

SEMANTICS AND PRAGMATICS OF ARBITRARINESS*

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Dissertation Proposal

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1. INTRODUCTION

This proposal explores the typology of a number of impersonal [1] and passive [2] constructions in several languages based on their semantic characterisation and pragmatic properties.

- (1) They speak English in America.
- (2) The enemy ship was sunk.

I will refer to all of the constructions considered here by a descriptive cover-term *constructions with arbitrary interpretations (arbs)*¹. Various authors have described as *arbitrary* the interpretations of pronouns and null syntactic elements (PRO) that do not involve antecedents or bound-variable interpretations (Jaeggli 1986, Lebeaux 1984, Cabredo-Hofherr 2002, inter alia). These items then yield sentence interpretations that have a generic or impersonal flavour to them. Another property that all of the constructions considered here have in common is the demotion (in the several senses to be defined below) of the agent.

While some of the constructions I am going to investigate have received previous attention in the literature, others have avoided inquiry altogether. The questions in semantics of arbitrariness remain far from fully resolved; at the same time, to my knowledge only one work (Prince 2003, *to appear*) has touched on the question of arbs' discourse functions. Moreover, to-date there is no unified account examining the similarities and differences between the different arbitrary constructions within a language and cross-linguistically. This gap in research and understanding

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¹ I am extending here the usage of the term *arbitrary* from its application to the null subjects in the Spanish 3rd-person plural null pronouns [i] (compare with [1]) (Suñer 1983), which in turn derives from its usage for the agents of certain infinitival clauses [ii] (e.g., Lebeaux 1984).

i. Spanish (example, translation from Cabredo-Hofherr 2002) ii. [_{CP} PRO To write a dissertation] is hard.

Tocan a la puerta.

knock.3PL on the door

'Someone's knocking on the door' (lit. 'They're knocking on the door')

stands in contrast to the work on non-arbitrary NPs, whose typology, semantics, and pragmatics are fairly well-explored².

The goal of this dissertation is twofold. First, I want to introduce a semantically-driven typology into the diverse realm of impersonals and passives. I will argue that some arbs are uniformly indefinite, while others are uniformly definite, drawing attention to previously unobserved behaviour of different arbs with respect to adverbial quantification. Further differences between the two types of arbs (and non-arbitrary NPs) emerge in their interaction with topic structure and discourse anaphora. Secondly, I want to contribute to the development of semantic theory by arguing that the use of Decision Theory in the formal treatment of (in)definiteness can bring forth new insights, both empirical and theoretical. Although these insights apply to both arbitrary and non-arbitrary NPs, empirical ground gained through this approach is particularly crucial in developing a uniform treatment of arbs – the first goal of this dissertation.

1.1 Background information.

The semantics of arbitrariness has received significant attention in the literature (Jaeggli 1986, Cinque 1988, Condoravdi 1989, Kim 1991, Chierchia 1995, Koenig and Mauner 1999, Alonso-Ovalle 2002, Cabredo-Hofherr 2002, inter alia), with proposals for the interpretation of arbs ranging from uniformly indefinite analyses (e.g., Chierchia 1995), to work treating arbs as special kinds of definite pronouns (e.g., Alonso-Ovalle 2002), to accounts arguing that arbs are ambiguous between several formal translations (Cabredo-Hofherr 2002).

The empirical data in the present proposal comes from 3rd-person plural constructions with antecedentless pronouns in Russian (where the subject is obligatorily null, unlike the anaphoric pronouns), English (where both anaphoric and antecedentless 3rd-person plural pronouns are overt), and Italian (where both kinds of pronouns are null) [3i,ii,iii], short verbal passives in Russian and English [4i, ii], Russian *sja*-passives [5] and morphosyntactically somewhat similar Italian *si*-impersonals [6], German impersonal pronoun *man* [7i] and English impersonal pronoun *one* [7ii], and the arbitrary interpretation of the second-person pronoun (singular, in those languages that make the distinction) [8i,ii].

(3) **i.** Russian

- a. *V Amerike govorjat po-anglijski.*
In America speak.3PL in-English.
‘They speak English in America.’ ($\approx \forall$)

- b. *Segodnja v Bejrute ubili nevinного cheloveka.*
Today in Beirut killed.3PL innocent person.
‘Today in Beirut they killed an innocent.’ (\exists)

ii. Italian

- a. *In America parlano inglese.*
In America speak.3PL English
‘They speak English in America.’ ($\approx \forall$)

- b. *Oggi a Beirut hanno ucciso un innocente.*
Today in Beirut have.3PL killed an innocent
‘Today in Beirut they killed an innocent.’ (\exists)

² The body of literature on interpretation of non-arbitrary NPs is too large to reference here. Some samples include Heim (1983), Farkas and de Swaart (2003) (semantic typologies of NPs), Link(1983), Landman (1989), Schwarzschild (1991), Dayal (2003,2004) (semantics and context-dependency in definite and indefinite NPs), Walker, Joshi, and Prince (1995) (effects of NPs discourse), among other works by these and many other authors.

iii. English

- a. They speak English in America. ($\approx \forall$)
- b. Today in Beirut they've killed an innocent. (\exists)

(4) **i. Russian**

- a. *V Amerike vchera byl radostno otmechen Den' Nezavisimosti.*
In America yesterday was joyfully celebrated Day of Independence
'Independence Day was joyfully celebrated in America yesterday.' ($\approx \forall$)
- b. *Vchera byl potoplen vrazheskij korabl'.*
Yesterday was sunk enemy ship.
'Yesterday, an enemy ship was sunk.' (\exists)

ii. English

- a. Independence Day was joyfully celebrated in America yesterday. ($\approx \forall$)
- b. Yesterday, an enemy ship was sunk. (\exists)

(5) **Russian**

- a. *V Rossii Novyj god prazdnovalsja dolgo i radostno v etot raz.*
In Russia New year celebrated.SJA long and joyfully in this time
'In Russia, New Year was celebrated long and joyfully this time around' ($\approx \forall$)
- b. *V restorane 'Odessa' segodn'a prazdnuetsja svad'ba i dva dnja rozhden'ja.*
In restaurant 'Odessa' today celebrates.SJA wedding and two days of birth
'In the restaurant 'Odessa' today, a wedding and two birthdays are being celebrated.' (\exists)

(6) **Italian (from Chierchia 1995: 107, 108)**

- a. *In Italia, si beve molto vino.*
In Italy SI drinks much wine
'They drink lots of wine in Italy' ($\approx \forall$)
- b. *Oggi a Beirut si è ucciso un innocente.*
Today in Beirut SI is killed an innocent
'Today in Beirut, an innocent was killed.' (\exists)

(7) **i. German**

- a. *Man wäscht die Hände vor dem Essen.*
MAN washes the hands before the meal.
'One washes one's hands before meals.' ($\approx \forall$)
- b. *Gestern hat man ein Haus abgebrannt.*
Yesterday has MAN a house burned.
'Yesterday, someone burned a house.' (\exists)

ii. English

- a. One has to wash one's hands before meals. ($\approx \forall$)

(8) **i. Russian**

- a. *Takih pejzazhej teper' ne uvidish'.*
Such.GEN landscapes.GEN nowadays not will.see.2SING

‘You won’t see such landscapes nowadays.’ ($\approx \forall$)

ii. English

a. You don’t get that kind of view of the countryside anymore. ($\approx \forall$)

Morphosyntactically, this is very diverse group: some constructions have agent-denoting arb serving as the subject, with main verb showing agreement with the arb (2nd-person pronouns, 3rd-person plural pronouns) or 3rd-person singular agreement (*one*, *man*); other constructions have a covert agent³, and the patient occupies the subject position (passives and *sja*-passives, Italian *si*-impersonals⁴).

All of the items under investigation have been claimed to have arbitrary or impersonal interpretations, in that they are “used when the intention of the speaker is to remain vague about the exact identity of the subject” (D’Alessandro 2004 on *si*).

The constructions introduced above have several interpretations, with readings varying across two dimensions: apparent quantificational force (the chief focus in this proposal), and the domain of quantification. Sentences with 3rd-person plural arbs [3i,ii,iii], implicit agent/cause in passives [4i,ii] and *sja*-passives[5] are compatible with generic or almost-universal interpretation for the arb (all the [a] examples), as well as with (seemingly) existential interpretations (all the [b] examples). The domain of apparent quantification for the arbs in [3]-[5] is often given by a locative or temporal adjunct.

Sentences involving *man* [7i] or *si* [6] can have universal ([a] examples) or existential ([b] examples) quantificational force. The domain from which the reference of these items is drawn may include or exclude the speaker (Kratzer 1997 and D’Alessandro 2004, respectively). Sentences with arbitrary 2nd-person pronouns [8] as well as arbitrary pronoun *one* [7ii] can have generic, but not existential interpretation, a property further discussed in *section 4*. Arbitrary interpretation of 2nd-person pronoun always has a sense of addressee and speaker inclusion or at least an appeal for empathy.

The discussion of the role of arbs in discourse mainly concerned their referential properties. Authors discussing syntax and semantics of Italian *si*-impersonals, for instance, noted that while it can support reflexive anaphors, it is unable to provide antecedents for intersentential anaphora (Cinque 1988, Chierchia 1995). In fact, the only item that can be used to refer to the agent denotation in a *si*-impersonal construction (outside of very local contexts licensing reflexive

³ I am looking at short **verbal** passives and *sja*-passives. In both of these constructions, as well as in Italian *si*-impersonals, the agent/cause argument is present in the syntactic representation. For instance, it can control the PRO in purpose clauses (in this case, it is always an agent) [i,ii,iii].

i. Russian

a. *Komnaty zdes’ chasto provetrivajutsja, chtoby uluchshit’ kachestvo vozduha.* The vase was sold to raise money.
Rooms here often air.SJA to improve quality of.air
‘Rooms here are frequently aired to improve the air quality’

ii.English

b. *Gaz byl ispol’zovan chtoby usypit’ terroristov.*
Gas was used to put.to.sleep terrorists
‘Gas was used to put the terrorists to sleep’

iii.Italian

Si va a biblioteca per leggere un libro.
SI goes to library to read a book
‘One goes to the library to read a book.’

⁴ However, see D’Alessandro (2004) who treats *si* as a subject pronoun of its sentences. The stereotypical function of the *si* morpheme is reflexive, like that of the Russian *sja*.

anaphors) is *si* itself. In certain intra-sentential contexts the second (and subsequent) occurrences of *si* may be dropped. Even more restricted behaviour emerges when we examine referential properties of the German *man* or its Yiddish equivalent (Kratzer 1997, Prince 2003, *to appear*), which also can antecede only another occurrence of the same pronoun, but cannot be dropped in subsequent occurrences.

In contrast, 3rd-person plural arbs can support intersentential anaphora – a fact that emerges most clearly in Russian, where personal and arbitrary 3rd-person plural pronouns have different realisations (overt and null, respectively). Koenig and Maurer (1999) argue that implicit agents in short verbal passives satisfy the argument slot of the predicate, but do not participate in the referential structure, a claim I shall dispute in this proposal.

1.2 Goals and working hypotheses

While these items show similar (and rather wide) ranges of interpretation, a closer examination of their semantic behaviour reveals important differences. The chief semantic claim, addressing the first goal of this dissertation, is given in [9] below:

- (9) Arbs fall into two sets that differ in their semantics and their effects on subsequent discourse. Set A consists of the 3rd-person plural arbs and the implicit agents in passives and Russian *sja*-passives; Set B arbs are the 2nd-person arbitrary pronouns, Italian *si*-impersonals, and the specialised impersonal pronouns *man* and *one*.
- a. Semantically, Set A arbs are uniformly (plural) definites, while Set B arbs uniformly behave like indefinites. A further semantic distinction exists within Set B, separating regular indefinites from shifting indexicals.
 - b. Set A arbs are possible, but unlikely (rare) topics and antecedents for discourse anaphora, while Set B arbs do not participate in topic structure or discourse anaphora at all.

The claim in [9a] goes against previous accounts of the semantics of 3rd-plural arbs (indefinite account of Chierchia 1995, ambiguity account of Cabredo-Hofherr 2002, among others), implicit agents in verbal passives and *sja*-passives (among others Dowty 1978 and Markman 2001, respectively, treats them as indefinites), and impersonal pronouns *man* and *one* (argued to be definite by Kratzer 1997 and Safir 2004, respectively). At the same time, claim [9b] contradicts Koenig and Maurer (1999), who argue that implicit agents in short verbal passives are invisible in discourse, whether as potential topics or antecedents for future anaphora. I shall show that in important respects implicit agents (like 3rd-person plural arbs) behave like definite noun phrases and unlike *man* or *si*-impersonals in discourse, in that they are not referentially impotent.

The uniform analysis [9] for each type of arb has consequences for the effects of context on the arbitrary items. The interpretation of definite plurals is intrinsically context-dependent, a fact captured in the framework of Schwarzschild (1991) by including a contextually-determined variable termed *Cover_i* in the formal translation for definite plurals. The value for the variable is salience-based, like a deictic or personal pronoun. Moreover, the interpretation of plural indefinites is also subject to (weaker) contextual constraints, mostly due to the relevance-

governed domain restrictions for the existential quantifier that (eventually) binds the indefinite variable.

