by the words *quale* "which" (containing the Italian Wh- morpheme *qu-*), plus the complementizer *che* "that" (cf. the fixed form *quale che sia* "whichever it may be").

2. THE ITALIAN SYSTEM OF SINGULAR DETERMINERS/PRONOUNS

Italian has various determiners which are syntactically singular, and have a null-nominal counterpart containing the morpheme $un_{masc}/uno_{masc}/una_{fem}$ "one" but no visible nominal or pronominal restrictor.[1]

(1)

Meaning	Determiner form	Null-nominal form
Existential	*Qualche* N "Some N" (?)	*Qualc-uno* "Some/some-one"
Existential	*Un(o)* N "A(n)" (article) or 1 (numeral)	*Uno* "One/someone"
Existential	*Un qualche* N "A some N" "Some_{sing}"	Ø
Universal	*Ogni* N "Every N"	*Ogn-uno* "Every-one"
Free choice	*Qualsiasi* N "Any_{fc} N"	Ø
Distributive	*Ciasc-un(o)* N "Each N"	*Ciasc-uno* "Each/each-one"
Negative and negpol	*Ness-un(o)* N "No N"	*Ness-uno* "None/no-one"
Negpol	*Alc-un(o)* N "$\text{Any}_{\text{negpol}}$ N"	Ø

All the determiners in Table (1) select a syntactically singular count noun,[2] and trigger singular verb agreement. However, the *-uno* morpheme is obligatory in the null-nominal form, but *ciascuno*, *nessuno*, *alcuno* keep it also in the determiner form.

[1] For simplicity, the masculine form in *-o* will be used in the rest of this paper.

[2] The exception is a class of abstract mass nouns discussed in Tovena (2001), which can appear with *uno/nessuno/un qualche/un certo*, though not with *qualche*. I set them aside here.

The null-nominal forms in Table (1) can have an implicit partitive interpretation, coindexed with a previous discourse element with which they agree in gender (see (2) and its glosses), or they can be free, as in (3). In the latter case, they are always [+HUMAN,+MASC].

(2) Ieri delle cicogne$_i$ si sono fermate sopra al tetto. . . .
yesterday some storks-FEM$_i$ stopped on the roof. . . .
"Yesterday some storks stopped on my roof. . . ."

a. {Una$_{j\subset i}$ / Qualcuna$_{j\subset i}$ / Nessuna$_{j\subset i}$ / Ognuna$_{j=i}$ / Ciascuna$_{j=i}$}
{one$_{j\subset i}$ / some$_{j\subset i}$ / none$_{j\subset i}$ / every one$_{j=i}$ / each$_{j=i}$}
è stata fotografata e ripresa. *SUBJ*
has been photographed and filmed.
"{One / Some / None / Each / Every one} of them$_i$ has been photographed and filmed."

b. {Una$_{j\subset i}$ / Qualcuna$_{j\subset i}$}, sono riuscito a fotografarla$_j$.
DOBJ, left topicalized
{one$_{j\subset i}$ / some$_{j\subset i}$} I managed to photograph-it$_j$
"I managed to photograph {one / some} of them$_i$."

c. A {una$_{j\subset i}$ / qualcuna$_{j\subset i}$ / ognuna$_{j=i}$}, sono riuscito a dare t_j un biscotto.
IOBJ, left topicalized
to {one$_{j\subset i}$ / some$_{j\subset i}$ / every one$_{j=i}$} I managed to give t_j a cookie
"I managed to give a cookie to {one / some / every one} of them."

(3) a. Sono uscito per strada e ho incontrato {uno / qualcuno}
I have gone out in the street and I have met {one / someone}
"I went out in the street and I met {some guy[3]/ someone}"

b. C'è sempre qualcuno che non parla mai con nessuno.
there is always someone that not talks ever with no-one
"There are always people who never talk with anybody"

c. {Uno / Qualcuno / Nessuno / Ognuno / ?Ciascuno} deve essere libero
{one / someone / no-one / everyone / each one} must be free
per essere felice.
to be happy.

The distribution of the partitive interpretation for the null-nominal forms is restricted: it is only available for preverbal subjects or topicalized direct and

[3] The isolated null-nominal form *uno* is slightly sub-standard.

indirect objects (the three case are illustrated in 2(a–c) respectively).[4] In all other positions, an explicit partitive form (e.g. *qualcuno di essi* lit. "someone of them") must be used to obtain the same meaning. If *di essi* is missing, the free, [+HUMAN, +MASC] interpretation is forced. Thus, (2b) contrasts with (4), whose only meaning without *di essi* is that I have photographed *people* – a *non sequitur* in the context.

(4) Ieri dei pappagalli$_i$ si sono fermati sopra al tetto.
yesterday some parrots$_i$ stopped over the roof.
(Non) ho fotografato {uno /
(not) I_have photographed {one /
qualcuno / nessuno / ?ciascuno / ognuno} *(di essi$_i$).
someone / no-one / each one / everyone} (of them).

Turning to the determiner forms in Table (1), their nominal restrictions can in some cases be replaced by the clitic pro-NP *ne*, optionally coindexed with a topicalized bare nominal under *di* "of", as in (5).

(5) a. Di {ragazze$_i$ / ragazza$_i$}, non ne$_i$ conosco nessuna.
of {girls$_i$ / girl$_i$}, not NE I_know none.
"girls, I know none"

b. Di {piante$_i$ / ?pianta$_i$}, non ne$_i$ ho annaffiata alcuna.
of {plants$_i$ / plant$_i$}, not NE I_have watered any
"Plants, I haven't watered any."

c. Di {piante$_i$ / ?pianta$_i$}, ne$_i$ ho annaffiata (solo) qualcuna.
of {plants$_i$ / plant$_i$}, NE I_have watered (only) some
"Plants, I have (only) watered some."

The *-uno* morpheme is obligatory in all *ne*-pronominalization cases, but impossible when *qualche* is preceded by *un*; as a consequence, there is neither a null-nominal nor a *ne* form for the existential *un qualche* + N "A SOME N":

(6) *(Ne) ho visto un qualc(uno).
(NE) I_have seen a some(one)

[4] It might be possible to unify this condition, treating the subject position as a hidden left-topicalized structure with a small *pro* in the canonical subject position. One problem with this is that objects with universal and negative determiners cannot normally appear as topics (i)(hence their absence in 2b).

((i)) a. *Quanto ai pappagalli, ognuno$_i$ sono riuscito a fotografarlo$_i$.
as for_the parrots, everyone$_i$, I_have managed to photograph-it$_i$

b. *Quanto ai pappagalli, nessuno$_i$ (non) sono riuscito a fotografarlo$_i$.
as for_the parrots, none$_i$, (not) I_have managed to photograph-it$_i$

Thus, the status of these forms in the putative subject left-topicalization remains unclear.

The paradigm is completed by *alc-uni/e*+N, which is plural, and equivalent to the English *some*$_{plur}$. Its null-nominal form, *alcuni/e*, is partitive in meaning: it can only mean "some$_{plur}$ out of a set of contextually salient entities". Again, this meaning is available only in the left-topicalized or pre-verbal subject positions, exactly as in (2). When no partitive coindexation has been set up or can be inferred, null-nominal *alcuni* is deviant, in contrast with *qualcuno* (7a). (7c), for instance, cannot mean "the priest married some people".

(7) *Context: answer to "What happened today in this church?"*

a. Qualcuno deve essersi sposato
someone must have gotten married

b. *Alcuni devono essersi sposati
some$_{plur}$ must have gotten married

c. *Il prete deve aver sposato alcuni.
the priest must have married some$_{plur}$

These data show that null-nominal forms are subject to more restrictions than determiner forms: we have cases where only the determiner form is possible (singular *alcuno*, *qualsiasi*), and cases where it is possible when *-uno* takes either a partitive meaning (a form of coindexation with a nominal), or a free meaning with features [+HUMAN, +MASC]. For unclear reasons, the implicit partitive meaning is available only in certain positions.

What the data suggest is that the DP, perhaps the D position itself, requires a combination of features to be licensed, some of which are normally contributed by N, by its pronominal counterpart *ne*, or by a partitive (overt, like *di loro* or implicit). When N is missing, the necessary features are jointly provided by *-uno* (since the morphemes *ogni*, *qualche* and **ciasc-* cannot function as null-nominal forms) and by the Wh-/quantificational features associated with *qualcuno*, *ognuno*, *qualsiasi* or *ciascuno* (since *alcuno*, which has no visible features of this sort, cannot serve as a null-nominal form).

Having distinguished between various types of null-nominal forms allows me to define the scope of the semantic remarks in the rest of this paper: they are meant to apply to *qualche*+ N, to the *ne* clitic cases (*ne* ... *qualcuno*, see (5)c) and to null-nominal *qualcuno* with a partitive interpretation (2), but not to the free null-nominal *qualcuno* in (3) (see however ft. 9).

Turning to the structure underlying these forms, I will adopt the DP schema in Heycock and Zamparelli (2005) (8).

(8) [$_{DP}$ *quantifiers* [$_{NumP}$ *cardinality predicates* [$_{PlP}$ *operators* [$_{NP}$ N]]]]
basic schema

Cardinal numerals (including "uno") are base-generated in NumP. Adjectives can be inserted in various positions (possibly within additional functional

projections, not represented here), subject to various semantic and/or syntactic constraints. The only constraint relevant for this paper is the distinction between *restrictive* and *non-restrictive* material: following Bernstein (1993), and much work on relative clauses (see e.g. Bianchi 2002), I will assume that non-restrictive modifiers must attach outside the domain containing the noun and all its restrictive modifiers:[5]

(9) [*determiners* [*non-restrictive modifiers* [*restrictive modifiers* N *restrictive modifiers*]]]

For concreteness, in the structure in (8) the edge of PlP (or of some projection above PlP but below Num) will be assumed to be the boundary of the domain within which modifiers can receive a restrictive interpretation.

