SEMANTICS AND PRAGMATICS OF ARBITRARINESS

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Dedication and acknowledgements

For my family

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Dissertation Abstract

This dissertation explores a typology of a number of impersonal [1] and passive [2] constructions (constructions with arbitrary interpretations or *arbs)* in Russian, German, Italian, French, and English based on their semantic and pragmatic properties.

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

The goal of this work is twofold. First, I want to introduce a semantically-driven typology into the diverse realm of impersonals and passives. Second, in doing so I want to formally capture the interpretation of context-dependent expressions by building in a reference to speaker/hearer goals into the semantics of definite plurals. The formal tools developed in creating the typology of arbs allow a greater insight into the interaction of context and truth-conditions in general.

Pursuing the first goal, I argue that some arbs are uniformly definite, while others are essentially indefinite, drawing attention to previously unobserved behavior of different arbs with respect to adverbial quantification. Further differences between the two types of arbs emerge in their interaction with topic structure and discourse anaphora. A closer look at those arbitrary pronouns that can also refer to the speaker and/or hearer (*you* in English and Russian, French *on*, German *man*, and Italian *si*) necessitate a more elaborated structure for this subset of indefinite arbs, involving an indefinite (variable) and an indexical-like component. The exploration of these arbs gives rise to an investigation into the nature of indexicality and reference *de se*.

Addressing the second goal, I contribute to the development of semantic theory by arguing that the use of Decision Theory in the formal treatment of definite plurals can bring forth new insights, both empirical and theoretical. The Decision-Theoretic approach allows a formal account of context-dependency when interpretation depends on speaker/hearer goals. In application to definite plurals, this framework replaces and expands the empirical coverage of earlier accounts of distributivity and non-maximality in definite plurals, both arbs and non-arbitrary NPs (Schwarzschild 1991, Brisson 1998, Landman 1989).

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1 Introduction

This dissertation explores the typology of a number of impersonal (1a) and passive (1b) constructions in several languages based on their semantic characterization and pragmatic properties.

(1) Constructions with arbitrary interpretation
  a. They speak English in America.
  b. 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*). 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 (2a) (compare with (1a)) (Suñer 1983), which in turn derives from its usage for the agents of certain infinitival clauses (2b) (e.g., Lebeaux 1984).

(2) Spanish (example & translation from Cabredo-Hofherr 2002)
  a. *Tocan a la puerta.*
     knock.3PL on the door
     'Someone's knocking on the door' (lit. 'They're knocking on the door')

  b. [$_{CP}$ PRO To write a dissertation] is hard

Various authors have described as *arbitrary* the interpretations of pronouns and null syntactic elements (PRO, 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 an impersonal flavor to them.

While some of the constructions I am going to investigate were studied by previous researchers, others have largely avoided semantic inquiry. The semantics of arbitrariness has received significant attention in the literature (Jaeggli 1986, Cinque 1988, Condoravdi 1989, Kim 1991, Chierchia 1995a, 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 1995a), 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). At the same time, to my knowledge only one work (Prince 2003, 2006) has investigated the question of arbs' discourse functions. The questions in semantics of arbitrariness remain far from fully resolved: is arbitrariness a unified phenomenon? What makes a meaning 'arbitrary'?

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 stands in contrast to the work on non-arbitrary NPs, whose typology, semantics, and pragmatics are fairly well-explored[1].

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 definite, while others are complex indefinites, drawing attention to previously unobserved behavior 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.

Second, I want to contribute to our understanding of pronouns and NPs in general, by placing the impersonals within a broader theory of pronoun and NP interpretation. I argue that (some) arbs are complex semantic objects, in line with the recent work of Kratzer 1998, 2006 proposing that pronouns in general have complex internal structure. In the course of this investigation, I will raise important issues in the semantics-pragmatics interface in the domains of indexicality and reference *de se*. Furthermore, I study the effect of context on NP-interpretation. Addressing the latter issue, I want to contribute to the development of semantic theory by arguing that the use of Decision Theory in the formal treatment of definite plurals 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 The constructions in question

The empirical data in this dissertation comes from several constructions: 3rd-person plural constructions with antecedentless pronouns in Russian, English, and Italian (3); short verbal passives in Russian and English (4), Russian *sja*-passives and morphosyntactically somewhat similar Italian *si*-impersonals (5), specialized impersonal pronouns in German (*man*) and French(*on*) (6), and 2nd-person (singular) impersonal pronouns in Russian and English (7). I will also briefly consider English impersonal pronoun *one* (8).