The second hypothesis, pursuing the second goal of this dissertation, argues against the salience-based analysis of definite plurals introduced in Schwarzschild (1991), and is given in [10] below.

- (10) Context-dependency in plurals (both definite and indefinite, arbitrary and not) is determined by relevance, not salience.

I propose to use the notion of relevance based on speaker's and hearer's communicative goals, formally defined in the terms of Decision Theory (Bar-Hillel and Carnap 1953, Pratt, Raiffa, and Schlaifer 1995) in order to capture both kinds of context-dependence, and allow the treatment of arbs as unambiguously definite or unambiguously indefinite.

1.3 Organisation of the proposal

In the next section I will present evidence for the typology in [10], first exploring the truth-conditional semantics of the two types of arbs (*sections 2.1 and 2.2*), and then their effect on subsequent discourse (*section 2.3*). *Section 3* discusses context-dependent aspects in the interpretation of both types of arbs. *Section 3.1* offers a formal semantic analysis of definite plurals, placing the arbs belonging to Set A within the larger account of definite NPs, and capturing the full range of readings for the definite arbs. The analysis builds into the semantics of definites their dependency on linguistic and extra-linguistic context, in a way consistent with the claim in [10] above. Context-dependent aspects common in the interpretation of both definites and indefinites are discussed in *Section 3.2*. *Section 4* addresses the placement of 2nd-person arbitrary pronouns in the typology of arbs, and derives the range of readings available for these constructions. The issues of quantification over contexts and of monsters (reference-changing indexicals) are also investigated in this section, and their applicability to the semantics of English impersonal pronoun *one* is explored. *Section 5* summarises the conclusions and outlines directions for future dissertation research.

2. THE TYPOLOGY OF ARBS

2.1 Definite arbs

Many researchers have claimed that the 3rd-person plural arb is translated as an indefinite (Jaeggli 1986, Condoravdi 1989, Kim 1991, Chierchia 1995:547 *inter alia*). The variable introduced by the indefinite is then bound by the sentence-level operator, e.g., in episodic sentences, the existential quantifier over events unselectively binds the free variable introduced by the indefinite; in generic sentences, the unselective binding is done by the generic operator.

Following Condoravdi (1989) for generic sentences and Alonso-Ovalle (2002) for episodic ones, Cabredo-Hofherr (2002) notes that arbs cannot be uniformly analysed as indefinites. In particular, she cites examples like [11 a,b] for Spanish to show that the 3rd-plural arbs cannot be

analysed simply as free variables that take on generic or existential readings depending on the sentential context they are in. That is because the arbs in the habitual sentences [11a] can be understood existentially, and the ones in the episodic sentences [11b] can be interpreted as generic.

(11) Russian

- a. *V etom parke vecherom igrajut v futbol.*
In this park in.evening play.3PL in football
'In this park they play football in the evening.'
- b. *Vchera v Ispanii otprazdnovali den' trudjaschihsja.*
Yesterday in Spain PRF.celebrated.3PL day of.workers
'Yesterday in Spain they celebrated Labour Day.'

The same reasoning can apply to the implicit agents in [12]: the implicit agent in the habitual sentence [12a] can be interpreted existentially, while the agent in the episodic [12b] is most naturally interpreted as generic.⁵

(12) English

- a. Spanish is spoken here.

Russian

- b. *Jescho ne doprazdnovalas' pervaja pobeda, a uzhe snova v boj.*
Still not PRFcelebrated.SJA first victory and already again into battle
'The first victory was not done being celebrated, and already again [one needed to go] into battle.'

Cabredo-Hofherr (2002) proposes an ambiguity analysis for 3rd-person plural arbs, claiming that they can be translated as definites or as indefinites. When the context provides an individual-level restriction for the arbs (such as a locative expression "in America" or our encyclopedic knowledge that it's people "in the government" that raise or lower taxes), then the arbs can be translated as definite plurals, giving rise to the quasi-universal or generic readings in the sentences containing them. In all cases, arbs can also be translated as free variables, giving rise to the various existential readings.

⁵ It must be noted that these arguments are not entirely bulletproof. Sentences where an arb is interpreted existentially in a generic context are easily derivable using an indefinite analysis of Chierchia (1995) rather than that of Cinque (1988). Unlike Cinque's free-variable translation, in Chierchia's framework the arbs are existentially quantified terms, which can get "disclosed" in generic contexts and subsequently bound by the generic operator. This translation allows arbs to remain existential in generic contexts, simply by not applying the existential disclosure operation to them.

Unassailably non-quantificational contexts, like the ones below or in [12b], present a more difficult problem for the indefinite analysis of arbs, when those arbs are interpreted generically. However, many examples like [11b] cited in the literature can be taken to contain hidden universal or generic quantification over sub-events, which would allow the indefinite arb to be bound by the hidden quantifier to achieve a generic interpretation.

Jescho ne doprazdnovali pervuju pobedu, a uzhe snova v boj.
Still not PRFcelebrated.3PL first.ACC victory.ACC, and already again in battle
'The first victory was not done being celebrated, and already again [one needed to go] into battle.'

In Malamud (2004), I present evidence that an indefinite translation for these items is unavailable, arguing that the ambiguity analysis of Cabredo-Hofherr (2002), which allows an indefinite translation for the arbs, is inadequate. The evidence comes from contexts that normally cause quantificational variability effects (QVE) in sentences containing indefinites. These contexts contain quantificational adverbs (Q-adverbs) like *always* or *usually*, which denote quantifiers that at least sometimes target situation variables: *always* (*for every situation*), *usually* (*for most situations*), etc. (see Lewis 1975 for an influential analysis of Q-adverbs). In sentences with indefinite subjects, Q-adverbs yield the effect of quantification over the variable introduced by the indefinite (QVE) [13], whether singular, as in the classical QVE sentence in [13a], or plural [13b] (Lewis 1975).

- (13) English (QVE available: *Most students = QVE on students*)
 a. A Penn student is usually smart
 b. Students at Penn are usually smart.

In contrast, QVE over a plural definite is achieved with operators like *for the most part* [14a], not with Q-adverbs [14b] (Nakanishi and Romero 2003).

- (14) a. The students sitting over there now are for the most part smart.
 (QVE available: *Most students = QVE on students*)
 b. # The students sitting over there now are usually smart.
 (QVE not available: the only reading is '*Now they are smart, now they are not*')
 (QVE not available: the only reading is '*Now they are smart, now they are not*')
 (QVE not available: the only reading is '*Now they are smart, now they are not*')

The same pattern holds in Russian, Italian⁶, and German.

Notably, QVE readings with 3pl arbs in Russian, English, and Italian are achieved with *for the most part*, but not with Q-adverbs [15].

- (15) English
 a. In this department, they're for the most part proud of Maribel.
 (QVE available: *Most people in this department are proud of her*)
 b. In this department, they're usually proud of Maribel.
 (QVE not available: the only reading is '*Now they're proud, now they're not*')
 Russian
 c. *Na etom fakul'tete bol'shej chast'ju ljubjat dekana.*
 On this department most.INSTR part.INSTR love.3PL dean.ACC
 'In this department, they for the most part love the dean.'
 (QVE ok: *Most people in the department = QVE on the people*)

⁶ Italian plurals are quite a bit more complicated. For example, definites are the normal way to express kind terms (the function reserved in English for bare plurals, usually analysed as a kind of indefinite). This makes it difficult to construct Italian QVE examples with plural indefinites. However, to illustrate the point that Q-adverbs bind the variable introduced by the indefinite, a singular example suffices, and definite plurals constructed with demonstrative determiners pattern just like their Russian and English counterparts.

- d. *Na etom fakul'tete obychno ljubjat dekana.*
 On this department usually love.3PL dean.ACC
 'In this department, they usually love the dean.'
 (QVE not available, the only reading 'Now they love the dean, now they don't')

Italian

- e. *In questa citt  in gran parte parlano tedesco.*
 In this city in most part speak.3PL German
 'In this city for the most part they speak German'
 (QVE available: *Most people in this city = QVE on people in this city*)
- f. *In questa citt  di solito parlano tedesco.*
 In this city of usual speak.3PL German
 'In this city usually they speak German'
 (QVE not available: the only reading is 'In most situations, people here speak German')

As this pattern of QVE readings indicates, 3pl arbs are never translated as indefinites, but are strikingly similar to overt definite plurals. Moreover, while discourse conditions for using them differ, the truth-conditional semantics for 3rd-person plural arbs can be extended to implicit agents as well. Indeed, contrary to the common assumptions that implicit agents in short verbal passives are indefinites (Dowty 1978), placing them in QVE contexts shows that they pattern rather with overt definite plurals [16].

- (16) a. In Spain, Michael Jackson is for the most part admired.
 (QVE available: *Most Spaniards = QVE on Spaniards*)
- b. In Spain, Michael Jackson is usually admired.
 (QVE not available: the only reading is 'Now he's admired, now he's not.')

Similarly, the implicit agents in Russian *sja*-passives pattern with overt definites in QVE contexts [17]:

(17) Russian

- a. *V Rossii, ``Pravda'' bol'shej chast'ju preziraetsja.*
 In Russia, ``Pravda'' most.INSTR part.INSTR despises.SJA
 'In Russia, ``Pravda'' is for the most part despised.'
 (QVE available: *Most Russians = QVE on Russians*)
- b. *V Rossii, ``Pravda'' obychno preziraetsja.*
 In Russia, ``Pravda'' usually despises.SJA.
 'In Russia, ``Pravda'' is usually despised.'
 (QVE not available: the only reading is 'Now it's despised, now it's not.')

It is important to note that this variability is truly dependent on the presence of the implicit agent. This is illustrated by the absence of any such effect in adjectival passives [18], where neither the quantificational adverb, nor *for the most part* have the agent denotation to quantify over.

(18) English

- a. The door was usually/for the most part (un)opened.
*Intended reading: *Most people did(n't) open the door.*

Russian

- b. *Dver' byla obychno/bol'shej chast'ju otkryta.*
Door was usually /most.INSTR part.INSTR open(ed)
'The/a door was usually/for the most part open(ed)'
*Intended reading: *Most people opened the door.*

Following Malamud (2004), I offer an analysis of 3rd-person plural arbs and implicit agents in short verbal passives and Russian *sja*-passives that translates them uniformly as definite plurals (due to the humanness restriction⁷, the readings are similar to those for overt definite NP 'the people'). The analysis is fully laid out in *section 3.1* of this proposal. The definite translation straightforwardly accounts for the generic/quasi-universal readings for these arbs: 'They speak English in America' is treated as truth-conditionally equivalent to 'The people in America speak English,' with the universal feeling resulting from the maximal (within the discourse-relevant limits) interpretation of the definite subject. Existential-like readings are then simply non-maximal readings for the plural definite, derived in the same way as such readings are derived for overt definites, as in [19].

(19) The boys built a raft. (Can be true even if some of the boys were slacking off)

In *section 3.1*, I give an existing account of such readings using covers and team credit – mechanisms developed to account for distributivity and pragmatic weakening in overt plural definites by Schwarzschild 1991 and Brisson 1998, respectively. I then present evidence that this mechanism is inadequate, and propose an alternative relevance-based account.

2.2 Indefinite arbs

2.2.1 *The question of indefiniteness.*

An investigation taking into account other types of arbs shows that not all of them pattern the same way with respect to (in)definiteness. In particular, while contexts with Q-adverbs were used to rule out the indefinite translation for the 3rd-person plural arbs and implicit agents, applying this crucial test to English impersonal pronoun *one*, German *man* and Italian *si*-impersonals gives an entirely different result. Q-adverbs succeed in producing the QVE on the

⁷ This restriction does not apply to implicit agents; just to 3rd-person plural arbs: 'The window was broken.' can be true if the wind broke it. Possible sources of this restriction will be discussed in future dissertation work.

denotation of *one* [20a,b], *man* [20c] and subjects of *si*-impersonals [20d], just as they do with overt indefinites [compare 21e]⁸.

(20) English

- a. In the Middle Ages, one usually/rarely lived to be 90.
(QVE available: *Most/few people in the Middle Ages...*)
- b. In this town, one is usually/rarely a Cal fan⁹.
(QVE available: *Most/few people in this town...*)

German

- c. *An diese Fakultät ist man gewöhnlich klug.*
On this department is MAN usually smart
'In this department people are usually smart'
(QVE available: *Most people in this department...*)

Italian²

- d. *Qui si è di solito tifosi dell'Atalanta*¹⁰.
Here SI is usually fans of.the.Atalanta
'Here one is usually a fan of the Atalanta'
(QVE available: *Most people here are fans of the Atalanta*)

English

- e. Penn students are usually smart.
(QVE available: *Most Penn students...*)

The sentences above involve quantification over individuals, not over times or events. E.g., [20b], on its preferred reading, cannot be paraphrased as “Most/few times/events during the Middle Ages contained people living till 90.” (see footnote 14 for further discussion).