Assuming the structure in (8), Heycock and Zamparelli (2005) propose that singular quantifiers can appear below other determiners because they are not generated in D, but inserted in a DP-internal functional projection, PlP, which is the level at which a plural denotation can be constructed. In this theory, singular determiners are singular because in complementary distribution with the covert operators in the Pl head which take in input the noun denotation (a set of singulars) and generate a plural denotation (a join semilattice structure).[6]

Building on this idea, I propose that the head *qualche/nessuno* moves to NumP, where the features of the morpheme *-uno* are checked (10), and from there to D, where *qualch-* checks its quantificational features (e.g. the [+QU] of Heycock and Zamparelli 2003). The free null-nominal form is analogous, modulo the absence of NP and the presence of [+HUMAN, +MASC] features (11). *Un qualche* will be rendered as in (12), with *uno* in NumP and *qualche* in its base position.[7] We automatically obtain the non-existence of **un qualcuno*, since *uno* could not check its features in Num, due to the presence of *un*.

(10) a. $[_{DP}$ D^e $[_{NumP}$ Num $[_{PlP}$ **qualch-uno/ogn-uno/ness-uno/ciasc-uno** $[_{NP}$ N]]]] *base*

b. $[_{DP}$ **qualche**$_i$ $[_{NumP}$ t_i $[_{PlP}$ t_i $[_{NP}$ N]]]] *"qualche" in D*

c. $[_{DP}$ **ness-uno**$_j$ $[_{NumP}$ t $[_{PlP}$ t_j $[_{NP}$ N]]]] *"nessuno" in D*

[5]For the present purpose, a modifier M of a noun N is restrictive iff $[M] \cap [N] \subset N$; this is sufficient for *intersective* modifiers (e.g. *carnivorous* in *carnivorous plant*). *Subsective* adjectives (e.g. *big*, in *big galaxy* and *big ant*, where *big* will take the meaning "big_for_a_galaxy" and "big_for_an_ant", respectively) and *intensional* ones require a more complex treatment, which is outside the scope of this paper.

[6]The singularity of these quantifiers could also follow if they were lower than PlP (i.e. within what I tag "NP"), if we assume that an operator in Pl would interfere with the raising of the quantifier.

[7]Alternatively, *un qualche* could be a single complex lexical item which moves as a unit to NumP. This idiomatic analysis seems less likely in light of the (somewhat marginal but well attested) possibility of inserting an inflected possessive adjective between the article and *qualche* (e.g. *una sua qualche attività* "a his SOME activity").

(11) [$_{DP}$ **Qualch-uno**$_{[+\mathbf{HUMAN},+\mathbf{MASC}]_j}$ [$_{NumP}$ t [$_{PlP}$ t_j]]]
null-nominal case

(12) [$_{DP}$ D^e [$_{NumP}$ **un** [$_{PlP}$ **qualche** [$_{NP}$ N]]]]

One syntactic assumption which will play a crucial role in the analysis is that the head *qualche* may be interpreted at NumP (the canonical position for indefinite determiners), or 'reconstructed' from D/Num to the base position Pl, and interpreted there. A technical alternative – more in the spirit of Minimalism – is to think of (10), (11) as involving movement of formal features alone. Either way, when *un* is in Num *qualche* will be obligatorily interpreted in PlP; when Num is empty, the place of interpretation is optional.

Let's now turn to a comparison of the semantic and distributional properties of *qualche*.

3. SEMANTIC PROPERTIES

3.1. Plural or Singular "Qualche"?

The most striking aspect of the semantics of *qualche* is probably the fact that this expression selects a singular count noun, but its meaning is normally *plural*, much like the meaning of plural *some/a few*. In the following cases, *qualche* means "an indeterminate (but typically small) number", greater than one:

(13) a. Ho appena sposato qualche ragazza. *I must be polygamous*
I_have just married SOME girl
"I just married some/a few girls"

b. Ho qualche fratello. *>1 brother*
I_have SOME brother
"I have some/a few brothers"

c. Per vincere, devo fare ancora qualche punto. *>1 point*
to win, I_must score still SOME point
"To win, I must still score a few points"

Qualche can also introduce measure phrases, with meaning *a few*:

(14) a. Marco pesa qualche chilo di troppo
Marco weighs SOME kilo too much
"Mario weighs a few kilos too much"

b. Camminammo per qualche chilometro
we_walked for SOME kilometer
"We walked for a few kilometers"

Similarly, partitive *qualcuno* cannot refer to a proper part of a group with two elements, since such a referent could only be singular:

(15) *Ho visto qualcuno di quei due pappagalli.
I have seen SOME of those two parrots

Turning to binding facts, *qualche*+N allows plural intersentential anaphora[8] (16), but within the sentence it binds a singular pronoun (17).

(16) a. Ho comprato qualche rivista. Sono nella borsa.
I_have bought [SOME magazine]$_i$. (They$_i$) are in_the bag

b. Ho notato [qualche errore]$_i$ qui e lì. Spero di averli$_i$
I_have noticed [SOME mistake]$_i$ here and there. I_hope to have_them$_i$
marcati tutti.
marked$_{plur}$ all
"I noticed some errors here and there. I hope to have marked them all."

(17) [Qualche dirigente]$_i$ voleva parlare subito con il suo$_i$/*loro$_i$
[SOME manager]$_i$ wanted to speak immediately with the his$_i$/their$_i$
avvocato.
lawyer
"Some managers wanted to speak immediately with their lawyer"

However, in 'donkey'-anaphora *qualche* can be picked up by a singular pronoun:

(18) Se ho qualche spicciolo in tasca, te lo metto sul
If I_have [*some* coin]$_i$ in the pocket, (I) CL **it**$_i$ put on the
cruscotto.
dashboard
"If I have coins in the pocket, I will put them on the dashboard"

The pattern in (16) and (17) is common to *every*, another quantifier with a syntactically singular restriction which normally ranges over more than one object (cf. [*every student*]$_i$ *discussed* [*his*$_i$ *assignment*]$_j$. *Overall, they*$_i$ *found them*$_j$ *difficult.*). *Every*, however, notoriously fails to serve as an antecedent in 'donkey'-anaphora like (18). I will return to the significance of this fact in Section 7, where I will address the question whether *qualche* is a genuine quantifier or an indefinite.

One important aspect in which *qualche* differs from *every* is that there are many natural contexts where *qualche*+N allows either a singular or a plural interpretation. Adding the indefinite article *un* before *qualche* forces a singular meaning. In the rest of this section I will give a few examples of these contexts.

[8]This is somewhat marginal for some speakers, but any speaker I have asked finds it better than the same example with *singular* anaphora.

First, in subject position, the plurality is more a preference than a requirement, and it partly depends on the lexical choice of verbs (19).

(19) Qualche studente mi ha {?riconosciuto / ?salutato / ??sposato}.
SOME student me has {recognized / greeted / married}
'1 student' meaning
"Some student or other has {recognized / greeted / married} me"

In object position, a singular meaning is perfectly acceptable in intensional contexts such as the antecedent of conditionals, future, optative and interrogative clauses (20) (from Longobardi 1988), and declaratives with an epistemic "must" (21).

(20) a. Se incontri qualche avvocato alla festa, fatti aiutare.
if you_meet SOME lawyer at_the party, ask for help
(*one is sufficient*)
"If you meet lawyers at the party, ask for help"

b. Mario troverà pure qualche donna che lo ami, prima o poi.
Mario will_find indeed SOME woman who him loves, sooner or later
"Mario will sooner or later find some woman or other who loves him"

c. Magari fosse riuscito finalmente a trovare qualche donna che lo amasse!
if only he_had managed finally to find SOME woman who him loved!
"If only he had managed to find some woman or other who loved him!"

d. Ha poi trovato qualche donna che l' ami?
has_he then found SOME woman who him loves?
"Did he eventually find some woman who loves him?"

(21) a. Qualche donna deve pur aver partorito questo bambino.
SOME woman must after all have delivered this baby
"Some woman or other must have delivered this baby"

b. Questo bambino deve pur essere il figlio di qualche madre.
this baby must after all be the son of SOME mother
"This baby must be the son of some mother"

c. La madre deve essere da qualche parte.
the mother must be in SOME place.

Here the plural interpretation for *qualche* is still available in principle, but it is sometimes ruled out by world knowledge.[9] The complex determiner *un qualche*, on the other hand, is strictly semantically singular. It can replace *qualche* in object positions in 20 and 21, with little or no meaning difference, see e.g. (22) and two examples from the WWW, in (23).[10]

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[9]In its free meaning, the null-nominal *qualcuno* favors a singular reading. Contexts which force a plural interpretation for *qualche*+N have no effect on *qualcuno*$_{[+\text{HUMAN},+\text{MASC}]}$, as illustrated by the minimal pair:

((i)) a. Ho sposato qualche ragazza che conosci. *cf.* 13*a: only '>1 girl' meaning*
I_have married SOME girl that you-know
"I married some/a few girls you know."

b. Ho sposato qualcuno che conosci. *cf.* 13*a: '1 person' meaning OK*
I_have married SOMEONE that you-know
"I married someone you know."

The singular meaning seems to be conversationally implied by *qualcuno*, but this implicature can easily be overridden (iia). This is not possible in those context where *qualche*+N has a plural meaning: (iib) is contradictory.

((ii)) a. Ho visto qualcuno, ma non più di 3 o 4 persone.
I_have seen someone, but not more than 3 or 4 people

b. #Ho qualche fratello, ma in effetti solo uno.
I_have SOME brother, but in fact only one

These data are compatible with the analysis proposed in the following sections (see footnote 21).

[10]There is a distributional difference between *qualche* and *un qualche*: the latter is marginal in preverbal subject positions even in the relevant singular-inducing contexts (i).

((i)) a. ?? Un qualche docente deve essere svizzero / uno straniero.
A SOME teacher must be Swiss / a foreigner.

b. ??Un qualche studente ha telefonato?
A SOME student has phoned?