Even more strikingly, when the variable introduced with *one*, *man* or *si* is inside the if-clause of a donkey sentence, it can be bound by quantificational adverbs [21a-c]. This is hallmark behaviour of indefinites (compare [21d])¹¹.

(21) English

- a. If one is smart, one is rarely/usually proud.

⁸ Operators like “for the most part”, while often sounding weird, could still be used with indefinites and with these arbitrary items to produce the QVE.

However, I use the examples in [24] to show that Q-adverbs, which are powerless to produce QVE in definites, work perfectly to create these effects in sentences with *man* and *si*.

⁹I'm grateful to Robert Gillham for explaining to me what Cal is (Berkley, for football purposes), and what's a Cal fan.

¹⁰ Special thanks to Roberto Zamparelli for providing all the examples involving fans of Atalanta, Bergamo's football team (p.c.).

¹¹ These examples are complicated by the fact that *man/si* are the only forms available to refer back to *man/si*. So, they are used for this purpose instead of regular pronouns in the consequent clause of the donkey sentences.

Since these examples involve variables co-varying under quantification, the co-construal of the two occurrences of *man/si* cannot be analysed as simple coreference or mediated by extra-linguistic reasoning (as is done in Koenig and Mauner 2000 for the French impersonal pronoun *on*).

(QVE available: *Most smart people are proud*)

German

- b. *Wenn man klug ist, ist man gewöhnlich stolz.*
If MAN smart is, is one usually proud
'If a person is smart, he/she is usually proud.'
(QVE available: *Most smart people are proud*)

Italian

- c. *Se si é intelligenti, si é di solito fieri.*
If SI is intelligent, SI is usually proud
'If a person is intelligent, he/she is usually proud.'
(QVE available: *Most smart people are proud*)

English

- d. If a man is intelligent, he is usually proud.

This pattern shows that constructions with *man* and *si* behave like indefinites, both in the scope of quantification adverbs and in the *if*-clauses of donkey sentences.

In her 1997 presentation, Angelika Kratzer argues that *man* is actually definite, based on its unacceptability in *there*-sentences [22a], unlike the indefinites like *wer* or *jemand* (someone).

(22) German (Kratzer 1997, examples 1-3)

- | | |
|---------------------------------------|---------------------------------------|
| a. * <i>Es war man gekommen.</i> | b. <i>Es war wer/jemand gekommen.</i> |
| *There was MAN come | There was someone come |
| Intended reading: 'Someone had come.' | 'Someone had come.' |

The same argument is given in Safir's (2004) presentation for the definiteness of *one* [23a,b], which contrasts with the indefinite *someone* [23c,d].

(23) English

- a. *She always knew there would be one waiting in the wings.¹²
b. *She always knew there would be one's mother waiting in the wings¹³ (Safir 2004, ex.21d)

¹² Throughout, I'm referring to the English generic pronoun *one*, which is quite different from *one* that substitutes for N', employed in sentences [i, ii] below. See Safir (2004) for a discussion of some of the differences between these items, both semantic/syntactic, and historical: i. I saw one. ii. Take the other one.

¹³ An additional reason for the ungrammaticality of [23b], discussed in section 4.2 of this proposal, is the inability of *one* to occur in episodic sentences, together with the inaccessibility of genitive possessors to quantifiers scoping above the existential *there*. That is, as shown below, genitive possessors are unlike, e.g., prepositional phrase modifiers [i,ii]. Unlike indefinites in other types of modifiers, an indefinite NP serving as the genitive possessor for the focus phrase for the existential *there* fails to be bound by Q-adverbs like *always* [iii,iv]. Thus *one*, which requires such quantification, is ungrammatical in this position [23b].

i. There is always/usually some evidence against a cheating student.

(QVE available: *For all/most cheating students = QVE on students*)

ii. There is always/usually some solution to a hard problem. (QVE available)

iii. There is always/usually a student's mother waiting in the wings.

Only non-QVE reading: *Most of the time, a mother of some student is waiting.*

No QVE reading: **For most students, their mother is waiting in the wings.*

- c. There was someone in the garden.
- d. She always knew there would be someone's mother waiting in the wings. (Safir 2004, ex. 21c)

However, given the entirely indefinite-like behaviour of *one* and *man* in QVE contexts, we must conclude that something else is at work in the examples [22] and [23]¹⁴. As Prince (2003) points out for the impersonal pronoun *me(n)* – the Yiddish counterpart of *man* – the pronoun is not focusable, in the sense of Vallduvi (1990). This is also evidenced in the pronoun's inability to receive intonational prominence, or be placed in syntactic configurations in which it receives contrastive focus (Rooth 1992) [24].

- | | |
|---|--|
| (24) Yiddish (Prince 2003: example [1e]) | German |
| a. <i>Emitser</i> / #Men, <i>zog ikh dir, iz do geven.</i>
Someone / #One, say I you, is here been
`Someone / #One, I'm telling you, was here.' | b. <i>Jemand</i> / #Man, <i>sage ich, war hier.</i>
Someone / #One, say I, was here
`Someone / #One, I'm telling you, was here.' |

English

- c. Someone / # One, I'm telling you, is always waiting in the wings.

However, the postverbal position in existential *there*- sentences is exactly the one in focus, both in the sense of being hearer-new information (Ward and Birner 1995), and in having intonational prominence. I therefore conclude that it is the unfocusability of *one* and *man* (however explained) that is responsible for ruling it out in *there*-sentences, and not its definiteness or indefiniteness. I address the issue of explaining the unfocusability of *one* and *man* in the next section, essentially following the account given in Prince (*to appear*).

Chierchia (1995) analyses *si* straightforwardly as an indefinite. In his implementation, *si* introduces an existentially quantified variable, which can either scopally interact with quantificational adverbs or generic operators, or if need be, be “disclosed” and (unselectively) bound by them. This account, applied to *si* and *man*, correctly derives existential readings for the agents in episodic [25] and generic sentences [26], and also generic/quasi-universal readings in generic/habitual contexts [27].

- | | |
|---|---|
| (25) Italian | German |
| a. <i>Ieri ad un partito si ha ballato mo'lo.</i>
Yesterday at a party SI has danced much
`Yesterday at a party, people danced much.' | b. <i>Man tanzte auf der Party.</i>
MAN danced at the party
`People danced at the party.' |

- iv. There is always/ usually some problem with students'/a student's homework.

Only non-QVE reading: *Most of the time, some student(s) has/have a problem with their homework.*

No QVE reading: **Most students have problems with their homework.*

Thus, the generic sentence in [23a] is more appropriate as a potential counterexample to the indefiniteness of *one*.

¹⁴ Kenneth Safir (2004), makes the following argument:

Many apparent counterexamples to the interpretive force of *one* may involve covert conditionals.

- i. In Europe, one rarely dies of starvation (from Moltmann 2003)
- ii. In Europe, people rarely die of starvation.

Some would accept [i] to mean [ii] (“few people die of starvation”), but I believe this is accommodation from a meaning such as [iii] “If one is in Europe, it would be a rare occurrence for one to die of starvation.”

However, the paraphrase in [iii] has only one sensible (i.e., when people only die once) reading, which involves quantification by *rare* over the European travellers and residents. No scenario would distinguish [i] and [iii]; moreover, some naïve native speakers I've asked have spontaneously paraphrased [i] with a variant of [ii]: “People rarely die of starvation in Europe.”

(26) Italian
a. *Si parla tedesco qui.*
SI speaks German here
'German is spoken here.'

German
b. *Hier spricht man Spanisch.*
Here speaks MAN Spanish
'Spanish is spoken here.'

(27) Italian
a. *Si parla inglese in America.*
SI speaks English in America
'English is spoken in America.'

German
b. *Man spricht Englisch in Amerika.*
MAN speaks English in America
'English is spoken in America.'

In two corpus studies of *man* and *si* (with total of just under 100 occurrences of each in a corpus), and in previous linguistic literature, every example with generic/universal use of *man/si* contained some quantificational element. Even sentences lacking Q-adverbs or silent generics involved quantification over times, worlds, or sub-events. In sentences describing purely episodic, singular events, generic/universal interpretation for *man* and *si* is unavailable [28].

(28) German
a. *Gestern hat man ein Haus abgebrannt.*
Yesterday has MAN a house burned.
'Yesterday, someone burned a house.'
(*generic *man*, only existential reading ok)

Italian
b. *Oggi si è ucciso un innocente.*
Today SI is killed an innocent
'Today, someone killed an innocent.'
(*generic *si*, only existential reading ok)

I thus conclude that generic/universal use of *man/si* in unassailably non-quantificational sentences is impossible, and that these items are translated as indefinites.

English impersonal *one* is entirely impossible in episodic contexts. Unlike *man* or *si*-impersonals it does not acquire an existential meaning in such contexts, but is entirely ruled out there [29].

(29) English
a. *One has come to the party too early.
b. *One just bought a house.

This property, as well as other requirements *one* imposes on its environment are further discussed in *section 4.2* of this proposal, where an attempt is made to unify some of its properties with those of English arbitrary *you*. At this point, I will provisionally conclude that *one* is a very special kind of indefinite variable that fails to be bound by the sentential existential closure.

2.2.2 Plural or singular?

In her 1997 presentation, Angelika Kratzer claims that *man* is in fact plural, because it can support plurality-taking reflexives, like *each other* [30a]. Similarly, *si* also supports anaphoric reference with '*each other*', at least in certain usages [30b].

- (30) German
 a. *Man redete miteinander.* (Kratzer 1997, example 5)
 MAN talked with.each.other
 `People talked with each other.`
- Italian
 b. *Si era parlato l'uno con l'altro.* (Cinque 1988, example 39)
 SI was talked the.one with the.other
 `People talked with each other.`

It must be noted that the plural-ness of *man* and *si* cannot be purely semantic, since `each other` cannot refer to singular NPs that denote pluralities, as is shown in [31].

- | | |
|---|---|
| (31) Italian | German |
| a. <i>*Questa famiglia parla l'un l'altro.</i>
This family talks the.one the.other
Intended: `Members of this family talk to each other.` | b. <i>*Diese Familie ist auf einander stolz.</i>
This family is of each.other proud
`Members of this family are proud of each other.` |

As Safir (2004) notes, examples like [32] are ungrammatical; thus, *one* cannot be plural.

- (32) English
 *In this family, one is proud of each other.

Following Kratzer on *man*, I conclude that both *man* and *si* are plural indefinites, translated as variables ranging over groups of people (possibly existentially quantified as in Chierchia 1995, depending on the framework for deriving their behaviour in generic contexts). At the same time, *one* seems to be a singular indefinite, albeit of a very unusual sort.

2.3 Pragmatics of arbs: effects of different arbs on discourse

2.3.1 Definite arbs.

Definite arbs can provide antecedents for discourse anaphora.

Truth-conditionally, I have claimed that arbs are parallel to other (overt) definite and indefinite plural noun phrases. A natural question that arises is whether their discourse properties are those of non-arbitrary definites and indefinites. In fact, definite and indefinite arbs affect discourse quite differently from non-arbitrary noun phrases, and from each other.

Koenig and Mauner (1999) show that implicit agents in English short verbal passives can, under certain circumstances, be subsequently followed by intersentential anaphora (which, they argue, is achieved by an inferential coercive process, rather than normal coreference). This is true for 3rd-person plural arbs [33], as well as for implicit agents in Russian *sj*a-passives [33b] and short verbal passives in Russian and English [34c,d]¹⁵, as the following constructed follow-

¹⁵ Examples with passives and *sj*a-passives are still susceptible to the objection that the (overt) pronoun in the next sentence is nevertheless interpreted as an arbitrary one, so that pragmatic factors and not actual co-reference create

ups to naturally occurring examples show (Note that in Russian, conveniently, 3rd-person plural arbs must be null, while anaphoric pronouns must be overt).

(33) Russian

a. *Ivan uzhe privyk, chto ego rasskazu ne verjat ili ponimajut ego kak-to izvrashchenno. Oni ved' ne vstrechalis' s d'javolom.*
Ivan already got.used, that his story.ACC not believe.3PL or understand.3PL it.ACC
somehow perversely. They indeed not have.met with devil.

'Ivan already got used to the fact that his story was not believed or understood somehow perversely. Unlike him, they haven't met the devil.'

b. *Na trave mojetsja krasnaja loshad'. Oni skrebut jejo golovu i boka.*

On grass washes.SJA red horse. They scrub its head and sides.

'On the grass a red horse is being washed. They are scrubbing its head and sides.'

c. *Kreslo uzhe bylo prigotovleno. Oni zaranee vyvolokli ego na scenu, i teper' zhdali artista.*

Chair already was prepared. They beforehand dragged.out it on stage, and now waited of.artist
'The chair was already prepared. They dragged it out onto the stage beforehand, and now waited for the performer.'

English

d. The ship, made of iron, was cleaned and made environmentally safe before it was sunk to the seabed. They wanted to create an artificial reef.

This referential possibility, however, is not evidence enough for declaring that the definite arbs are identical to non-arbitrary NPs in their effect on subsequent discourse. I have conducted a corpus study of their status in a corpus of Russian literary texts collected from the online library of Maxim Moshkow (www.lib.ru). A Centering analysis of the corpus investigated the topicality and pronominalisation patterns for 3rd-person plural arbs.

Centering Theory.

Centering theory (Joshi and Kuhn 1979, Grosz, Joshi and Weinstein 1995, Walker, Joshi and Prince 1998) was proposed as a model of local discourse coherence. The connection between salience and coherence made in the theory was later the basis for pronoun-resolution algorithms (e.g., Brennan, Friedman, and Pollard 1987). In the framework, the local discourse segment is broken up into utterances (roughly equivalent to sentences). Several basic notions of the theory are defined as follows.

DEFINITION 1. *Cf-list* or *the list of forward-looking centers* is the set of discourse entities evoked explicitly (and sometimes implicitly) in each utterance.

The entities on the Cf-list are ranked according to their salience, with language-specific principles determining the ranking. In English, Italian, and Russian, previous studies have

the co-construal of the pronoun with the implicit agent in the previous sentence. I will therefore mostly concentrate on 3rd-person plural arbs in my discussion of the discourse potential of definite arbs.

determined the ranking as being roughly SUBJECT >> OBJECT >> OTHER (Walker and Prince 1996, DiEugenio 1998, Malamud 2001).

DEFINITION 2. *Cp* or *the preferred centre* is the highest-ranked entity in the current utterance, which is the predicted preferred topic for subsequent discourse, most likely to be pronominalised in future utterances.

DEFINITION 3. *Cb* or *the backward-looking centre* is the most salient (highest-ranked) entity from preceding utterance realised in the current one. This is the centre of the hearer's attention, the actual topic of an utterance, linking this utterance to preceding discourse

The backward-looking centre is the item most likely to be realised as a pronoun in the current utterance. Based on the change and retention of backward-looking centres and preferred centres, transitions of different levels of coherence are defined between adjacent utterances. For example, in [35a] below, the same backward-looking centre (John) is retained in utterance 2 and 3, and the *Cp* of utterance 3 is also the same entity. This is the smoothest type of transition, called *Continue*. On the other hand, in [35b], while the *Cb* and *Cp* of the third utterance are the same, indicating a probability that the speaker will continue talking about Mary, there is a change of backward-looking centre between utterance 2 and utterance 3, making this transition a *Smooth-Shift*. The roughest type of transition is illustrated in [35c], where the topic (i.e., the backward-looking centre) changes from utterance 2 to utterance 3, and the projected topic for subsequent discourse (i.e., the preferred centre) is also different from the *Cb*.

- (34) a. 1. John went to school this morning. 2. He met Mary on his way. 3. He was in a good mood.
b. 1. John went to school this morning. 2. He met Mary on his way. 3. She carried a pink bag.
c. 1. John went to school this morning. 2. He met Mary on his way. 3. Bill had been teasing her.

Centering studies: Russian arbs vs English definite NPs.

Previous Centering studies (Malamud 2001) showed that non-sentence-final subjects in Russian are the *Cps* in their utterances – they are most likely to be pronominalised in subsequent discourse. However, the analysis of corpus data showed that 3rd-person plural arbs are almost never actually followed with intersentential anaphora (5 cases out of 967 items). Moreover, an analysis that considered the phonologically null arbs to be the *Cbs*, like personal null pronouns in pro-drop languages, predicted that the discourse in which they occurred had an unusual number of incoherent (rough-shift) transitions between utterances. However, both the intuitive perception of the discourse and an analysis that only counted non-arbitrary pronouns as especially salient showed that the discourse was perfectly coherent. This suggests that while agents of sentences involving arbs *can* provide antecedents for future anaphora (at least when this is the only way to make sense of a discourse), they are not preferred topics nor highly salient items.

In contrast, Russian non-arbitrary 3rd-person plural pronouns in subject position are *Cbs* of their sentences almost 100% of the time (1 exception in my entire corpus, *Master and Margarita*). They are also *Cps*, and were followed by subsequent mention/anaphora in approximately 71% of cases in my corpus.

Since Russian lacks a definite article, I conducted a smaller corpus study to compare the effect of overt definite noun phrases in an English corpus (comprised of several Wall Street

Journal articles) with the effect of definite arbs in Russian. Previous Centering studies of English (Brennan, Friedman, and Pollard 1987, Prince 1992, Walker and Prince 1996, inter alia) showed that subjects are Cps in this language. However, when only the definite noun phrases in the subject position are considered, we find that they are pronominalised quite rarely in subsequent discourse (3 cases out of 63 items).

This observation is confirmed in the studies conducted by Hartwell Francis on a corpus of spoken English, where definite noun phrases are pronominalised in subsequent discourse a third less than indefinites. While some of the definite descriptions in my corpus were the Cbs of their sentences, most were neither the Cb of their utterance, nor Cp (the preferred topic for future discourse). While a much larger corpus is necessary to achieve statistical significance for these results, the two corpus studies strongly suggest that while English overt definites are not strongly salient or topical, Russian 3rd-person plural arbs are even less so, in contrast to Russian definite 3rd-person plural pronouns.

A pilot study of Russian passives and *sja*-passives showed that implicit agents in them are, predictably, neither Cbs, nor Cps of their utterances. In a few cases, however, these items were followed by subsequent mention/anaphora, demonstrating that while this possibility might be available in Russian [33b,c], it is strongly dispreferred.

Definite arbs are low on the salience scale.

While definite arbs can provide antecedents for future anaphora, they generally are not used to do so, suggesting low salience for these items. This becomes apparent in sentences containing a competing antecedent for plural anaphora. Even nonsensical overt antecedents provide strong competition for arbs [35].

- (35) Russian
- a. *Zdes' pekut horoshije pirogi. Oni starajutsja ugodit' klientam.*
 Here bake.3PL good.ACC pies.ACC. They try.3PL to.please clients.DAT
 'They bake good pies here. They try to please the clients.'
- b. *V etoj kasse prodavalis' bilety. Oni staralis' ugodit' klientam.*
 In this booth sold.SJA tickets. They tried.3PL to.please clients.DAT
 'In this booth the tickets were being sold. They tried to please the clients.'
- c. *Bilety byli prodany ochen' bystro. Oni staralis' ugodit' klientam.*
 Tickets were sold very quickly. They tried.3PL to.please clients.DAT
 'The tickets were sold out very quickly. They tried to please the clients.'

A very salient (and for 6 out of 10 native speakers asked, the preferred) reading of [35a,b] is one where the pies or the tickets are trying to please the clients; similarly for the tickets in [35c] (with slightly less of a preference). Of course, overt and sensible antecedents are almost unbeatable competition [36].

- (36) Russian
- a. *Zdes' vybirajut horoshih artistov. Oni starajutsja ugodit' klientam.*
 Here choose.3PL good.ACC performers.ACC. They try.3PL to.please clients.DAT

‘They choose good performers here. They try to please the clients.’

- b. *Zdes’ nanimajutsja horoshie artisty. Oni starajutsja ugodit’ klientam.*
Here hire.SJA good artists. They try.3PL to.please clients.DAT
‘Good artists are being hired here. They try to please the clients.’
- c. *Zdes’ byli ubity prekrasnye artisty. Oni staralis’ ugodit’ klientam.*
Here were killed wonderful artists. They tried to.please clients
‘Wonderful artists were killed here. They tried to please clients.’

The only reading in [36] is the one where the performers, and not their employers or murderers, try to please the clients. Thus, the pronoun (which refers to the most central, the highest-ranked salient entity from the preceding utterance) is preferentially (and in [36], categorically) resolved to *something other* than the arbitrary subject.

Given that, in general, subjects in Russian are typically Cps (the likeliest antecedents for future anaphora and likeliest topics for subsequent discourse), we can conclude that definite-plural arbs are closer to definite plurals in English than to typical Russian subjects. Whatever their chief discourse function(s), utilising 3rd-person plural impersonals, short passives and SJA-passives has the effect of decreasing the topicality or salience of the agent. In Centering terms, we say that these arbs succeed in placing a discourse entity on the ranked list, thus making future anaphora possible, but that the entities are ranked extremely low on the list, making future anaphora very much dispreferred.

2.3.2 Indefinite arbs.

In contrast, it has been noted by many researchers that *man* and *si*-impersonals cannot provide antecedents for discourse pronouns of any kind (Chierchia 1995, Kratzer 1997, inter alia). Prince (*to appear*) reports on a Centering study of a Yiddish corpus containing *me(n)*, the Yiddish correlate of German *man*. The patterns of pro-drop and pronominalisation force a conclusion that *me(n)* fails to place an entity onto the ranked list; that is, the agent denotation in sentences with *me(n)* is never considered to be a potential topic for subsequent discourse, or a potential antecedent for intersentential anaphora.

I conducted a replication of Prince’s study for small corpora of German and Italian. In each case, evidence from pronominalisation and pro-drop (zero instances for both *man* and agents of *si*-sentences; rather, the entity that would have been ranked second after the agent was the most likely to be dropped or pronominalised in subsequent discourse) showed that an entity other than the agent denotation in sentences with *man* or *si* was the Cp. This provides a striking contrast with overt indefinites, which are exactly the providers of new discourse entities to the ranked list of potential topics. Given these Centering results, I conclude that the chief discourse function of *man* and *si*-impersonals is to remove the subject/agent denotation from the topic-structure of its sentence (the list of forward-looking centres), allowing the next-highest-ranked entity to become the Cp.

This Centering-based analysis naturally accounts for the unfocusability of *man* – if its main purpose is to allow hearer’s attention to focus on another entity, specifically focussing the hearer’s attention on it would violate its *raison d’être*.

The corpus studies (in particular, the rareness of subsequent pronominalisation of definite arbs, and the absence of pronominalisation or pro-drop for indefinite ones) support the analysis in which the definite arbs are placed on the bottom of the salience hierarchy (the Cf list), making subsequent discourse anaphora possible yet extremely dispreferred; at the same time, the indefinite arbs would not be placed on the list of potential antecedents at all, making subsequent discourse anaphora entirely impossible, as suggested in Prince (2003, *to appear*) for Yiddish *me(n)*.

2.4 Summary of section 2.

Table 1 below summarises the findings and claims made in section 2.

Table 1

Set A	QVE w/ Q-adverbs	QVE w/ most part	$\approx \forall$	\exists	Anaphora
3 rd pl	*	✓	✓	✓	Dispreferred
passive	*	✓	✓	✓	Dispreferred
<i>sja</i>	*	✓	✓	✓	Dispreferred

Set B	QVE w/ Q-adverbs	$\approx \forall$	\exists	Number	Anaphora
<i>man</i>	✓	✓	✓	PL	*
<i>si</i>	✓	✓	✓	PL	*
<i>one</i>	✓	✓	*	SING	*

The arbs in Set A, semantically plural definites, exhibit no QVE with Q-adverbs, as is expected under this analysis. While their quasi-universal interpretation ($\approx \forall$) naturally follows from this semantics, the existential-looking readings (\exists) are unexpected. A theory of definite plurals that allows us to derive these readings is the subject matter of the next *section* (3).

The arbs in Set B, semantically indefinites, show the usual indefinite QVE in sentences with Q-adverbs. They show the expected range of readings for the indefinite analysis, with the exception of the arbitrary pronoun *one*, which lacks an existential interpretation. This deficiency, shared by the arbitrary use of 2nd-person pronoun (*section 4.1*), is further addressed in *section 4* of this proposal.

While the arbs in Set A allow intersentential anaphora, this anaphora is strongly dispreferred for these items. In contrast, intersentential anaphora with Set B arbs is entirely impossible, a direct consequence of their chief discourse function.

3. CONTEXT-DEPENDENCY IN ARBS AND OTHER PLURALS

3.1 Definite arbs within the theory of definite plurals

3.1.1 *Data: exhaustive, non-exhaustive & team credit readings for definites*

At this point, the QVE data in *section 2* has showed that 3rd-person plural arbs and implicit agents in passives and *sja*-passives cannot have an indefinite translation (otherwise, they would be quantifiable by Q-adverbs). However, a residual question remains: if these arbs are not indefinite, how do they achieve existential-like readings in sentences like the ones below?

(37)English

- a. They play football here in the afternoons..
- b. Yesterday, the enemy ship was sunk.

Russian

- c. *Vchera byl potoplen vrazheskij korabl'.*
Yesterday was sunk enemy ship
'Yesterday, an enemy ship was sunk.'
- d. *V garazhe moetsja novaja mashina.*
In garage washes.SJA new car
'A new car is being washed in the garage.'

An answer to this question is imperative if our treatment of these arbs as uniformly definite is to have any validity. Before I provide any semantic solutions, I first consider the behaviour of non-arbitrary definite plurals. Many authors have strived to account for collective and distributive readings for plural definites (Bennet 1975, Gillon 1987, van der Does 1993, Heim, Lasnik, and May 1991, Lønning 1987, Schwarzschild 1991, Lasersohn 1990, inter alia); others have addressed the maximal (or exhaustive) and non-maximal distinctions (Lasersohn 1990, 1995, Landman 1989, 1996, Brisson 1998). It is important to note that these two distinctions are completely independent: thus, a collective reading for [38] below may involve an exhaustive [38a] or non-exhaustive [38b] interpretation, just as an (intermediate-level) distributive reading has both [38c exh., 38d non-exh.].