The judgment is confirmed by a search of the occurrences of "un qualche" in Italian web pages: when subject, this form always appears post-verbally. We can make some sense of this difference starting from the structures proposed for *un qualche*, repeated here:

((12)) $[_{\text{DP}}\ \text{D}^0\ [_{\text{NumP}}\ \textbf{un}\ [_{\text{PIP}}\ \textbf{qualche}\ [_{\text{NP}}\ \text{N}]]]]$

The distribution of this forms is restricted to those environments where empty heads are independently licensed (roughly, objects of verbs and prepositions, and certain types of post-verbal subjects, see Zamparelli 2000). This suggests that with *un qualche* the D head, which is normally licensed by the determiner, remains empty, possibly because *un* blocks movement of *qualche* (or of its abstract features) to D. I speculate that this effect might be due to the Wh- features of *qualche*, since the parallel construction *un certo* "a certain" has no distributional restrictions.

(22) Se incontri un qualche avvocato alla festa, fatti aiutare.
if you_meet A SOME lawyer at_the party, ask for help
1 is enough, see (20)a

(23) a. Johnny somigliava a un qualche personaggio di un qualche film
Johnny resembled A SOME character from A SOME film
Google
"Johnny resembled some character from some film"

b. A meno che non si verifichi un qualche intoppo: un gene[...]
unless not arises A SOME problem: a gene[...]
oppure un qualche fattore ambientale.
or A SOME factor environmental
"...unless some problem or other doesn't arise – a (defective) gene or some environmental factor"

The differences between *qualche* in (13)–(14) and *(un) qualche* in (20)–(23) are not limited to number. Pretheoretically, we could describe their meanings by saying that in plural[11] usages *qualche* contributes the meaning of "an indeterminate small number of", while a singularly interpreted *(un) qualche* nominal conveys indeterminacy of the *identity* of the object referred to. Specifically, singular *qualche* seems to pick out an object whose sortal identity cannot or does not need to be determined beyond the content of the restrictor itself.

This contrast manifests itself in the possibility of elaborations (*cioè* ... "namely"), which are much stranger with singular *(un) qualche* (24b, c), even in those interrogative or conditional contexts where the singular reading is otherwise natural.

(24) a. Ho incontrato qualche compagno di scuola, cioè Vito,
I_have met SOME schoolmate, namely Vito,
Stefano e i loro amici della IV-B
Stefano and their friends from IV-B.
"I met some schoolmates, namely Vito, Stefano and their friends from IV-B"

b. Hai incontrato un qualche compagno di scuola
have_you met A SOME schoolmate
??(, cioè Vito)?
??(, namely Vito)?

c. Se incontrassi un qualche compagno di scuola ??(, cioè
if you_met A SOME schoolmate ??(, namely
Vito), fammi sapere.
Vito), let_me know

[11] Here and below I will use the terms "plural" and "singular *(un) qualche*" purely in their semantic sense. Syntactically, *qualche* is always singular.

cf. "If you meet some schoolmate or other, namely Vito, let me know".

The elaborations show that the speaker has a very precise idea of who the hearer might meet, but this contrasts with the indeterminacy associated with singular *qualche*.

Additional evidence for this effect comes from measure phrases. The meaning of units of measure is perfectly determined (e.g. *kilo* denotes, say, a specific function from objects/places to numbers), and cannot be made any more or less specific. As a result, in (25) singular *un qualche* is redundant (the nominal is already fully identified), and deviant, while as seen in (14) *qualche* with a plural interpretation is fine.

(25) Il pacco pesa (*un) qualche chilo?
the pack weighs (A) SOME kilo?
cf. "Does the pack weigh some kilo?"

The meaning of singular *qualche* is not isolated. The Italian form *un qualsiasi*+N seems similar to *un qualche*+N, whereas *qualsiasi*+N has a quasi-universal meaning similar to that of free-choice *any* in English (Chierchia 2006). Cross-linguistically, the Spanish indefinite determiner *algun* has been said to have an "epistemic free choice" meaning (Alonso-Ovalle and Menéndez-Benito 2003) which seems virtually identical to singular *(un) qualche*. German *irgendein* (Kratzer and Shimoyama 2002), French *un quelconque* (Jayez and Tovena 2002) seem also closely related. Yet, none of these latter forms has the plural meaning we see in e.g. (13), probably a reflex of the fact that *alg-un, irgend-ein* and *un quelconque* all contain a morpheme meaning "one".[12] The challenge, then, is to give an analysis of *qualche* which can account for the alternation between what we can call the "plural numeral" meaning and the "epistemic free choice" meaning.

3.2. A Scale-Based Analysis for Plural "Qualche"

My proposal is that the two meanings are a reflex of the two DP-internal positions *qualche* can occupy: when interpreted in PlP, *qualche* takes the NP as its argument and functions as a domain widener, giving the "free choice" effect, much as it has been proposed for *algun*, *irgendein* and *qualsiasi*. When interpreted in NumP/DP, *qualche* has no special effect on the restriction and is treated as an existential quantifier. The plural meaning – I will argue – comes from a pragmatic inference. But the two meanings are not available in the same contexts: domain widening has a

[12] French *quelques* seems to have specialized for the plural meaning (cf. English *some$_{plur}$ people*), leaving the free-choice meaning to *quelque*+Count N (Corblin 2004) and especially, in modern French, to *un quelconque*. I tentatively propose that *quelques* is directly generated in Num, *quelque* and *quelconque* in P1, and that the analysis presented in this paper applies to these expressions without major modifications. However, I have not had the possibility to examine in detail the differences between French and Italian with respect to these indefinites.

purpose only in certain modalized contexts; outside those contexts, the epistemic free-choice meaning is unavailable and only the plural numeral meaning survives.

To spell this out, consider (26) as a candidate for a logical meaning common to all our indefinite DPs, setting aside for the moment the question whether (25) comes from the lexical meaning of the determiners, or from some type of existential closure.

(26) $[\![[_{\text{DP}}\ \textbf{Det}_{indef}\ \text{XP}]]\!]^{w,g} = \lambda\, \text{Q}\big[[\![\text{XP}]\!]^{w,g} \cap \text{Q} \neq \emptyset\big]_{\langle\langle et\rangle t\rangle}$

In Italian, DPs introduced by *un* "a", *almeno un* "at least one", *qualche*, "SOME", *uno o più* "one or more", *più di zero* "more than zero", etc. will all have (26) as their semantic value proper (modulo the fact that the last two will range over plural noun denotations). To obtain the fact that different indefinite determiners differ in meaning, I propose (with Krifka 1999, Landman 2003, among others) that each determiner may adds to this basic logical component of meaning additional logical requirements (e.g. a filter for a specific cardinality), plus a set of pragmatic constraints, whose net effect is to make the information conveyed by its use compatible with Grician maxims, and minimize the overlap between the meanings of distinct forms.

A well-known example of such constraints is scalar implicatures based on Horn scales. The standard account of why *a man arrived* suggests that not more than one man has arrived relies on Grice's maxim of Quantity (see e.g. Levinson 1983): if the speaker had the information that more than one person had arrived, it would have been more informative to say so (since the arrival of more than one person entails the arrival of one). As a result, the hearer infers that the speaker has no evidence for the arrival of more than one person, or has evidence to the contrary. This implicature must of course be blocked for *at least one* or *one or more*, or these forms would end up being synonymous with *a/one* (see Krifka 1999 for a way to implement this idea).

Deciding whether two elements are in a Horn scale is a delicate matter. The first requirement, it seems, is that they can be seen as part of a paradigm, a class of expressions with some formal or semantic similarities. The second requirement is that the meaning of one element must entail the meaning of the other. The third is that the two expressions must be able to apply to the same type of arguments; in other terms, the speaker can evaluate the pragmatic effect of using an expression A rather than B at a certain point in the derivation only if both A and B are applicable at that point. When meaning types are tied to syntactic positions, this can lead to cases where heads of distinct phrases simply cannot be compared: in an abstract structure such as (27) where A dominates the attachment point for B, A and B can be in a scale only if α and β – their respective arguments – have the same semantics, which will generally not be the case.

(27) $[\textbf{A}\ [_{\alpha}\ \ldots\ [\ \textbf{B}\ [_{\beta}\ \ldots\ ]]]]$

With this in mind, let's consider the semantics of *qualche*. Relativizing the meaning to the position in which this word is interpreted, we have two cases: *qualche*$_{num}$ (interpretation at the level at which indefinites like *un/a* are normally evaluated) and *qualche*$_{pl}$ (interpretation at PlP, below the indefinite level). The latter is forced when *qualche* is preceded by the indefinite article.

Consider *qualche*$_{num}$ first. In a maximally economical theory, nothing should be said about the semantics of *qualche*: by hypothesis, its logical meaning should be the existential quantification in (28) applied to the domain of *qualche* at the point of interpretation (i.e. the Pl projection). But this is just the meaning of *un PlP*: any semantic difference between *qualche* and *un* must thus follow from their different pragmatic effects.

(28) $[\![[_{\text{NumP}}\ \text{qualche}_{num}\ [_{PlP}\ t\ \text{NP}]]]\!]^{w,g} = \lambda \text{Q}\big[[\![\text{PlP}]\!]^{w,g} \cap \text{Q} \neq \emptyset\big]$

Let's see how. Hearing *qualche*$_{num}$ *persona è arrivata*, the hearer should assume that the speaker has provided the most informative statement compatible with his or her knowledge. This time, however, the hearer cannot conclude that only one person has arrived, since if the speaker had known that much, he or she would have used the indefinite article *un*. Evidently, *qualche* competes with *un* for the singular meaning. The question is why it loses.

The answer I propose is that morphological complexity counts as a metric for such cases: the least informative meaning, the singular, is won by the element with the simplest morphological composition, i.e. the article *un*, in contrast with *qualche*, the combination of the complementizer with the Wh- features. Seen the other way round, a non-singular, more informative meaning is assigned to the marked *qualche* rather than to the unmarked *un*.

Along a different scale, this time measuring specificity of information, *qualche* competes in one direction with *more than one*, which has a completely non-specific, evenly distributed disjunctive meaning ("two or three or ..."), in the other, with the cardinal numbers and the vague numerals *parecchi* "several", *molti* "many" and *pochi* "few" (all of which must add to their basic existential meaning some further specification about small/large cardinality). The resulting 'paucal' meaning of *qualche*$_{num}$ is thus framed between the meaning of the singular indefinite article and the more specialized meanings of 'multal' expressions and cardinal numbers.[13, 14]

As we shall see in section 4, this scale-based derivation has consequences for the behavior of *(un) qualche* in downward-entailing environments.

[13]Of course, *qualche* could not mean any *specific* cardinal number, since if the speaker had known a specific value a more informative cardinal could have been used.

[14]The fact that the meaning of *qualche* is essentially defined by negation over the meaning of more specialized or more basic determiners might help understand why it cannot be intensified with adverbs (i), or compared (ii):

((i)) Questo bimbo ha davvero {molti / pochi / *qualche} dentino/i.
this baby has really {many / few / *SOME} small tooth/teeth

3.3. Domain-Widening "Qualche"

Let's now turn to the semantics of the epistemic free-choice *qualche*$_{pl}$, taking the lead from Alonso-Ovalle and Menéndez-Benito (2003) treatment of *algun*, in turn based on Kratzer and Shimoyama's (2002) account of why *irgendein* must be in the scope of a modal.[15]

The starting point is the DP structure in (29), with all restrictive adjectival modifiers NP-internal, plus the assumption that the overt nominal restriction, contributed by the the denotation of NP, can be narrowed down by the effect of additional *implicit* restrictions generated by the utterance context.

(29) [$_{\text{DP}}$ (Det) [$_{\text{NumP}}$ (*indef*) [$_{\text{PlP}}$ (*qualche*) [$_{\text{NP}}$ (*modifiers*) N (*modifiers*)]]]]]

Suppose that the context in which an utterance takes place can be seen as a reservoir of properties (the "domain properties") which can be conjoined with the denotation of the nominal, narrowing it down. Let's call the composition of the overt NP denotation with the implicit domain properties the "final restriction". Two questions immediately arise: at which point the domain properties are intersected with the NP denotation, and which sort of properties the context provides.

We can think of domain properties as "implicit attributive modifiers" that must be added to overt N modifiers (adjectives, PPs, relatives). Let's assume that, as for all other modifiers, their meaning is combined with the meaning of the noun incrementally, beginning from the modifiers closest to the noun and moving outward, in a compositional fashion. It turns out that the point at which domain properties are added makes a large difference for semantic processing. To see why, consider the following case. I utter:

(30) Every Albanian child is male.

Taken at face value, (30) is obviously false, a signal that some implicit restriction must be added. The context is one where we have been talking about two classes of children in the local kindergarten, classes A and B. The situation is as in (31).

((ii)) a. C' è qualche straniero in Libano, *(in confronto all' Iraq)
there is some foreigner in Lebanon (in comparison to Iraq)
(cf. "There are a few foreigners in Lebanon (*in comparison to Iraq)")

b. Ci sono molti / pochi / parecchi stranieri in Libano, in confronto all' Iraq
there are many / few / several foreigners in Lebanon, in comparison to Iraq

Here *qualche* clearly patterns with *a few* (while *a small number of foreigners* patterns with *few* in (iib), *pace* kayne's 2007 attempt to reduce *a few* to *a small number*).

[15] I will use a different formalism from the one in Kratzer and Shimoyama (2002), who are less specific on the assignment of meaning to layers. Their analysis of *irgendein* could be recast as [$_{NumP}$ -ein [$_{PlP}$ irgend- NP]] plus movement of *irgend* to *ein*, and semantic reconstruction of *irgend-* to its lower position.

(31) a. children in kindergarten = {a, b, c, d, e, f, g, h, i}
b. in class A = {a, b, c, d}
c. in class B = {e, f, g, h, i}
d. Albanians = {h, i, j}

As a first attempt, suppose that no particular order of insertion for implicit modifiers is specified. As a result, some of the domain properties will end up being added *before* all the overt modifiers have been processed. The problem with this solution is that implicit modifiers, being the result of inferences and guesses over the mind states of discourse participants, are far more unreliable than explicit ones; if the wrong implicit modifier is chosen and inserted early in the derivation it can preempt the contribution of overt material later on. For instance, suppose that I guess that the quantification in (30) is to range only over children *in class A*. I intersect ⟦children⟧ with ⟦class A⟧, obtaining (31b). Now if I intersect further with [Albanian], I obtain the empty set – an impossible restriction. I have to "undo" the intersection, select ⟦class B⟧ as a domain property and finally derive a well-formed intersection: {h,i}, excluding just {j}.

What this example shows is that domain properties should be added *after* the noun's denotation has been combined with all its overt modifiers. Only at this point can I try out different potential domain properties without backtracking, or decide that none is needed after all. The syntactic corollary is that context-induced restrictions should be added at the edge of the domain for restrictive modification, that is, in the present framework, at the edge of PlP.

The next question concerns the nature of contextual properties. Some have to do with what the speaker "has in mind" or "finds salient" in the domain of discourse, while others express what the speaker knows about the mind of others. Consider (32).

(32) a. "I am looking for a man" (says John)
b. John is looking for a man

Uttering (32a), John might intersect ⟦man⟧ with, say, ⟦person I_{John} have in mind⟧, obtaining a restriction true only of the particular person he is looking for. But if I have heard (32a) and I am convinced that John is looking for a specific person, I could report this fact as (32b), where the final restriction is given by intersecting ⟦man⟧ with ⟦person John has in mind⟧. Obviously, I might have no idea whatsoever of which person John has in mind, thus no idea about who the final restriction ends up picking; but this is not at all different from the denotation of many overt restrictions, such as *top winning number at next year's national lottery*. Yet, in both cases I do know one thing, namely that the final restriction is going to be true of a single entity.

Seen intensionally, the difference between (32a) and (32b) is that in the former the final restriction ⟦NP⟧∩P, with P = [John has in mind *x*], will be true of the same

individual (in some trans-world identity sense of *the same*) in all worlds compatible with John's beliefs, while in the latter the change of speaker makes the denotation of $[\![\text{NP}]\!] \cap \text{P}$ be different in every world compatible with the new speaker's beliefs. It will always be, however, a singleton property.

The linguistic importance of restrictions which apply to just one object (even when we are unable to say to which object they apply in the actual world) is reflected by the existence of modifiers such as *certain*, which arguably signal to the hearer the presence of a final restriction that is a singleton property (see a similar analysis in Jayez and Tovena 2002).[16]

(33) [*a certain NP*] presupposes that there is a contextually salient P such that $|\ [\![\text{NP}]\!]^{w,g} \cap \text{P}| = 1$

We are now in a position to consider the effect of *qualche*$_{pl}$: my proposal is that this expression preempts the combination of NP with the contextual properties by combining with the NP denotation right before contextual restrictions can be applied, at PlP. Thus, for all possible worlds w and variable assignments g, with $\mathbf{C}^{w,g}$ the set of contextually salient properties and Pl a functional head in the PlP layer, we normally have the NP in (34a) interpreted as in (34b) at the next level up. With *qualche* in Pl, the situation is instead (34c).

(34) a. $[\![[_{\text{NP}}\ \text{man}]]\!]^{w,g} = \{\text{x} \mid \text{x is a man in w}\}$

b. $[\![[_{\text{PlP}}\ \text{Pl NP}]]\!]^{w,g} = [\![\text{Pl}]\!]\big([\![\text{NP}]\!]^{w,g} \cap \mathbf{P}\big)$ for some P in $\mathbf{C}^{w,g}$, when Pl$\neq$ *qualche*; otherwise:

c. $[\![[_{\text{PlP}}\ \textit{qualche}\ \text{NP}]]\!]^{w,g} = [\![\textit{qualche}]\!]\big([\![\text{NP}]\!]^{w,g}\big)$[17]

If on the other hand *qualche* is interpreted outside PlP, the denotation of NP is intersected with the domain property as in [b], and then fed to the existential. This way, the "domain widening" effect of *qualche* is triggered on and off, depending on the LF position of its source.[18]

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[16]This idea immediately extends to (i), which had to be dealt with separately in Hintikka's 1986 original analysis, under the assumption that proper names preceded by indefinites behave like common nouns: (i) expresses the proposition that there is a John Mainard at the door and that there is a property P which, intersected with the set of people named John Mainard, gives me a property uniquely satisfied by the individual at the door.

((i)) There is a certain John Mainard at the door.

More needs to be said, but I have to leave *a certain* on the side in this paper.

[17]The way contextual properties are selected is a separate issue, which I will not address here. The existence of 'null contexts', cases where intersecting the overt restriction with the context does not reduce the NP restriction, can be modeled by assuming that D, the set of all possible individuals, i.e the most general property, is a member of $\mathbf{C}^{w,g}$.

[18]To remain within standard terminology I will continue to call "domain widening" the effect of *qualche*$_{plp}$, but it should be clear that the effect of *qualche* is actually that of *blocking context-induced domain narrowing*.

The logical value of an indefinite DP containing *qualche*$_{pl}$, whether preceded by *un* or not, is again the broad existential seen in (26). But the presence of *un* makes a difference with respect to whether a plural interpretation is possible at all, as illustrated by the minimal pair:

(35) A giudicare dalla sua improvvisa ricchezza, si direbbe che
judging from his sudden wealth, one would_say that
Mario abbia vinto...
Mario has won...

a. un qualche lotteria. *"**a some** lottery" one at most*

b. qualche lotteria. *"**some** lottery", one or more*

Again, this follows from pragmatic principles. In (35a) the presence of *un* makes the DP participate in the Horn scale of numerals, as described above; by scalar implicatures, *un qualche NP* obtains a singular reading. In (35b) *un* is missing and *qualche*$_{pl}$ licenses NumP/DP, functioning as a full-fledged determiner. This time, however, *qualche* is not in the same pragmatic scale with the indefinite article, since their restrictions are now different: the restriction of *qualche*$_{pl}$ has been "widened", that of the indefinite article and other numerals has not. *Qualche*$_{pl}$ conveys a meaning of indeterminacy and it is no longer comparable with other indefinite determiners. As a result the singular meaning is not blocked pragmatically and the DP can be semantically singular or plural.