(38) The girls built a raft.

Scenario: Ann & Belle =team 1, Cathy, Diana,& Eve=team2 are in a raft-building competition.

- a. Each of the five girls participated in building the raft.
- b. A, B, and C worked on the raft, while D and E went to get them lunch.
- c. A and B built team1 raft working together, and C, D, and E all worked on team2 raft.
- d. A and B worked on team1 raft; C and D worked on team2 raft while E got them lunch.

I will discuss distributivity and non-maximality in more detail in the next section. Here, I will further illustrate (non)maximal interpretations for definite plurals. Brisson (1998) calls the rise of non-maximal readings 'pragmatic weakening.' This is the process that makes sentences with definite plurals compatible with essentially existential scenarios by allowing exceptions in the denotation of the plural. Different contexts may change the interpretation of the sentence by allowing only a few exceptions, as in the scenario in [39a], or permitting almost all the singularities in the denotation of the plural to be exceptional, as in the scenario in [39b].

(39) Pragmatic weakening (example [a] adopted from Brisson 1998, ex.25):

Utterance: The boys were building a raft.

- a. *Scenario:* The Boy Scout troop has an exercise, in which each boy has to build a raft in the course of an afternoon. A few boys, however, are cleaning up from lunch or napping in the cabin, while all the others were working.
- b. *Scenario:* Boys and girls were competing in building rafts. The girls team slacked off all day, and so didn't build anything at all. The boys team, however, succeeded in building a raft, even though only two boys from the ten-boy team did all the work, and worked all day long.

From this data, we can see that the question of existential readings for definite arbs arises also for non-arbitrary definites. However the existential readings for arbs in [37] are derived, a

mechanism for doing so is independently necessary to account for non-maximal readings in non-arbitrary plural definites. In the next two sections, I will lay out two possible mechanisms for deriving such readings, arguing for one of them as empirically and theoretically superior. However, whatever the implementation, pragmatic weakening allows existential readings for the definite-plural translation of the arbs, reducing the ambiguity analysis proposed in Cabredo-Hofherr (2002) to a uniform treatment of these items as definite descriptions

3.1.2 *Take one: covers and team credit*

Examples like [40] illustrate that distributivity possibilities available to definite plurals yield a range of readings like that for 3rd-person plural arbs (or, in fact, for indefinite plurals). A predicate distributing over its definite plural subject does not have to go all the way to atoms (Schwarzschild 1991). Instead, this subject denotation can be broken into intermediate pieces, and then the predicate distributes up to these pieces. For example, both sentences in [40a,b] (on the antecedentless reading of [40a]) are true in a situation [40c], where it's neither the case that each boy individually lifted the piano, nor that all of them collectively did so.

(40) English

- a. On the fourth floor, they lifted the piano.
- b. The boys lifted the piano.
- c. Residents of 4th floor = {Ed, John, Bill, Harry}. Ed & John lifted the piano, then Bill & Harry did.

Schwarzschild 1991 proposes a framework in which the different distributivity possibilities are achieved by using covers over the domain of discourse. A cover is defined as follows:

DEFINITION 1. *Cover* - a collection of sets of entities, such that the union of the sets in the cover gives you the entire universe of discourse.

Assuming the universe of discourse $D = \{\text{Ed, John, Bill, Harry}\}$, the cover in (41) corresponds to the situation in (40c):

(41) Cover = { {Ed, John}, {Bill, Harry} }

A (pragmatically determined) variable over covers is an inherent part of each VP denotation, allowing predicates to distribute up to each cover-cell in the NP denotation, as illustrated in [42].

(42) $(\text{Part}(\text{Cov}_i)(\text{lifted-the-piano}'))(\text{the boys}) =$
 $= \forall x [x \in \llbracket \text{Cov}_i \rrbracket \ \& \ x \subseteq \llbracket \text{the boys}' \rrbracket \rightarrow x \in \llbracket \text{lifted-the-piano}' \rrbracket]$

The distributive operator applies to the 'covered' denotation: every cell x in the cover, such that x is a subset of 'the boys', lifted the piano. Assuming definite denotations for arbs, we can thus account for the different distributivity levels available for [40a].

Brisson (1998) builds on the ideas of Schwarzschild (1991) to account for pragmatic weakening of sentences with plural definites. For example, [40b] can be true even if only a few of the boys participated as in [43].

(43) *Scenario*: only Ed and John lifted the piano.

This is equivalent to assigning team credit to the boys for lifting the piano. In Brisson (1998), pragmatic weakening is achieved by putting the exceptional members of the NP denotation in a cover-cell with non-members ('pragmatic junkpile'), creating a cover that is *ill-fitting* with respect to $[[the\ boys]]$. Then, *the boys* in [40b], interpreted with respect to the cover in [44] will essentially mean *the boys except Bill and Harry*.

DEFINITION 2. A cover is called *ill-fitting with respect to an NP denotation* when some members of NP denotation are put in the same cover-cell as non-members, so no union of cells in the cover equals the NP denotation [44].

(44) Universe = {Ed, John, Bill, Harry, Mary, Sue}
Cover = {{Ed, John},{Bill, Harry, Mary, Sue}}

DEFINITION 3. *Pragmatic junk-pile* is the cell of the ill-fitting cover that includes both entities inside the relevant NP denotation and entities outside it (for example, {Bill, Harry, Mary, Sue} in the cover in [44]).

I will suggest in the next section an alternative approach to the distributivity and non-maximality in plural definites, arguing that approach involving variable over covers is inadequate.

3.1.3 *Take two: a relevance-based approach.*

While accounting for the distributivity data, the cover-based analysis leaves unexplained the actual mechanism underlying the choice of covers. Schwarzschild states that the choice is guided by pragmatic considerations without formally explicating them, and provides several examples illustrating the choice of cover based on immediate linguistic and extra-linguistic context [45].

- (45) Examples adopted from Schwarzschild (1991)
- a. [*Scenario*:Farmer Bill keeps his sheep and cows in the same barn] The animals fight each other.
 - b. [*Scenario*:Apples arrive to the grocery pre-packaged in baskets. Grocery has only a tiny scale for weighing a couple of fruits at a time, and a huge one for small truckloads.The speaker is the grocer] The apples are too light for the huge scale and too heavy for the tiny scale!

It should be noted that in both sentences in [46], but most obviously in [46b], speaker goals are the main factor in the choice of cover.

The chief drawback of Schwarzschild's (1991) account is the deictic nature of the variable Cov_i . Like any such variable (e.g., a personal pronoun), it requires its antecedent to be salient, with the speaker and hearer attending to it. Thus, the content of the cells in the cover must be salient, the way the referent of an indexical or a pronoun has to be salient in the extra-linguistic or linguistic context. This salience of the cover essentially means that (at least) the speaker is required to know the exact composition of cells in the cover and junk-pile cell containing exceptions. Both requirements are contrary to fact : exact content of boy-made cells in the cover

doesn't need to be known in [46a,b], and neither does the identity of exceptions in [46b]. In fact, individual boys in the NP denotation in [46b] become exceptional exactly *because* they are irrelevant to the speaker and hearer and do not have to be known.

(46) The boys lifted the piano.

Scenario: Andy, Bill, Cedric, and Dan are the boys, Eva and Faith are the girls.

- a. Hearer wants to know which of his upstairs-neighbours was responsible for shaking floors and furniture-moving noise at 2am, in order to complain to the landlord about each noise-maker. In fact, first, Andy and Bill lifted the piano together, then Cedric and Dan did.
- b. Hearer needs to know if the Boys team in an object-lifting competition (in which he is a judge) should be left behind, or promoted to the next level. In fact, Boys team (consisting of A, B, C, and D) succeeded in lifting the piano (only A and B did the actual lifting), while the Girls team didn't.

The examples in [46] show that the exact size and structure of the set or plurality to which the definite plural refers can be unknown to the speaker of [46a,b]. In order to interpret and to utter felicitously these sentences, the conversational participants have to know or estimate what information is relevant to the conversation at hand.

In other words, licensing conditions for the use of plural definites, and their interpretation have to rely on the notion of relevance rooted in the communicative goals of the participants, in the same way interpretation of questions has to be (van Rooy 2003a). This very suggestive similarity between relevance of answers to questions and relevance of subsets entering the interpretation of definite plurals is further illustrated in [47] below.

(47) adapted from Maribel Romero's (2004) lecture notes on van Rooy (2003a)

Scenario: It's time for dinner and 5-year old Mary doesn't show up. The only people that can possibly have seen her are the neighbours' sons Andy and Bob, and Mary's baby brother Dan who can't talk.

a. Who saw Mary this afternoon?

Answers including Dan have the same usefulness as answers excluding him, but in addition the former are over-informative, and thus less relevant.

b. The boys saw Mary this afternoon.

For the goal of learning Mary's whereabouts, Dan is useless. So the sentence could be true even if non-talking baby brother didn't see her.

In the rest of this section, I develop a formal account of non-maximality¹⁶ in the semantics of definite plurals, following van Rooy's (2003a) work on questions. The analysis is couched in the terms of Decision Theory (Bar-Hillel & Carnap 1953), a formal framework that allows to formulate a definition of relevance based on the conversationalists' goals and beliefs.

In a series of recent papers on the semantics of questions, van Rooy (2003a,b) proposes a notion of relevance rooted in speaker's communicative goals. In his framework, the most relevant answer to a question is one which will allow the questioner to choose a single course of action to pursue in order to achieve the goal behind that question. In order to extend this notion of relevance to the interpretation of plurals in non-interrogative sentences, I assume a model of discourse structure similar to one proposed in Grosz and Sidner (1986). In the model, each

¹⁶ I will concentrate on deriving non-maximality in this proposal, since this is what allows us to derive existential-like readings for definite arbs.

discourse segment is associated with a speaker intention/goal. When interpreting a definite plural, the hearer chooses the subset of the domain which contains just the relevant individuals/groups, which are defined as those individuals/groups that can influence the speaker's course of action.

Hearers base their choices on their best guess as to the speakers' goals, which is partially determined by preceding discourse, and partially by extra-linguistic considerations. A large number of researchers have been exploring the ways in which goals of conversational participants are signalled in conversation (and extra-linguistically). I will not assume here any exact mechanism for putting speaker and hearer goals into the common ground, but leave this extremely interesting question to future research.

Speaker (and hearer) intentions can be represented as decision problems they are trying to solve. A decision problem is a triple $\langle P, U, A \rangle$, where the probability function P represents agent's beliefs, utility function U reflects the agent's goals, and a set of actions A is the set of (mutually exclusive) actions the agent chooses from. A proposition q changes agent's beliefs (P). q resolves a decision problem if, after q is learned, one of the actions in A *dominates* all the others, as defined below. An example of a (resolved) decision problem is given in [48], in which a_2 dominates all the others in A .

DEFINITION 4. Action a *dominates* all others iff in each resulting world no action has a higher utility value than a

(48)

Worlds ↓ / actions →	a1	a2	a3
w1 P(w1)=1/3	U(w1,a1)= .1	U(w1,a2)=.3	U(w1,a3)= .2
w2 P(w2)=1/3	U(w2,a1)= .2	U(w2,a2)=.7	U(w2,a3)=.2
w3 P(w3)=1/3	U(w3,a1)=0.7	U(w3,a2)= .8	U(w3,a3)=0.7

In making an utterance, speaker aims to resolve hearer's decision problem. A relevance ordering between propositions yields the contextual criterion for licensing the plural and choosing an interpretation, with relevance defined as helpfulness in resolving decision problem [49].

- (49) Proposition p is more relevant (better to learn) than proposition q ($p > q$) iff
- i. p eliminates more actions as non-optimal than q does or
 - ii. p eliminates the same number of actions as q does, and q entails p (i.e. q is over-informative)

This mechanism for determining relevance provides a natural way for allowing exceptions in sentences like [39], [46b], or [47b], without use of ill-fitting covers (Brisson 1998), just as in questions [47a] "the relevant set contains all and only all individuals that could affect the decision" (van Rooy 2003a).

This analysis also allows a simple account of the observations made in Krifka (1996), concerning the way in which context, and particularly speaker goals, affect the interpretation of plural definites like "the doors" (as "all the doors" or "some of the doors") in [50] and [51], adopted from Krifka (1996) ex. [10] and [12] (The winning interpretation has a smiley next to it).

(50) *Decision problem:* Before a thunderstorm, Hearer has to decide whether to go on with daily business (*action1*, if all windows are closed) or return home (*action2*, if some windows are open). [a] is resolving (and true) in case if some windows are open. For [b] to be resolving (and true) all windows have to be closed.