To see the interaction of *(un) qualche*$_{pl}$ with a modal, it is convenient to switch to Kratzer and Shimoyama's (2002) Hamblin semantics for indefinites. In Kratzer and Shimoyama's proposal, indefinites are never existentially closed, but denote *sets of alternatives*. Suppose that this set is available at NumP and DP:

(36) $[\![[_{\text{NumP/DP}}\ \text{una}\ [_{\text{PlP}}\ \text{qualche}\ [_{\text{NP}}\ \text{donna}]]]]\!]^{w,g} = \{\text{Anna, Maria, Carla}, \ldots\}$
for all the women in D at w

A predicate applies to an indefinite DP by applying 'pointwise' to all of its members, in $\mathbf{R}_s$, generating a set of propositions.

(37) a. A girl come to the party. *cf. Alonso-Ovalle and Menéndez-Benito 2003*

b. $\mathbf{R}_s = \{\text{Anna, Carla}\}$,
$[\![[\text{came to the party}]]\!]^{w,g}\left([\![[\text{a girl}]]\!]^{w,g}\right) =$
$\{\ \lambda w'[\text{Anna came to the party in } w'],$
$\lambda w'[\text{Carla came to the party in } w']\ \}$

Modals operate on the set of propositions. A set containing a modal (e.g. an epistemic operator such as *IT IS COMPATIBLE WITH MY BELIEFS THAT* ...) is true at w iff for each world w' epistemically accessible from w, there is at least one

proposition in the set the modal operates on which is true at w'.[19] Since *qualche*$_{pl}$ (like *algun*) blocks the application of contextual restrictions, an indefinite containing *qualche*$_{pl}$*/algun* generates a larger set of propositions than a simple indefinite. The crucial step is now the assumption that domain widening must be done for a purpose (see Kadmon and Landman 1993 on *any*$_{fc}$): in particular, the propositions which are introduced in the denotation of a sentence of the form [[$_{DP}$ *un qualche* NP] PREDICATE] *in virtue* of the presence of *qualche* must all be true in some of the worlds epistemically accessible to the speaker. To see a case where this condition fails, consider:

(38) #Ho sposato una qualche ragazza. *cf. (13)a*
I_have married A SOME girl

Suppose, with Alonso-Ovalle and Menéndez-Benito (2003), that a statement of this sort are implicitly epistemically modalized by an operator which indicates *partial* knowledge. In modern Western societies, it is normally safe to assume that in all the worlds that represents what the speaker knows about a particular marriage of his or her, the bride/groom will always be the same. This simply formalizes the idea that, at least for a certain time after the wedding, I have total knowledge of *who* I have married. But the DP *una qualche ragazza* denotes the disjunction of all the girls in the domain, the vast majority of whom will have no place in my belief-worlds. Hence, *qualche* has been used without a purpose (saying *a girl* would have achieved the same effect). The infelicity of (38) follows.

Interestingly, a change in person may be sufficient to improve the sentence: (39) is more natural than (38), since it justifies the fact that the speaker might not know anything about the woman who has been married except for the fact that she has been married by Mario.

(39) Mario ha appena sposato una qualche ragazza
Mario has just married A SOME girl

We can see the same pragmatic mechanism at work with overt disjunctions. Hearing (40a), the hearer concludes that the speaker does not know which of the two women has been married, but this lack of knowledge is harder to justify in (40b) – hence the oddness of the disjunction.

(40) a. Jack has just married Paula or Sue
b. #I have just married Paula or Sue

Going back to the contexts in which singular *qualche* is possible, we see that the contexts in (20)–(21), the antecedent of conditionals, optatives and interrogatives, all characterize states of incomplete knowledge on the part of the speaker, and therefore license *qualche*$_{pl}$. In other cases (e.g. (19), (23)), it must be the type

[19] See Jayez and Tovena (2002) for an account in the same spirit, with different formal tools.

of predicate which allows for the possibility of incomplete knowledge.[20] But where the speaker must be assumed to have full knowledge of the identity of the indefinite (e.g. (13), (14)), free-choice *qualche*$_{pl}$ becomes impossible. The only possibility interpretation is the vague numeral *qualche*$_{num}$, hence the plural-only meaning.[21]

Let's take stock. In this section I have proposed that the plural/singular alternation of *qualche* is due to two different pragmatic meanings for this words, linked to the place of interpretation. The situation is summarized in the following table:

Structure	**Logical meaning**	**Pragmatic meaning**	**Semantic environment**	**Syntactic environment**
[$_{NumP}$ qualche$_{num}$ [$_{PlP}$ t NP]]	$\lambda Q\big[[\![PlP]\!]^{w,g} \cap Q \neq \emptyset\big]$	$\lambda Q\big[\lvert[\![PlP]\!]^{w,g} \cap Q\rvert > 1\big]$ plural: via scalar impl. with *un*	Non-downward-entailing (*see below*)	Unrestricted
[$_{NumP}$ un [$_{PlP}$ qualche$_{pl}$ NP]]	$\lambda Q\big[[\![NP]\!]^{w,g} \cap Q \neq \emptyset\big]$	$\lambda Q\big[\lvert[\![NP]\!]^{w,g} \cap Q\rvert = 1\big]$ singular: scalar impl. from *un*	Modals (from domain widening)	Lexically governed positions (see ft. 10)
[$_{NumP}$ Num [$_{PlP}$ qualche$_{pl}$ NP]]	$\lambda Q\big[[\![NP]\!]^{w,g} \cap Q \neq \emptyset\big]$	$\lambda Q\big[\lvert[\![NP]\!]^{w,g} \cap Q\rvert \geq 1\big]$ either: (no scalar impl.)	Modals (from domain widening)	Unrestricted

4. SCOPE

An account of the meaning of determiners based on scalar implicatures cannot be complete without some tests in downward-entailing (DE) contexts, where the usual scalar implicatures are reversed: the fact that I have not seen three people does not entail that I have not seen two, or one. Vice versa, if I have not seen one person, I have not seen two or three people either: 1 is now the most informative element in the scale. Recall that we had assigned the same logical meaning to *un*, *qualche* and other indefinites, i.e. $\lambda P \lambda Q[P \cap Q \neq \emptyset]$; scalar implicatures did the rest, with the least marked items (what we call the "indefinite article") taking the singular

[20] Interestingly, in cases like (39) the indefinite *un* is obligatory to get the 'free-choice' singular meaning: when *un* is missing, the preferred interpretation is that Mario has married more than one girl at once. This shows that the *qualche*$_{pl}$-licensing epistemic operator we need to postulate for these cases is actually a last-resort device: it is introduced to salvage the sentence when we have the form *un qualche*, which can only be interpreted as a singular 'free choice'; in the absence of *un*, however, language prefers to let *qualche* be interpreted as a vague numeral rather than introducing the necessary epistemic operator.

[21] Returning to the behavior of the null-nominal form *qualcuno* exemplified in footnote 9, we can now assume that the *qualch-* of *qualcuno* is not the domain widener (since there is no restriction), but the 'plural numeral' *qualche*. The possibility of a singular meaning follows from the fact that the pronoun *qualcuno*, unlike *qualche*, is probably not in a comparison class with *uno*. When *uno* is a determiner, there is no structural similarity and thus no blocking; when it is a [+HUMAN, +MASC] pronoun it is not in the same stylistic register as *qualcuno*, see footnote 3.

meaning, the informational lower bound, and *qualche* selecting 'paucal' plural values, probably due to the effect of other, more specific expressions meaning "many", "several", etc. The reasoning which led to the exclusion of the singular meaning is no longer valid in DE-contexts. Here, *qualche*, *un* and *uno o più* "one or more" etc., end up being fully equivalent.

Language doesn't seem to favor semantic equivalence in the functional domain (particularly when the items involved have a different markedness status), and has various ways to resolve it when it arises. Scope is one of them; in some cases, $qualche_{num}$ can regain its plural meaning by moving outside the negative DE-environment at LF: in (41), for instance, we see it obligatorily taking scope over a clause-mate negation.[22] This gives *qualche* the appearance of a "positive polarity item".

(41) Non leggo qualche libro (p.es. quelli scritti troppo piccoli) *only* $\exists > \neg$
I don't read SOME book, (e.g. those printed too small)
"There are some books I don't read (the others, I do)"

The effect is not always strong, but it is clear enough to be noticeable when outscoping negation is not an option, as it happens with measure phrases. (42) could not mean "there are some grams the letter does not weigh": as a result, the indefinites are forced to an odd-sounding narrow scope (it would have been more natural to say: the letter doesn't weigh a single gram), or to associate with the 'metalinguistic' negation (suggesting that the letter actually weighs zero grams).

(42) ?La lettera non pesa {qualche grammo / uno o più grammi.}
the letter not weighs {SOME gram / one or more grams}
"The letter doesn't weigh {some grams / one or more grams}"

In principle, another solution to avoid the collapse of *qualche* and *un* in DE-environments would be to interpret *qualche* as $qualche_{pl}$. DE-contexts would not create a conflict between the pragmatic meanings of $qualche_{pl}$ and *un*, since the two remain distinct: the former widens the restriction, the latter doesn't. However, a negative environment *per se* does not license $qualche_{pl}$, as we see if in (41) we replace *qualche* with *un* $qualche_{pl}$ (43).[23] Scoping *un qualche* outside the negation wouldn't help here, since the required epistemic modal would still be missing.