- a. The windows are open. $\Rightarrow \lambda w. \uparrow \sigma x \text{ window}(x,w) \in \text{OPEN}(w)$
 - i. $\lambda w. \forall x [\text{window}(x,w) \rightarrow \text{open}(x,w)]$
 - ☺ ii. $\lambda w. \exists x [\text{window}(x,w) \& \text{open}(x,w)]$
- b. The windows are closed. $\Rightarrow \lambda w. \uparrow \sigma x \text{ window}(x,w) \in \text{CLOSED}(w)$
 - ☺ i. $\lambda w. \forall x [\text{window}(x,w) \rightarrow \text{closed}(x,w)]$
 - ii. $\lambda w. \exists x [\text{window}(x,w) \& \text{closed}(x,w)]$

In [50a], the hearer has to select one of the interpretations [i] or [ii] as the true import of the vague literal statement. It is important to note that [50a-ii] is compatible with [50b-ii] in a scenario where some windows are open and some are closed. The first (and, in fact, the only) basis for inference used in this selection process is relevance, defined via the decision problem-induced ordering in [49]. Both [50a-i] and [50a-ii] resolve the decision problem at hand (by pointing to *action2* as the right solution) and thus are both relevant; however, [i] entails [ii] and thus is over-informative (hence less relevant according to [49]). This points to [ii] as the intended message.

Similarly in [50b], the hearer gets a vague literal utterance, and is trying to select between the two unambiguous readings [50b-i] and [50b-ii]. Again, relevance is the first criterion applied in this process. While [i] resolves the decision problem (by pointing to *action1* as the right choice), [ii] fails to do so, since it is compatible both with a scenario where all windows are, in fact, closed, and one in which some are open and some are closed. Thus, [i] is the only relevant interpretation.

The same procedure applies if the hearer is interpreting one of the utterances in [51].

(51) *Decision problem:* A bank vault can be reached through three successive sets of doors. A worker in the bank wants to reach the vault either by going there directly (*action1*) or by asking the manager for keys first (*action2*). [a] is resolving (and true) if all the doors are open. [b] is resolving (and true) if some doors are closed.

- a. The doors are open. $\Rightarrow \lambda w. \uparrow \sigma x. \text{ door}(x,w) \in \text{OPEN}(w)$
 - ☺ i. $\lambda w. \forall x [\text{door}(x,w) \rightarrow \text{open}(x,w)]$
 - ii. $\lambda w. \exists x [\text{door}(x,w) \& \text{open}(x,w)]$
- b. The doors are closed. $\Rightarrow \lambda w. \uparrow \sigma x \text{ door}(x,w) \in \text{CLOSED}(w)$
 - i. $\lambda w. \forall x [\text{door}(x,w) \rightarrow \text{closed}(x,w)]$
 - ☺ ii. $\lambda w. \exists x [\text{door}(x,w) \& \text{closed}(x,w)]$

In [51a], interpretation [ii] is just as vague as the literal interpretation with the sigma – it does not resolve the decision problem (since it is compatible with the scenario when some of the doors remain closed). [51a-i] does resolve the problem (by pointing to *action1*), and so is more

relevant than [51a-ii]. It is, then, the interpretation of choice. If the hearer hears [51b], both interpretations in [51b-i,ii] resolve the decision problem (by pointing to *action2*). However, [i] entails [ii], and is thus less relevant by being over-informative. Hence, [ii] is the interpretation of choice in [51b].

Note that the interpretation algorithm illustrated for [50] and [51] above makes a statement about the relevance of particular windows or doors, via the claims about relevance of different potential interpretations. Only those windows or doors are relevant (and thus included in the interpretation) that minimally influence the hearer's actions. Exceptional windows and doors, which are discounted in the non-maximal ('existential') interpretations, are exceptional exactly because they have no bearing on the hearer's choice of action and are thus irrelevant.

As a general principle, we see that what is relevant is basically what helps a speaker uniquely determine his/her course of action; definites are sensitive to exactly this notion of relevance.

3.2 Further contextual factors in interpreting definites and indefinites

3.2.1 Pragmatic strengthening: Krifka's (1996) observations on definites.

Krifka (1996) notes that when situational and grammatical factors do not enforce a particular reading, upward-entailing contexts favour a universal/exhaustive interpretation for the definite, while downward-entailing contexts trigger an existential interpretation for the definite [52], an effect he terms *pragmatic strengthening*:

- (52) a. (I believe) The windows are made of security glass. → I believe that all of the windows ...
 b. I doubt the windows are made of security glass. → I believe that none of the windows ...

Krifka proposes a two-rule principle that derives these pragmatic strengthening effects in plural predications, similar to Horn's (1984) R-based implicatures:

Rule 1. Grammar does not fix whether predication P over a sum individual is universal or existential, except if there is explicit information enforcing one or the other.

Examples of explicit information include overt lexical items such as *All the windows...*, *The men each...*, or extra-linguistic information about the predicate and speaker goals (do all subparts need to fulfil the predicate in order for the plural to fulfil it, or is one/some enough [50], [51]).

Rule 2. When multiple interpretations are available, pick the strongest one that's consistent with general background assumptions.

This principle will, in upward-entailing contexts, when several options are available, favour the universal-like interpretation for definite plurals, and in downward-entailing contexts will favour the existential interpretation. Krifka's observations appear to hold for arbs as well:

- (53) Russian
 a. *Opyt pokazal, chto etot rasskaz ponimajut izvrashchenno.*
 Experience showed, that this.ACC story.ACC understand.3PL perversely
 'Experience showed that this story is understood perversely.'
 → I think everyone ($\forall x$) misunderstands this story

- b. *Ja somnevajus', chto etot rasskaz ponimajut izvrashchenno.*
 I doubt, that this.ACC story.ACC understand.3PL perversely
 'I doubt that this story is understood perversely.'
 → I think nobody (not $\exists x$) misunderstands this story

The entailingness of the context seems to affect implicit agents as well:

(54) Russian

- a. *V etom godu, Rozhdestvo bylo otprazdnovano bujnym vesel'jem.*
 In this year, Christmas was celebrated wild.INSTR joy.INSTR
 'This year, Christmas was celebrated by wild merry-making'
- b. *Ja somnevajus', chto v etom godu Rozhdestvo bylo otprazdnovano bujnym vesel'jem*
 I doubt, that in this year Christmas was celebrated wild.INSTR joy.INSTR
 'I doubt that this year, Christmas was celebrated by wild merry-making'

3.2.2 *It's not just the definites: pragmatic strengthening in indefinites*

I show below that, while Krifka's rules (and Rooth's Generalisation for which the rules account) were formulated for expressions denoting sum individuals (i.e., for plural definites), they also apply to the indefinite plurals or rather, to bare plurals in English and Russian, as well as to plain indefinites. In particular, upward-entailing contexts favour universal-like readings for agents of the sentences in [55a,b,c] below, and the negated contexts favour existential interpretations [55d,e,f].

(55) Russian

- a. *(Ja dumaju, chto) deti pravil'no pojmut etot rasskaz.*
 (I think that) children.NOM correctly will.understand this story.ACC
 '(I think that) children will understand this story correctly.'
 → I believe that roughly all children will get the story ($\forall x$)

English

- b. (I think that) children will understand this story correctly.
 → I believe that roughly all children will get the story ($\forall x$)
- c. (I think that) a Penn student is smart.
 → I believe that roughly all Penn students are smart ($\forall x$)

Russian

- d. *Ja somnevajus', chto deti pravil'no pojmut etot rasskaz.*
 I doubt that children.NOM correctly will.understand this story.ACC
 'I doubt that children will understand this story correctly.'
 → I believe that pretty much no children will get the story (not $\exists x$)

English

- e. I doubt that children will understand this story correctly.

- f. I doubt that a Penn student is smart.
 → I believe that pretty much no children will get the story (not $\exists x$)
 → I believe that pretty much no Penn students are smart (not $\exists x$)

Unsurprisingly, the same pattern also applies to the indefinite arbs – the preferred universal interpretation in [56a,b] becomes dispreferred, with existential interpretation favoured in the negative sentences in [56c,d].

- (56) Italian
 a. *Questa storia si capisce correttamente.*
 This story SI understands correctly
 ‘One (generally) understands this story correctly.’ ($\forall x$)
 German
 b. *Man versteht die Geschichte richtig.*
 MAN understands the story right
 ‘One (generally) understands this story correctly.’ ($\forall x$)
 Italian
 c. *Dubito che si capisca questa storia correttamente.*
 I.doubt that SI understands this story correctly
 ‘I doubt that one understands this story correctly.’
 → I believe, pretty much no one understands this story (not $\exists x$)
 German
 d. *Ich bezweifle, dass man die Geschichte richtig versteht.*
 I doubt that MAN the story correctly understands
 ‘I doubt that one understands this story correctly.’
 → I believe that pretty much no one understands it (not $\exists x$)

As currently formulated, Krifka’s rule does not account for this phenomenon in indefinites.

3.2.3 It’s not downward-entailingness, but clausemate negation.

A closer examination of the environments conditioning the pragmatic strengthening, or rather, conditioning the switch from universal to existential preference, leads us to revise Rooth’s Generalisation as applied to sentences with plurals. In particular, not all downward-entailing environments cause the switch [57].

- (57) English
 a. If the windows are made of security glass, you have to pay more.
 → In the case when all windows are made of security glass.... ($\forall x$)
 Expected: In the case when some windows are made of security glass... (if $\exists x$)
 b. If children understand this story correctly, you’ll get an award.
 → If (pretty much) all kids get this story, you’ll be rewarded. ($\forall x$)

Expected: In case if some children understand this story... (if $\exists x$)

While the antecedent clause of a conditional is a downward-entailing environment, it fails to switch the preference for the interpretation of the plurals, both definite and indefinite. Analysing “X doubts that p” as “X believes that not p”, I hypothesise that it is negation, rather than downward-entailingness that causes the switch in examples [52]-[56] above. However, not just any negation would do. Consider the examples below:

(58) English

a. John doubts that Mary told me that the windows are made of security glass.

→ John believes that Mary didn't tell me that (almost)all windows are made of security glass($\forall x$)

Expected: John believes Mary didn't tell me that some windows are made of security glass($\exists x$)

Russian

b. *Ja somnevajus', chto Vanja znajet, chto deti ponjali etot rasskaz.*

I doubt that John knows that children understood this story

'I doubt that John knows that children understood this story.'

→ I believe John doesn't know that (almost) all kids got it ($\forall x$)

Expected: I believe John doesn't know that some kids got it ($\exists x$)

Thus, I conclude that the environments causing the pragmatic-strengthening effect are restricted to clausemate negation. This is a much smaller set of conditioning environments than originally claimed by Krifka (1996).

Krifka's original explanation for the phenomenon of pragmatic strengthening, as the term itself suggests, relied on the choice of strongest possible interpretation in cases when the grammar and extra-linguistic context offer several possibilities. Since the entailment relation between possible interpretations is switched in downward-entailing contexts, the chosen (strongest) interpretation would be switched as well. His account, thus, relied on the assumption that downward-entailing contexts are the ones that condition the switch from universal to existential interpretations of the definite plural. By extending the phrases subject to the switch to include indefinites, and by narrowing the conditioning environments to clausemate negation, we have removed the basis for the 'strengthening' explanation of the switch.

An explanation for this phenomenon, whether purely semantic or decision-theoretic, is left to future dissertation work¹⁷.

To summarise, in this section I have linked the presence of existential-like interpretations for definite arbs with the presence of such non-maximal interpretations for definite plurals in general. I have also argued that salience-based account of Brisson (1998) is empirically inadequate, and proposed a relevance-based account following van Rooy's (2003) work on questions. Some further contextual influences affecting the quantificational force in the interpretation of definite plurals were noted in Krifka (1996). I extend the applicability of these

¹⁷ While I do not have a complete answer to this question, some additional data that shows that the special behaviour of clausemate negation is shared by domain-narrowing operators like *almost*. This suggests that the explanation of this phenomenon is more likely to be purely semantic rather than based on Gricean-style reasoning.

observations to indefinites as well, both arbitrary and non-arbitrary, while strongly narrowing down the set of environments that condition the change in quantificational force.

4. ARBITRARY SHIFTING INDEXICALS.

4.1 ‘You’, monster.

Given the typology central in this proposal, a natural question about any impersonal construction is, which type of arb does its agent represent? In the case of the arbitrary *you* construction, this is an especially interesting question, since the status of the arbitrary 2nd-person pronoun has, to my knowledge, entirely avoided linguistic inquiry. In this section, I will argue that arbitrary *you* behaves like an indefinite arbs and present a semantics of the construction that captures this indefinite behaviour, while also preserving the inherent indexicality of the 2nd-person pronoun. I also provide new data (and analysis) further bringing out the similarity of *you* to other types of variables. The chief problem here is reconciling the 2nd-person (singular, in languages that make the distinction) morphology of the pronoun and its indexical nature with its behaviour as a bound, indefinite-like variable in quantified constructions.

According to both the regular QVE [59a,c] and the donkey sentence [59b,d] tests, *you* patterns with indefinites. The QVE effects follow the same pattern as for non-arbitrary indefinites, picking up the quantificational force of the adverb (with *usually* resulting in a ‘most x’ interpretation, *rarely* in a ‘few x’, and *sometimes* in a ‘ $\exists x$ ’ one).

(59) English

- a. In those days, you usually/rarely/sometimes lived past 90.
- b. Back then, if you were intelligent, you were usually/rarely/sometimes proud.