(43) a. ??Non ho risposto a una qualche domanda.
I haven't answered A SOME question

[22] I am setting aside another possible reading, where the negation associates with the determiner, giving roughly the meaning: "*qualche* is not the appropriate determiner to use in the the sentence *leggo qualche libro* 'I read some books'." This is 'metalinguistic' negation.

[23] According to Jayez and Tovena (2002), French *un quelconque*, which seems in many respects to correspond to *un qualche*, is licensed by negation. I have no way to investigate this difference at present, though a way to capture the effect would be to propose that, under negation, French can insert implicit epistemic modals (like those needed in (39)) more easily that Italian.

b. ??Non ho un qualche fratello.
I don't have A SOME brother

c. ??Non ho sposato una qualche ragazza.
I haven't married A SOME girl

However, in (20), we have seen other DE-environments which are compatible with situations of partial knowledge and thus license *un qualche*: the antecedent of a conditional, the restriction of *every*, an optative operator, questions. We conclude that these environments do not just allow $qualche_{pl}$, but actually disfavor $qualche_{num}$.

One interesting result of this situation is that when the structure [NEG... *qualche*] is embedded under an environment which licenses $qualche_{pl}$, the indefinite can easily take scope *under* the negation (a fact noted for *some* in Farkas 2003:54, who cites Szabolcsi 2004; see also Baker 1978). The following examples all favor a narrow scope existential:[24]

(44) a. Se non trovi qualche soluzione, sarai nei guai.
if not you_find SOME solution, you_will_be in trouble
"If you don't find some solution or other, you'll be in trouble"

b. Ogni bambino che non ha qualche foglio per scrivere
every child who not has SOME sheet to write on
verrà sgridato.
will_be scolded
"Any child who doesn't have some sheet to write on will be scolded"

c. Non conosci qualche giocatore?
not you_know SOME player?
"Don't you know some player or other?"

d. Magari non conoscesse qualche giocatore d'azzardo,
If_only not he_would_know some gambler,
quel ragazzaccio!
that rascal boy!
"If only he didn't know some gambler, that rascal boy"

This fact is a problem for other theories (see e.g. Farkas 2003), but it follows directly from the present analysis: thanks to the implicit epistemic modal introduced by the external operators, $qualche_{pl}$ is allowed with scope above or below negation.

[24] Intermediate scopes are also possible. In (i) the preferred scope is if > ∃ >Neg (Samek-Lodovici, p.c.).

((i)) Se non avessi risposto a (una) qualche domanda, dimmelo.
If not I_had answered (a) SOME question, let me know
"If there are questions that I have not completed, let me know"

Inserting *qualche*$_{num}$ and scoping it outside negation like in (41) would not help here, since the operator would remain in a DE-environment.

The next question is whether *qualche* is ever able to take widest scope across islands, as some indefinites are well known to do (the so-called "free scope"). In general, the answer is no: in (45) *qualche* can only take narrow scope, unlike the simple indefinite article and (interestingly) English *some*, as shown in (46).

(45) a. Se vedi (un) qualche poliziotto che ci conosce, fammi
if you_see (A) SOME cop that us knows, give me
un cenno. * ∃ > *if*
a sign.
"If you see some cop who knows us, give me a sign"

b. Ogni uomo che conosce (una) qualche persona che amo
every man who knows (A) SOME person I love
è fortunato *∃ > ∀
is lucky

(46) If I meet again some guy I just had a fight with, I'll kill him. *OK* ∃ > if

Sentences with three potential scopes, like (47) (adapted from Farkas 2003) and (48), confirm and refine the same pattern. All the speakers I have asked reject the widest scope of *qualche*, and most accept the narrow scope as the most natural (particularly in the absence of *un*). Some speakers also accept an intermediate scope. I will return to this possibility in a moment.

(47) Ogni collezionista ha deciso di comprare ogni album
every collector has decided to buy every album
pubblicato da (un) qualche fotografo ungherese.
published by (A) SOME photographer Hungarian.
"Every collector decided to buy every album published by some Hungarian photographer."

(48) Ogni professore$_i$ sarà felice se (un) qualche suo$_i$ studente
every professor will rejoice if (A) SOME his student
imbroglia agli esami.
cheats in_the exams.
"Every professor will rejoice if some or other of his students cheats in the exam"

To see the reason for the impossibility of wide scope, we need to examine the two meanings for *qualche* separately. If *qualche* is *qualche*$_{num}$, the fact that it cannot scope out is, if not clear, unsurprising: no vague or complex numerals in Italian or English can take free scope, with the notable exception of English *some*: *many*,

few, *several*, *one or more*, *more than three*, *exactly four*, etc, are all island-bound. I will not deal with the nature of this constraint here, but see Zamparelli 2000, Section 6.3, and Winter 2001, Section 4.3 for discussion.

The exact reason why *qualche*$_{pl}$ and *un qualche*$_{pl}$ cannot take free scope depends on the origin of this possibility for other indefinites (*a, some*, simple numerals). In the "singleton property" approach, proposed in Schwarzschild (2002) and similar in many respects to Kratzer (1998), indefinites introduce existential quantifiers whose structural scope positions are not different from those of *every* or *most*; the impression of wide scope comes from the restrictions, which in a suitable context may end up applying to a single individual. In this case, the structural position of the quantifier becomes irrelevant. For instance, if in the context $[\![$building in Washington$]\!] = \{\mathbf{w}\}$, (49a) becomes equivalent to (49b).

(49) If *some building in Washington* is attacked by terrorists, US security will be in danger.

a. $[\exists x\ [\mathbf{building\_in\_Washington}'(x) \cap \mathbf{attacked}'(x)] \rightarrow \mathbf{danger}(\mathbf{security})]$
$\equiv$

b. $\exists x\ [\mathbf{building\_in\_Washington}'(x) \cap [\mathbf{attacked}'(x) \rightarrow \mathbf{danger}(\mathbf{security})]]$
wide scope

This account heavily relies on the idea that overt restrictions may be further constrained by context-dependent domain properties. If *qualche*$_{pl}$ blocks these additional restrictions, we immediately derive the inability of *qualche*$_{pl}$ to become a singleton and take (apparent) free scope.

Suppose on the other hand that free scope is obtained by means of "choice functions" (Reinhart 1997, Winter 1997, etc.). Now a representation of the widest scope of (45a) would be something like:

(50) $\exists f$ se [OP tu vedi f(un qualche poliziotto che ci conosce)], fammi un cenno. *cf. (45)*

The effect of the function f is that of picking a single individual. In a Hamblin semantics, this means that a single proposition will be formed and combined with the modal operator (OP). But now the effect of *qualche* on the restriction is wasted, again against the idea that domain widening must be done for a purpose.

Some speakers accept intermediate scopes for (47) (in (a): "for every collector, there is some (possibly different) Hungarian photographer whose albums that collector decided to buy"). To obtain this reading, we need to distinguish between implicit contextual restrictions (the domain property), which are blocked by *qualche*, and bound variables which may be implicit in the restriction. For instance, by saying (51) I do not mean that I am looking for anybody who is generally "a friend" of someone else, but that I am looking for just any old friend *of mine*.

(51) Sto cercando un qualche amico.
I_am looking for A SOME friend.

I suggest that the intermediate scope reading could result from an implicit relation containing a bound variable (e.g. "collected by *x*") associated with *fotografo* and bound by *ogni collezionista*.

5. SOME DIFFERENCES BETWEEN "QUALCHE" AND "SOME"

So far, following standard dictionary translations, I have glossed *(un) qualche* as (small caps) (A) SOME, avoiding the issue of whether and to what extent Italian *qualche* corresponds to the English *some* in meaning and distribution. It is now time to address this question directly.

One obvious difference between *qualche* and *some* is that *some* can be syntactically singular or plural. *Some*+N_{plur} is always semantically plural, *some*+N_{sing} always singular. The epistemic free-choice *un qualche*$_{pl}$ has been translated as *some*+N_{sing} or *some* N_{sing} *or other*, while *qualche*$_{num}$ was translated as *some*+N_{plur} or *a few*+N_{plur} (I disregard here the difference between *some* and *a few*). The formula *some . . . or other* is indeed acceptable in all those cases which allow a singular *(un) qualche* (see e.g. (19)—(23)).

Let me sketch an explanation for this division of labor between *some*+N_{sing} and *some*+N_{plur}. Suppose that the logical value of the two forms is the same, i.e. $\lambda Q[[\![N]\!] \cap Q \neq \emptyset]$. Suppose, moreover, that singular *some* is generated in PlP, with the same domain-widening capabilities as *qualche*. Plural *some*, on the other hand, is generated in NumP, if not higher, given the contrast:

(52) a. He took some two kilos of sand. = "*approximately two kilos. . .*"
b. *He took some one kilo of sand. = "*approximately one kilo. . .*"

I will assume that singular *some*, just like *qualche*, can be interpreted at Num. However, due to their formal similarity, the two *some* in Num compete in a Horn scale.

As a result, the existence of *some*+N_{sing} blocks the possibility for *some*+N_{plur} to be used with a singular meaning, and vice versa. *Some*+N_{sing} cannot take the pragmatic meaning of a simple singular indefinite, since it is blocked by the indefinite article *a*, but the epistemic free-choice meaning (the singular domain-widening meaning of *un qualche*$_{pl}$) remains available.

However, *some* diverges from *(un) qualche/algun* in allowing free scope, as we saw above in (46), and in having three additional possible meanings which are not shared by *(un) qualche* or *algun*.

The first is what Farkas (2003) calls the 'derogatory meaning' of *some*: the speaker may know the identity of the indefinite, but he or she implies, by using *some*, that this identity is actually irrelevant or uninteresting for the hearer. *Some* can in fact be used to convey that the speaker is withholding information which

could in principle allow the hearer to identify the object to which the restriction applies (perhaps because this information is inappropriate, or to be given later, etc.). This meaning (let's call it the "irrelevant identity" reading) is perfectly compatible with the range of extensional contexts which block *un qualche*, like those in (13), but is blocked by the presence of the modifier *...or other*. It is also very close to *a certain*.