Russian

- c. *V te vremena ty obychno/redko/inogda dozhival (azh) do 90-ti.*
In those times you.SING usually/rarely/sometimes lived (even) till 90-ty
‘In those days you usually/rarely/sometimes lived (even) until 90.’
- d. *V te vremena, esli ty byl dvorjanskogo zvanija, ty obycho/redko*
In those times, if you were of.noble of.title, you usually/rarely
inogda vsju zhizn’ sluzhil tsarju-batjushke.
sometimes all life served tsar-father.DAT
‘In those days, if you were a noble, you usually/rarely/sometimes all your life served the father-Tsar.’

However, two telltale differences exist between the behaviour of the arbitrary *you* and that of indefinites. First of all, there are no episodic sentences with arbitrary *you*: in [60a,b] the pronoun can only be interpreted deictically (compare with *man* in [60c] and with non-arbitrary indefinites in [60d]). In fact, unlike *man* or *si*-impersonals (and unlike non-arbitrary indefinites), arbitrary *you* appears to be existentially quantified only when embedded under an overt Q-adverb like *sometimes* [59].

- (60) English
- a. You just bought a house.
(Arbitrary interpretation for *you* totally unavailable)
- Russian
- b. *Ty tol'ko chto kupil dom.*
You only what bought house
'You just bought a house.'
(Arbitrary interpretation for *you* totally unavailable)
- German
- c. *Gestern hat man ein Haus abgebrannt.*
Yesterday has MAN a house burned.
'Someone has burned a house yesterday.'
- English
- d. Penn students/A Penn student just bought a house.

Thus, in sentences that involve no overt (or, for generic operator, silent) quantification, arbitrary *you* is impossible. In fact, in sentences involving only a quantification over sub-events, as paraphrased in [61c], only the deictic interpretation for *you* is available [61a], in contrast to German impersonal pronoun *man* [61b]. In effect, the quantification involved in sentences with arbitrary *you* always has a modal flavour to it, somehow involving quantification over possible worlds, and not simply over actual sub-events.

- (61) English
- a. Yesterday in America, you celebrated Christmas with joy. (*arbitrary *you*)
- German
- b. *Gestern feierte man Weihnachten HERE in Deutschland.*
Yesterday celebrated MAN Christmas here in Germany
'Yesterday, people in Germany celebrated Christmas.'
- Paraphrase:*
- c. There is a country-wide event *e* taking place yesterday, such that for each sub-event *e'* part of *e* with a person in it, *e'* is a X-mas celebrating event.

Secondly, sentences with arbitrary *you* always involve a special sort of empathy – an appeal to the addressee to place himself/herself in the situation(s) introduced. Thus, paraphrasing [59a] in accordance with this second intuition, we get [62] below.

- (62) For most/few/some *x* in those days, place yourself in the shoes of *x*, you live until 90.

This combination of requirements suggests a way to reconcile them with our claim that *you* is indefinite: the derivative semantic intuition is that arbitrary *you* is still a second-person pronoun, interpreted with respect to a novel context introduced by the quantifier over contexts (*you* = person with whom I'm asking you to identify yourself). This analysis (to be fleshed out in a moment) treats *you* as a shifting indexical, the kind of semantic animal termed 'monster' by

Kaplan (1989)¹⁸. The question of the existence of (and semantic analysis for) shifting indexicals has been subject of much debate in the last several decades (Fillmore (1981), Anderson and Keenan (1985), Kaplan (1989), Partee (1989), Nunberg (1993), Lewis (1998), Schlenker (2003), (2004), Recanati (2004), inter alia), with the last two authors in particular arguing for the existence of such items.

In his 2003 plea for monsters, Philippe Schlenker argues for the existence of shifting indexicals, bringing two examples to bear: the present tense in Russian, the reference of which shifts when it is embedded into past-tense attitude reports [63a], and Amharic *I*, which also shifts in complement clauses of attitude verbs [63b].

(63) Russian

- a. Scenario: Last month, John said “I am building a house.”
V proshlom mesjace Vanja skazal, chto on stroit dom.
 In last month John said that he builds.PRES house
 ‘Last month John said that he was building a house.’ (literally: ‘Last month John said that he is building a house.’)

Amharic

- b. Scenario: John says “I’m a hero.” (example from Schlenker (2003), p.25)
 ጎን ጎና ነህ -ኸኸ ነህ -all
 John hero be.PRF-1sO 3M.say-AUX.3M
 ‘John says that he is a hero’ (literally: ‘John says that I am a hero’)

To account for this shifting behaviour of present tense (previously thought to be deictic to the time of utterance), and of first-person pronoun (previously thought to be deictic to the speaker of the utterance), Schlenker proposes a revised semantics for the attitude-reporting verbs. These verbs have been previously analysed as quantifiers over situations; Schlenker proposes that they can quantify over contexts, binding the shifting indexicals embedded in their complement clause. He defines a context as a tuple <agent of utterance/thought, recipient of utterance/thought, time, world>; an indexical then refers to one of the coordinates of this tuple. The analysis for [63b] in this framework would be as indicated in [64], where <John,x2,t1,w1> is the context of the reported speech act.

(64) SAY_{<John, x2, t1, w1>}C_i be-a-hero (I(c_i), time(c_i), world(c_i))

I propose to extend Schlenker’s (2003) reanalysis of attitude verbs to adverbs of quantification (previously analysed as quantifiers over situations), treating them as quantifiers over contexts. The modal flavour associated with this quantification results from the introduction of new worlds as one of the coordinates of the quantified contexts. It is important to note that the worlds introduced are minimally different from the actual world in which the utterance takes

¹⁸ A natural question at this point will be, why do we want to treat the generic and the deictic *you* in a unified manner? Why not just posit two lexical entries (whatever their semantics) – one something similar to the generic pronoun *one*, and another for the deictic *you*? The chief reason against positing such an ambiguity is that arbitrary second-person pronoun (singular, wherever such distinction exists for 2nd-person pronouns) appears with astounding systematicity in language after language. This pronoun is attested in Slavic, Romance, Germanic, and Dravidian languages, among many others. Explanatory power of our theory would be lost if we were to ignore this connection.

place: the new contexts introduced by the Q-adverbs (and the worlds in them) are imaginary ones, corresponding to the ‘thought act’ of speaker and, via recognition of speaker’s intent, the addressee pretending to place themselves into the situation described in the restrictor phrase, such as *in those days*.

The second-person pronoun then will be always indexical, in the sense that it will pick out the addressee coordinate of the context (defined as a tuple <speaker, addressee, time, world>, following Schlenker 2003). In sentences that involve no quantification over contexts, the 2nd-person pronoun will be forced to pick the addressee of the speech context, resulting in the obligatory deictic interpretation. This happens in [60], which involves no quantification at all, as well as in [61a], which involves quantification over sub-events that is semantically ‘too low’ for *you*. When quantification over contexts has been introduced, *you* will additionally have the option of referring to the addressee coordinate of the quantified context, as in [59]. In this case, the reference of *you* will co-vary with the context. The effect of empathy will result from the nature of the context: the addressee of the new context is simply the addressee of the old context in the shoes of a person in the situation described by the restrictor.

Treating arbitrary *you* as a monster not only allows its placement into the typology of arbs, but also helps account for the similarity of its behaviour in multiple-pronoun sentences to the behavior of other variables in such sentences: *de se* pronouns in dream reports, and sloppy variables in VP-ellipsis. For dream reports, Percus and Sauerland (2003) present the following data [66], where different readings arise in the scenario where John dreams that he is Bill. Then, the two pronouns in a dream report have two potential antecedents: John and Bill (John's dream-self). This gives rise to some incestuous readings, but also to some mixed readings. Note that the <real-self, dream-self> reading for [66a] is unavailable. Hard (2003) notes that this pattern is parallel to the pattern of sloppy and strict readings observed in Dahl (1973) for sentences with VP-ellipsis involving multiple pronouns (Dahl’s puzzle) [65].

- | | |
|--|--|
| <p>(65) a. John said he saw his mom, and Bill did, too.</p> <p>i. ok B said J saw J's mother.</p> <p>ii. ok B said B saw B's mother.</p> <p>iii. * B said J saw B's mother.</p> <p>iv. ok B said B saw J's mother.</p> | <p>b. John said his mom saw him, and Bill did, too.</p> <p>i. ok B said J's mother saw J.</p> <p>ii. ok B said B's mother saw B.</p> <p>iii. ok B said J's mother saw B.</p> <p>iv. ??ok¹⁹ B said B's mother saw J.</p> |
|--|--|

- | | |
|--|---|
| <p>(66) a. John dreamed he married his sister.</p> <p>i. ok J dreamed J married J's sister.</p> <p>ii. ok J dreamed that he=B married B's sis.</p> <p>iii. * J dreamed that J married his=B's sister.</p> <p>i.v. ok J dreamed that he=B married J's sister.</p> | <p>b. John dreamed his sister married him.</p> <p>i. ok J dreamed that J's sister married J.</p> <p>ii. ok J dreamed that B's sis married him=B.</p> <p>iii. ok J dreamed that J's sis married him=B.</p> <p>iv. ok J dreamed that his=B's sis married J.</p> |
|--|---|

Here, I point out previously unobserved pattern of arbitrary and deictic interpretations for sentences involving several 2nd-person pronouns. This pattern [67] turns out to be completely parallel to those observed in multiple-pronoun dream reports and Dahl’s puzzle.

(67) Binding pattern of *you*

- | | |
|--|--|
| <p>a. In those days, you had to support your children.</p> | <p>b. In those days, your employer had to support you.</p> |
|--|--|

¹⁹ Judgments reported in the literature are straight ‘ok’s; however, a number of my informants found this reading to be downgraded or unavailable.

- | | |
|--|---|
| i. ok Addr had to support addr's children. | i. ok Addr's employer had to support addr. |
| ii. ok One had to support one's children. | ii. ok One's employer had to support one. |
| iii. * Addr had to support one's children | iii. ok Addr's employer had to support one. |
| iv. ok One had to support addr's children. | iv. ?ok One's employer had to support addr. |

To derive the binding pattern in Dahl's puzzle and *de se* pronouns in dream reports, Hardt (2003) uses a Centering-inspired dynamic-semantic mechanism for sloppiness (shifting variables), together with syntactic QR-like movement to derive mixed (non-incestuous) readings. The shifting variable (whether sloppy variable in VP-ellipsis, or a *de se* pronoun) is sensitive to salience, switching its reference, e.g. from real-self to dream-self, when the corresponding antecedent becomes more salient.

Extending this analysis directly to account for the data in [67] presents a challenge, since speaker and addressee are globally salient, so that *you* (like *I*) is not sensitive to local salience (Walker, Joshi, and Prince 1995). We can circumvent this problem by including contexts (tuples as above) in our ontology of discourse referents. *You* is then a function of a salience-sensitive context variable c_i , [68]; it is that variable and not *you* that shifts from the speech-context antecedent to quantified-context one.

(68) ^{TOP-CONTEXT} In those days ^{NEW CONTEXT} you(c_i) could marry your(c_i) sibling.

Hardt's (2003) framework and the derivations for the binding patterns are formally presented in the Appendix, as is an account of 2nd-person pronouns that avoids making them directly dependent on salience while still deriving the binding pattern.

4.2 'One' as a monster?

In this section, I will discuss the semantic properties of English impersonal pronoun *one* that any analysis of this pronoun will have to take into account. The first of these has already been mentioned in *section 2.2* – *one* behaves like an indefinite with respect to QVE [20],[21a], repeated in [69a,b] below. We have also noted in *section 2.2* that *one*, like *you*, is unacceptable in episodic sentences [29], repeated in [69c].

- (69) a. In the Middle Ages, one usually/rarely lived to be 90. (QVE available)
 b. If one is smart, one is rarely/usually proud. (QVE available)
 c. *One just bought a house.

Importantly, this property cannot be accounted for by making *one* somehow allergic to existential quantification. This is because *one* is perfectly fine when it is existentially quantified by the Q-adverb *sometimes*:

- (70) If one deals with the Mob, one can sometimes get killed.
 For some x that deals with the Mob, x gets killed.

We can argue that *one* requires the same special type of quantification as *you*, since in contrast to impersonals like *man* [61b] both are unhappy with quantification over sub-events [71a], and content with quantification over contexts [71b]:

- (71) a. *Yesterday here in the States, *one/you* celebrated Christmas with joy.
b. In those days, *one/you* celebrated Christmas with joy.

So, *one* has to involve quantification over contexts. In fact, the next property we discuss might provide a clue as to the reason for this requirement.

Safir (2004) notes that interpretation of *one* is related, in a complicated but undeniable way, to the properties of conversational participants in the context in which *one* is uttered. If uttered without further qualifications, it must include the hearer(s)²⁰. Thus, to take Safir's example, a Martian addressing an audience of humans cannot felicitously say [72a], nor can a member of his audience felicitously answer with [72b].

- (72) Inclusion of conversational participants:
a. Fortunately, nowadays one is not susceptible to human disease.
b. On the contrary, one is always susceptible to human disease!

To summarise, in our quest for an analysis of English impersonal pronoun *one*, we will be looking for a semantics that treats *one* as a special kind of indefinite (based on its behaviour in QVE contexts), which requires quantification over contexts, and gives rise to an indexical inference regarding the inclusion of the addressee(s) and possibly the speaker in the variable's reference.

5. CONCLUSIONS AND DIRECTIONS FOR FUTURE WORK.

I summarise the main claims made in this proposal in Table 2 below. The chief dimensions along which the interpretation of arbitrary items was explored are the following:

- [i] the truth conditions: definite vs. indefinite,
- [ii] possibility of discourse anaphora: ok but dispreferred for definite arbs, and unavailable for indefinite arbs. and
- [iii] the domain of quantification: no quantification except the vague reference to actual plural individuals for definite arbs, quantification over individuals or situations for one set of indefinites (Kamp and Reyle 1993, or Lewis 1975, Kratzer 1989, von Stechow 1994), and quantification over contexts for the other set of indefinite arbs.

²⁰ However, this requirement is not perfect – a mother can make the complaint in [i] addressing only her daughter, who will not be included in the generalisation. In fact, a speaker can overtly contradict the inclusion of his only hearer, as in [ii]. The last example, however, acquires a deontic ('one should take a shower every day') or qualified ('one tends to take a shower every day') flavour, which may be the reason for its acceptability. I conclude that the inclusion of conversational participants is not an entailment in sentences with *one*, but most likely an implicature.

- i. One raises kids, sacrifices so much for them, and then they move where one cannot even see the grandchildren!
- ii. In the States, one takes frequent showers, although you, my dear, never do.

Table 2

Truth-conditional semantics and formal pragmatics				Discourse pragmatics
		Truth conditions, source of QVE	Domain of quantification	possible anaphora?
Set A	3 rd plural	definite	\forall/\exists effects are not due to quantification, but to vagueness. In any case, these arbs refer to an actual plural individuals => Decision Theory	ok
	implicit arguments in passives: verbal & <i>sj</i>	definite		ok
				ok
Set B	B1	man	Quantification is over individuals (as in DRT framework of Kamp and Reyle 1993) or over situations (as in the analysis proposed by Lewis 1975, Kratzer 1989, von Stechow 1994).	*
		si		indefinite
Set B	B2	you	Quantification is over contexts => Monsters	*
		one		indexical variable

An excursus into Decision Theory was necessitated by the need to derive the readings available for definite arbs in view of the vagueness inherent in their semantics. The analysis developed here extends to all definite plural NPs. At the same time, new observations about the variability of the indexicals *you* and *one* under quantification over contexts, gave rise to the discussion of shifting indexicals (monsters), suggesting that Q-adverbs (in addition to attitude verbs) can introduce quantification over contexts.

While this investigation conducted so far already covers some important properties of arbs, still, some further distinctions in the interpretation of arbs need to be explained. The need for the additional distinctions arises in a situation when two incarnations of the same type of arb co-exist in a language. Two cases are briefly considered in the rest of this section.

The first of such case arises in Russian and English within Set A, since 3rd-person plural arbs and implicit agents can occur in the same environment in these languages [73].

(73) Russian

a. *Zdes' ispekut horoshuju vatrushku.*

Here PRF.bake.3PL good.ACC danish.ACC
 'They'll bake a good danish here.'

b. *Zdes' ispechetsja horoshaya vatrushka.*

Here PRF.bake.SJA good.NOM danish.NOM
 'A good danish will be baked here.'

c. *Zdes' budet vypechena horoshaja vatrushka.*

Here will.be baked good.NOM danish.NOM

'A good danish will be baked here.' (slightly marked, by comparison to [b])

English

d. They'll bake a good danish here.

e. A good danish will be baked here.

A slight empirical difference between 3rd-person plural arbs and implicit agents was uncovered in the course of this investigation: while 3rd-person plural arbs received very few anaphoric mentions in subsequent discourse, references to implicit arguments were practically non-existent in corpus data. Based on this slight difference, one possible dimension along which the requisite distinction may be drawn is morphosyntactic: while discourse pronouns referring to 3rd-plural

antecedents agree in number (and possibly person) with their arb antecedents, the implicit argument provides no syntactic features for the agreement. The cost of accommodating these features would explain the difference in the frequency of discourse anaphora to these arbs.

The second case illustrating the need for further distinction between the arbs is the co-existence of two monsters in English: arbitrary *you* and arbitrary *one*, both of which only occur in generic contexts. An empirical difference between these two items emerges when they co-occur in a single utterance [74].

- (74) a. In those days in England, one had to show you some respect.
 b. In those days in England, you had to show one some respect.

The central point about examples in [74] is the sharp changes in perspective between the [a] and [b] sentences. In [74a], the point of view resides with *you* – if the speaker and addressee(s) were to be located in England in ‘those’ days, the Englishmen would have to show them some respect. In contrast, in [74b], it is the speaker/hearer that would have to show respect to Englishmen. In both cases, when both *you* and *one* are used in the sentence, the empathy or point of view resides with the denotation of *you*, and not *one*. Explanation of these contrasts, I believe, lies in the nature of the indexicality of *you* and *one*: in *you*, the empathy is entailed, via the 2nd-person indexical nature of the pronoun, while in *one* participation of conversational participants is more defeasible and implicature-like (see footnote 20 for the latter conjecture).

Two types of studies are planned to provide clearer empirical data relating to the two distinctions. First, naïve native speaker judgements will be collected for minimal pairs like [73] and [74], in search for scenarios and intuitions that will make the differences between the arbs more precise. Second, comparisons between the relevant arbs will be conducted in several corpora: a novel (*Little Prince*, following a suggestion from a seminar by Ellen Prince), magazine articles, and scripts or transcripts of radio narratives.

Taken together with the existing results, these studies promise a clearer understanding of the nature of arbitrariness, a richer theory of noun-phrase interpretation integrating formal semantics with recent developments in formal pragmatics, and a clearer understanding of the nature of shifting indexicals and context-shifts.

Appendix.

1. *Hardt’s framework for sloppy variables in multiple-pronoun contexts.*

Hardt (2003) notes that [1] from Dahl (1973) is parallel to [2] from Percus and Sauerland (2003).

- | | |
|---|---|
| <p>(1) a. John said he saw his mother, and Bill did, too.
 v. ok Bill said John saw John's mother.
 vi. ok Bill said Bill saw Bill's mother.
 vii. * Bill said John saw Bill's mother.
 viii. ok Bill said Bill saw John's mother.
 b. John said his mother saw him, and Bill did, too.
 i. ok Bill said John's mother saw John.
 ii. ok Bill said Bill's mother saw Bill.
 iii. ok Bill said John's mother saw Bill.
 iv. ??ok Bill said Bill's mother saw John.</p> | <p>(2) a. John dreamed he married his sister.
 i. ok John dreamed John married John's sister.
 ii. ok J dreamed that he, as B, married B's sister.
 iii. * J dreamed that J married his=B's sister.
 iv. ok J dreamed that he, as B, married J's sister.
 b. John dreamed his sister married him.
 i. ok J dreamed that J's sister married J.
 ii. ok J dreamed that B's sister married him=B.
 iii. ok J dreamed that J's sister married him=B.
 iv. ok J dreamed that his=B's sister married J.</p> |
|---|---|

In order to account for this pattern of strict and sloppy identity, Hardt (2003) proposes a combination of dynamic semantic mechanism for anaphora resolution, and a syntactic mechanism for deriving the mixed readings in multiple-pronoun sentences. [3] gives the generalised schema for sloppy identity:

(3) Controller1 ... [XP ...[Y P]...]...Controller2 ... [XP'].

Here, the XP' is a proform referring to the antecedent XP, which contains a sloppy anaphoric expression YP, which changes in reference from Controller1 in the first clause to Controller2 in the second.

This change is modelled using Centering Theory (Grosz et al. 1995): the anaphoric expression YP must refer to discourse center, which is the most prominent discourse entity of those currently under discussion. Sloppiness results when the center shifts from Controller1 to Controller2. The center shift is a re-assignment of a special position (0) in the assignment function. The identity requirement for ellipsis or anaphora resolution is the identity of indices (Hardt (2003)). The system uses discourse referents of different types, following Stone and Hardt (1997) and Bittner (2001).

The discourse center thus is assigned to two different indices - the permanent index for this entity, and the special shifting index 0. An additional Centering Requirement is imposed, disallowing the use of the non-zero index to refer to the discourse center. A further Centering Preference makes pronominal reference to non-centered entities dispreferred.

This dynamic semantic mechanism can derive strict-strict and sloppy-sloppy readings in [1]. The different readings involve the indexing shown below (* superscript denotes the new/current center, while * subscript denotes a reference to the current center):

- (4) a. STRICT-STRICT: John^{1*} [said he* saw [his* mother]²]³, and Bill⁴ did₃ too. (said he* saw [his* mother]₂)
 b. SLOPPY-SLOPPY: John^{1*} [said he* saw [his* mother]²]³, and Bill^{4*} did₃ too. (said he* saw [his* mother]₂)

Hardt (2003) derives unmixed representations for mixed readings using syntactic movement. This enables him to capture the remaining available readings in [1]. The movement is licensed by QR-like considerations, which permit NPs to move out of intensional contexts. Hardt (2003) permits all discourse-referent-denoting phrases to move in this manner.

- (5) a. SLOPPY-STRICT: John^{1*} [his* mother]² [said he* saw t₂]³, and Bill^{4*} did₃ too. (said he* saw t₂)
 b. SLOPPY-STRICT: John^{1*} [his* mother]² [said t₂ saw him*]³, and Bill⁴ did₃ too. (said t₂ saw him*)
 c. STRICT-SLOPPY: John^{1*} [saw him*]⁵ [said [his* mother]² VP₅]³, and Bill⁴ did₃ too. (said [his* mother]₂ VP₅)

The strict-sloppy readings for [1a] cannot be represented in an unmixed way, since moving he* will leave behind a trace t*, and thus will not be fixed in its reference to John, but will switch to Bill following the center-shift.

In Hardt's account, the available mixed and unmixed readings for the dream reports in [2] are derived in exactly the same way they are for the ellipsis case, with the discourse center optionally shifting to the dream-self, a discourse marker introduced by *dream*.

- (6) a. REAL-REAL: John^{1*} dreamed^{Bill2} he* married [his* sister]³.
 b. DREAM-REAL: John^{1*} [his* sister]³ dreamed^{Bill2*} he* married t₃.
 c. REAL-DREAM: John^{1*} [married him*]⁴ dreamed^{Bill2*} [his* sister]³ VP₄.

Again, the reading [2a-iii] cannot be represented as unmixed without violating the Centering Requirement - the ellipsis antecedent will contain a marker pointing to the center, whether this marker is he* or t* (indexing John^{1*} dreamed^{Bill2*} he₁ married [his* sister]³ gets the reading by violating Centering Preference).

2. Accounting for 2nd-person data without direct Centering.

We will extend Hardt's analysis to the new data in [7]

- (7) a. In those days, you had to support your children. In those days, your employer had to support you.
 v. ok Addressee had to support addressee's children. i. ok Addressee's employer had to support addr.
 vi. ok One had to support one's children. ii. ok One's employer had to support one.
 vii. * Addressee had to support one's children iii. ok Addressee's employer had to support one.
 viii. ok One had to support addressee's children. iv. ?ok One's employer had to support addr.

One possible account is to have second-person pronouns introduce discourse referents that can participate in Centering, with contexts acting as operators that introduce potential new centers-addressees.

This analysis, however, is undesirable, since the primary purpose of Centering is modelling local topic structure. Yet, entities like speaker and addressee are thought to be available globally throughout discourse, and thus not eligible to participate in the local topic structure (Walker, Joshi, and Prince 1995).

An alternative account which does not involve counting a second-person pronoun as a part of local topic structure, would make it possible to include contexts (defined above as tuples <speaker, addressee, time, world>) among the objects that can participate in Centering. This would extend the ontology of possible discourse referent types proposed in Hardt and Stone (1997) and Bittner (2001). Then, an occurrence of an indexical, like a second-person pronoun, would refer to the currently-centered context, as in [8]. This analysis remains faithful to Hardt's proposals for VP-ellipsis and dream reports, while keeping speakers and addressees out of Centering. [8a] below spells out the addressee-addressee reading for [7a], corresponding to the unshifted, strict interpretation of the context variable; [8b] corresponds to the arbitrary-arbitrary reading for [7a], illustrating a center shift to a new context introduced by the modal; [8c] gives the derivation for the mixed reading [7b-iii], in which the phrase *your employer* moves out of the shifted context, and thus is able to remain strict.

- (8) a. ADDRESSEE-ADDRESSEE: C^{1*} In those days [had to] C^2 , you(C_*) support [your(C_*) children] 3
 b. ONE-ONE: C^{1*} In those days [had to] C^2 , you(C_*) support [your(C_*) children] 3
 c. ADDRESSEE-ONE: C^{1*} [your(C_*) employer] 3 In those days [had to] t_3 support you(C_*)

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