(53) a. I just married some girl (#or other).

b. I have some brother (#or other).

c. I know some guy (#or other) who could help you out of this problem.

A second meaning, discussed in Alonso-Ovalle and Menéndez-Benito (2003), is found in examples such as:

(54) a. (*Context: at a university party a person of which all I know is that he is a professor starts dancing on the table*)
Look! Some professor is dancing lambada on his table! *(Alonso-Ovalle and Menéndez-Benito, 2003), ex.9*

b. As you have seen, when we entered the university I was hugged and kissed by some student. Well, I have no idea who she was!

Qualche, *un qualche*, *algun* or *irgendein* could never be used in the equivalent of these sentence. What is peculiar about these cases is that both speaker and hearer have perceptually identified the individual at issue. What they lack is any further information about his or her identity. Let's call this meaning the "unknown identity" reading.

The third meaning available to *some* and unavailable to *(un) qualche* is the "evaluative property" reading, which may be modified by *quite* and can appear as a predicate.

(55) a. Sam is (quite) some stud.

b. They are (quite) some scientists.

Here *some* seems to offer a comment on the extent of someone's studness or scientific prowess. I believe this reading is genuinely different from the others, and I will not discuss it here any further.

The existence of the "irrelevant" and "unknown identity" readings for *some* but not for *un qualche* and other indefinite determiners raises interesting questions. Determiners are functional categories, and as for other functional categories, linguists have tried to factor their cross-linguistic differences in terms of the smallest possible number of features, to be learned by the child acquiring the language.

In the simplest possible linguistic world, we could expect determiners to be cross-linguistically composed of similar features, perhaps those features which form natural classes together. This would justify saying that two languages have 'the same' determiners.

Now, to what extent are English *some* and Italian *un qualche* 'the same' determiner? In many respects, they certainly pattern alike. They behave the same in negative contexts: like *qualche*, *some* takes scope outside a clause-mate *not* (see (56)) unless when embedded within a downward-entailing operator with an epistemic modal character (the reader can verify with the translations of (44)).

(56) Mary did not buy some apartment in San Francisco when she could have afforded it and now it's too late. *(Farkas, 2003)*

Moreover, they are identical in their behavior with copular sentences. Unlike numerals, *qualche* and *some* are not cumulative and cannot appear with group predicates like *be a team/group*.

(57) a. Two persone sono già una squadra.
2 people are already a team

b. ?? Qualche persona è un gruppo/una squadra/una pluralità.
SOME person is a group/a team/a plurality
cf. *"Some people are a group/a team/a plurality"

Last, neither *some* nor *qualche* can be bound by adverbs of quantification, unlike the indefinite article:

(58) {*Qualche / uno} svedese è sempre alto.
{SOME / a} Swede is always tall
cf. *"Some Swede(s) is/are always tall"

Yet, as we have seen, there are meanings which are restricted to one of these forms and not the other. Any approach which tried to construct a unified semantic theory for all the meanings of *some* would be inadequate for *qualche*.

Which are the features, then, that distinguish *some* from *qualche*? All I can offer at present is some speculative remarks. The key to understand the two forms is the way we identify an entity. "Identifying" does not mean having a single hard and fast property which uniquely applies to an entity, but rather increasing the number of properties which we can use as alternative ways to pick that entity. Consider for instance (59). B is not an adequate response to A, even though it uniquely identifies an individual; B′ is. However, (59 B) can be an acceptable answer to (60 A), since it does add useful additional information.

(59) A: Who are you?

B: The person you are speaking to right now.

B′: Roberto Zamparelli.

(60) A: Who is Roberto Zamparelli?

B: The person you are speaking to right now.

Let's go back to the most problematic case, singular *some* in e.g. (54 a):

((54a)) Look! Some professor is dancing lambada on his table!

Suppose that *some* has the same choice of positions as *qualche*, and that in this particular case it is interpreted in *Num*, since there is no modal to license the PlP interpretation. Unlike *qualche*, *some*+N_{sing} cannot be semantically plural, for it is blocked by *some*+N_{plur}; since it is interpreted above the position where the final restriction is computed, it quantifies over the whole final restriction. This is as it should be: the meaning we want is strongly contextualized: *professor* seems to mean *professor we are looking at in this very moment*. This can be modeled by saying that in every world w compatible with my beliefs the property P of being the special dancing professor before my eyes is uniquely satisfied by an individual, say **k**. I suggest that in this context the role of singular *some*+PlP can be characterized as in (61):

(61) There is no property Q such that

a. $Q = [\![PlP]\!]^{w,g}$ for all variable assignments g and worlds w compatible with the beliefs of the speaker s, and

b. $Q \cap [\![PlP]\!]^{w',g} = \emptyset$ in some other possible world w' accessible by s.

In words, if I am the speaker I have in my beliefs no additional property distinct from the final restriction by which the individual(s) picked up by the final restriction could be uniquely identified. Part (b) of the definition makes sure that we are considering only additional properties that are truly distinct from the restriction, and not just in an entailment relation with it. The use I have called the "irrelevant identity" reading would be the same, except this time the speaker simply believes that it is the hearer who has no additional identifying property for the description the speaker is providing.

For illustration, suppose I know that Robert Louis Stevenson is the author of *Treasure Island*. Thus, in all the worlds which represent my beliefs it holds:

(62) $\iota[\![\text{guy that wrote } \textit{Treasure Island}]\!]^{w,g} = \mathbf{s}$

I could use *some* in the meaning under discussion, as in *The prof told us to read an essay by some guy that wrote* "*Treasure Island*", only if I didn't have in my beliefs (or thought that my hearer doesn't have in his/her beliefs) that, for instance:

(63) a. $\iota[\![\text{guy that wrote } \textit{The bottle imp}]\!]^{w,g} = \mathbf{s}$

b. $\iota[\![\text{guy that wrote } \textit{The Strange Case of Dr. Jekyll and Mr. Hyde}]\!]^{w,g} = \mathbf{s}$

c. ...

Evidently, the notion of "additional identifying property" needs refinement: there are probably many additional outlandish properties which do not count for the purpose of using *some*. Perhaps the additional identification should in turn be constrained by context.

Since in this use of *some* the final restriction can be as narrow as a single individual, we expect that this meaning of *some* should have the possibility of free scope, much as the simple indefinite in (49) above (see Schwarzschild 2002).[25] However, *some* still cannot be used with entities which are hard to identify in multiple ways. A prime example is that of numbers and measuring units:

(64) a. *[some kilo] *cf. 25*

b. *[some number two] *cf.* "*a certain number (*two)*"

It is possible that the "unknown identity" meaning of *some* is not completely excluded for *qualche*$_{pl}$, at least for some readers. In cases like (65), a scope outside the restriction of *ogni* "every" seems much easier to obtain.

(65) Ho sentito dire che ogni collezionista ha deciso di comprare
I heard that every collector has decided to buy

ogni album di un qualche fotografo ungherese,
every album by A SOME photographer Hungarian,

il cui nome al momento mi sfugge.
whose name at present eludes me.

"I heard that every collector decided to buy every album published by some famous Hungarian photographer, whose name at present eludes me."

Again, this meaning of *un qualche* is very close to the meaning of *un certo*, the difference being that with *qualche* the speaker is not expected to be able to provide further identification. I will leave a more precise analysis of the differences between these "specific" meanings of *some* and *qualche* unexplored for the time being.

[25] In a choice-functional account, the possibility of wide scope would be given by the fact that this use of *some* is not vague and it is not domain widening, the two factors which played a role in limiting the scope of *qualche*.

6. "QUALCHE" AND "QUALSIASI"

Chierchia (2006) has proposed a scale-based analysis for another singular determiner, *qualsiasi* 'any$_{fc}$' which seems very similar to the present analysis for *qualche*, since *qualsiasi* is treated as a domain-widener over the denotation of N/NP. Both analyses make very minimal additional assumptions on the semantics of these forms, putting the burden on the pragmatic effect of widening combined with a simple existential quantification. The problem is that native speakers of Italian have the clear intuition that (66 a) and (66 b) differ in meaning.[26]

(66) a. Sto cercando un qualche dottore.
I am looking for A SOME doctor

b. Sto cercando un qualsiasi dottore.
I am looking for A ANY doctor
"I am looking for a doctor whatsoever"

One could thus suspect that one of the two analyses must be incorrect, or at least very incomplete.

This conclusion would be too rushed, I think. *Qualche* and *qualsiasi* can both be analyzed as elements that widen the domain of the restrictor (a direction of analysis confirmed by the fact that DPs containing *qualsiasi* and *qualche*$_{pl}$ have very similar distributions), if we acknowledge the fact that a restriction can be widened in two different ways. *Qualche* prevents contextually salient properties from intersecting with the NP denotation, whatever it may be. *Qualsiasi*, on the other hand, stretches the denotation of N itself. According to Chierchia, *qualsiasi*+N (and *any*+N) 'widens' the denotation of its N argument by selecting the widest possible domain of quantification (within a range of reasonable candidates). For our purposes, this is the domain where the denotation of N is a superset of the denotation of N in any other domain; this operation maximizes the number of objects which count as instances of N: 'marginal cases' are now included. For instance, *qualsiasi dottore* 'any doctor' might enroll among possible relevant doctors even chiropractors or voodoo healers.

The effect of *qualche* is much less radical: it simply makes sure that even if a particular doctor or kind of doctor happens to be salient, *qualche*$_{pl}$ *dottore* will still range on the full denotation for *dottore*, and not over, say, 'doctors of the kind salient in this moment'. Put otherwise, *qualche dottore* affects the answer to the question: "which doctor?", *qualsiasi dottore*, the answer to the question "what kind of doctor", and only derivatively "which doctor". In practice, the effect of *qualsiasi* subsumes that of *qualche*: if the speaker has used *qualsiasi* to decrease the information on the nature of N, the hearer can infer that no contextually implicit property

[26] I am actually extrapolating, since Chierchia acknowledges the existence of the order *un qualsiasi N*, but does not actually provide a full analysis for it.

(of the sort filtered out by *qualche*) should be understood to restrict N. It would make little sense to widen N and then let the context restrict it again.

The idea that *qualsiasi* directly affects the denotation of N can explain a very low position within DP, immediately after the noun (see Crisma 1991, Cinque 1994), a region of the DP which has been associated with a kind or intensional property denotation (see e.g. Krifka 1995, Zamparelli 2000). This position is completely precluded to *qualche*:[27]

(67) a. qualsiasi/qualche dottore

b. un (qualsiasi/qualche) dottore

c. un dottore (qualsiasi/*qualche)

If we map *qualche* onto *whichever* and *qualsiasi* onto *whatever/whatsoever* we obtain a parallel effect:

(68) a. whatever/whichever person

b. no person whatever/whatsoever/*whichever

A second difference between *qualche* and *qualsiasi* is that the latter never seems to lose the 'free choice' meaning: no instance of *qualsiasi* can appear outside a modalized context, unlike $qualche_{num}$. This seems to indicate that *qualsiasi* is for some reasons always interpreted in its base position, or al least, within NP. Unfortunately, I have to leave a closer comparison between *qualche* and *qualsiasi* to another occasion.

7. IS "QUALCHE" A QUANTIFIER?

The last question I want to address is whether the existential meaning I have associated with *qualche*, in (26), is part of its lexical semantic specifications. If this was the case, *qualche* would be inherently diadic, with an internal argument (the nominal restrictor), and an external one (the main predicate). Any well-formed instance of *qualche*+N in a position reserved for properties (e.g. a predicate nominal) would require a special type-shifting from $\langle\langle et\rangle t\rangle$ to $\langle et\rangle$ (à-la Partee 1987). The alternative is for *qualche* to be an indefinite, a property modifier which is quantificationally closed only by external means (e.g. some version of existential closure). In this

[27] It should be noted that in the post-N position *qualsiasi* has a second meaning as well, which can be rendered as *average* or *non-descriptive*. This reading is favoured in cases such as (i).

((i)) Sto cercando un uomo qualsiasi, non un Einstein o un Bill Gates.
I am looking for a man average, not an Einstein or a Bill Gates.
"I am looking for an average man, not an Einstein or a Bill Gates".

case, *qualche*+N would natively denote a property and we could expect it to fit in small clauses and copular constructions without any need for type-shifting.

At a first look, the data seems to support the position that *qualche* is a 'native' quantifier. Like *ogni* 'every', it cannot appear as a predicate in cases such as:

(69) a. *Quella persona è qualche ragazzo italiano.
That person is SOME Italian boy

b. *I partecipanti sono qualche ragazzo italiano.
The participants are SOME Italian boy

(70) a. *{Gianni / Nessun ragazzo / Ogni ragazzo} qui presente è
{Gianni / no boy / every boy} here present is
qualche studioso.
SOME scholar.

b. *{Gianni / Nessun ragazzo / Ogni ragazzo} qui presente è un
{Gianni / no boy / every boy} here present is (A)
qualche studioso.
SOME scholar.

(71) *Io considero Gianni (un) qualche grande studioso.
I consider Gianni (A) SOME great scholar

Next, *qualche*, unlike *un* and like *ogni* cannot be bound by adverbs of quantification.

(72) {*Qualche / *Ogni / Uno} svedese è sempre alto.
{SOME / every / a} Swede is always tall
cf. *"Some Swedes(s) is/are always tall"

If *qualche* was a quantifier, its inability to escape syntactic islands could be quite conveniently reduced to the fact that *every* and other quantifiers are island-bound. The only case where *qualche* could escape islands was in combination with *un*, in (65), and there we could somehow attribute the effect to the indefinite article.

However, the evidence for this simple analysis remains inconclusive. The correct behavior of *qualche* in (69)–(72) could be derived only if this word was *obligatorily* analyzed as a quantifier. But (65) already shows that, in its position after the indefinite article, *qualche* must behave as a monoargumental modifier, hence an indefinite; it is not clear why this meaning should not be available also in the absence of *un*.

Additional data show that *qualche*+N does not always behave like *every* or *each*. A first important difference is that *qualche* can appear in those existential sentences where 'strong' (= 'quantificational', in some accounts) determiners, definite article included, would be deviant:

(73) Esiste {una / qualche / ??la / *ogni / *ciascuna}
there_exists {a / SOME / the / every / each}
soluzione a questo problema.
solution to this problem.

Second, *qualche* does not trigger the presuppositions of existence associated with quantifiers like *every*, *most* or *the*: (74) does not imply the existence of any mistake.

(74) Se trovi qualche errore, fammi sapere.
if you find SOME mistake, let me know.

Third, as we saw in (18), repeated below, *qualche* can be the antecedent of a singular pronoun in donkey-anaphora:

((18)) Se ho qualche spicciolo in tasca, te lo metto
If I_have [SOME coin]$_i$ in the pocket, (I) CL **it**$_i$ put
sul cruscotto.
on the dashboard
"If I have coins in the pocket, I will put them on the dashboard"

Fourth, in Italian the quantifiers *ogni* "every" and *ciascuno* "each" followed by a simple NPs cannot appear in the clitic left-dislocated position (75a, b). However, *qualche* is perfect in the same position, with the typical plural interpretation.

(75) a. ?? {Ogni / Ciascun} amico$_i$, l'$_i$ ho chiamato ieri.
{every / each} friend$_i$, (I) him$_i$ have called yesterday.
"Every/Each friend, I called yesterday"
b. Qualche amico$_i$, l'$_i$ ho chiamato ieri.
some friend$_i$, (I) him$_i$ have called yesterday.
"Some friends, I called yesterday"

This might perhaps follow from the binding behavior in (18), if one assumed that in the dislocated position a quantified nominal cannot C-command the clitic pronoun.

As for the predicative examples in (69)–(71), their unacceptability could be due to a combination of factors which do not hinge on *qualche* being a quantifier. In (69a) and (70a) there is a mismatch between the singular subject and the semantically plural predicate. (69b) shows that the mismatch cannot be solved simply by having a syntactically plural subject: plural subjects with singular predicates are possible in English or Italian, but only if the predicate can be understood cumulatively, as in e.g. *Those boys are a problem*. But (57b) above has already shown that *qualche* + N cannot be interpreted cumulatively (i.e. *qualche*$_{num}$ + N cannot be coindexed with a group noun). If on the other hand the predication is read distributively, the predicate must agree with the subject (so we have *Those boys are*

*actors/*an actor*). This is of course not what happens in (69b), hence its ungrammaticality. If however the subject is plural and *qualche_num* is embedded in a conjunction, (76), the predicate nominal becomes perfect.

(76) I partecipanti sono quattro o cinque matricole e qualche
the participants are 4 or 5 freshmen and SOME
studente del secondo anno
student from second year
"The participants are some four or five freshmen and some second year students"

The singular predicative reading (cf. b) can be saved using a modal context which licenses *qualche*$_{pl}$:

(77) Quella macchia sul radar potrebbe essere qualche veicolo da
that spot on_the radar could be SOME vehicle to
intercettare.
intercept.
"That spot on the radar could be some vehicle to intercept"

The impossibility of binding by adverbs, shown in (58) above could again be due to a contrast between the pragmatic effects of this type of quantification and the semantics of *qualche*. In general, vague numerals are not easily bound by adverbs or generics, see (78); *some/qualche*$_{num}$ could be worse simply because its number if even less specified.

(78) Many Italians always make a lot of noise. *? in the meaning:* "*Italians always make noise, when in large numbers*"

As for the domain-widening *qualche*$_{pl}$, its contribution would be redundant, since adverbs of quantification already range on the total denotation of the nominal restrictions (so, even if there are speaker-salient Swedes, *a Swede is always tall* in (58) remains a statement about Swedes *in general*). This is an essential part of the pragmatic effect of this class of generic expressions, which is, very roughly, that of establishing law-like regularities (see Carlson 1977).

What these data tell us is that *qualche* is not parallel to *ogni/every*. There could be two explanations. Either *qualche* is lexically a quantifier, but existential quantifiers behave differently from universal ones despite their common logical type, or *qualche* is not (or not always) a lexical existential quantifier, and its logical meaning comes from some non-lexical operation of existential closure. The first hypothesis is of course difficult to test, since we no longer have at this point any clear case of *lexical* existential quantifier to test it against. Until sharper tests are developed, the matter must remain open.

8. CONCLUSIONS

The analysis presented in this paper has largely been an exercise in (and hopefully, an exploration of) the syntax–pragmatics interface. I have proposed that the complex behavior of the Italian determiner *qualche* and its variants follows from the two positions in which this expression can be interpreted, and from the interplay between a logical meaning (which may or may not be part of the lexical specification of the determiner itself) and a pragmatic meaning, computed by comparing *qualche* with the pragmatic meanings of other determiners in the same Horn scale. Morphological markedness plays a role in determining the position in the scale, and the final pragmatic meaning.

The singular, 'indeterminate' interpretation for *qualche* and *un qualche* has been attributed to a low LF position which 'bleeds' contextual restrictions, obtaining the so-called domain-widening effect. The fact that this meaning is available only in certain intensional contexts can provide an explanation for the complex behavior of *qualche* under negation. If the proposal is on the right track, specifying multiple *qualche* (or multiple meanings of *qualche*) in the lexicon becomes largely unnecessary.

One issue in need of further work is the difference between *qualche* and *some*. Despite many similarities, the latter seems to be open to a reading where the restriction is a property that singles out an entity known to the speaker, provided this entity cannot be identified by additional (salient?) properties. One interesting question is whether this difference could be cast purely in terms of intensionality (*some* would be sensitive to intensional properties in a way *qualche* or *algun* are not). A symmetrical proposal has in fact been advanced for the definite determiner by Dayal (2004) (the Italian definite article would be intensional, the English one would not). My hunch is that in the final picture intensionality is going to be an ingredient, but probably not the only one.

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