(3) **i.** Russian

a. *V Amerike govor'at po-anglijski*
In America speak.3PL in-English
'They speak English in America' (≈∀)

b. *Segodn'a v Bejrute ubili nevinnogo cheloveka*

[1] 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 on discourse), among other works by these and many other authors.

Today in Beirut killed.3PL innocent.ACC person.ACC

'Today in Beirut they killed an innocent person' (∃)

ii. English

a. They speak English in America (≈∀)

b. Today in Beirut they've killed an innocent person (∃)

iii. Italian

a. *In America parlano inglese*
In America speak.3PL English

'They speak English in America' (≈∀)

b. *Oggi a Beirut hanno ucciso un innocente*
Today in Beirut have.3PL killed an innocent

'Today in Beirut they killed an innocent person' (∃)

(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' (≈∀)

b. *Vchera byl potoplen vrazheskij korabl'*
Yesterday was sunk enemy ship

'Yesterday, an enemy ship was sunk' (∃)

ii. English

a. Independence Day was joyfully celebrated in America yesterday (≈∀)

b. Yesterday, an enemy ship was sunk (∃)

(5) **i.** Russian

a. *V Rossii Novyj god prazdnovals'a 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' (≈∀)

b. *V restorane 'Odessa' segodn'a prazdnujets'a dva dn'a rozhden'ja*
In restaurant 'Odessa' today celebrates.SJA two days of.birth

'In the restaurant 'Odessa' today, two birthdays are being celebrated' (∃)

ii. Italian (from Chierchia 1995a: 107, 108)

a. *In Italia, si beve molto vino*
In Italy SI drinks much wine
'People drink lots of wine in Italy' (≈∀)

b. *Oggi a Beirut si è ucciso un innocente*
Today in Beirut SI is killed an innocent
'Today in Beirut, an innocent person was killed.' (∃)

(6) **i.** German

a. *Man sieht nur mit dem Herzen gut* (from *Der Kleine Prinz*)
MAN sees only with the heart well
'One sees well only with the heart' (≈∀)

b. *Gestern hat man ein Haus abgebrannt*
Yesterday has MAN a house burned
'Yesterday, someone burned a house' (∃)

ii. French

a. *On parle anglais en Amérique*
ON speaks English in America
'People speak English in America' (≈∀)

b. *On parle anglais ici*
ON speaks English here
'English is spoken here' (∃)

(7) **i.** Russian
Takih pejzazhej teper' ne uvidish'
Such.GEN landscapes.GEN nowadays not will.see.2SING
'You won't see such landscapes nowadays' (≈∀)

ii. English
You don't get that kind of view of the countryside anymore (≈∀)

(8) English
One should take care of one's parents (≈∀)

This is a very diverse group, varying with respect to semantics and effect on subsequent discourse, as well as morphosyntactic properties.

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 work), and the domain of quantification. Sentences with 3rd-person plural arbs (3), implicit agent/cause in passives (4) and *sja*-passives (5i) 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)-(5i) is often given by a locative or temporal adjunct.

Sentences involving *si* (5ii), *man*, or *on* (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 (cf. D'Alessandro 2004 for Italian, Kratzer 1997 for German, and Laberge and Sankoff 1979 for French). Sentences with arbitrary 2nd-person pronouns (7) as well as arbitrary pronoun *one* (8) can have generic, but not existential interpretation, a property further discussed in chapters 4 and 5a. Arbitrary interpretation of 2nd-person pronoun always has a sense of addressee and speaker inclusion, though very different from speaker-inclusive uses of *si*, *man*, and *on*. The sense of inclusion of conversational participants in the impersonal 2nd-person pronouns stems from an appeal (on speaker's behalf) for (addressee's) empathy.

The arbs also vary in their referential properties. Thus, 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 realizations (overt and null, respectively). In short verbal passives, Koenig and Mauner 1999 argue that implicit agents satisfy the argument slot of the predicate, but do not participate in the referential structure, a claim I shall dispute in Chapter 2 of this thesis.

At the same time, authors discussing syntax and semantics of Italian *si*-impersonals 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 anaphors) is *si* itself.

The referential properties of the German *man* and its Yiddish equivalent (Kratzer 1997, Prince 2003, 2006), as well as the French *on* are only slightly more permissive than those of the Italian *si*. *Man* and *on* can antecede only another occurrence of the same pronoun or a reflexive; *man* and *on*, like *si*, cannot be dropped in subsequent clauses within the same sentence (9) (for German, where a corresponding sentence with *er*=he instead of *man* is also ungrammatical, this is not surprising).

(9) German

a. * *Man sagt, dass gewinnen will*
MAN said that win will.3SING

French

b. * *On dit que gagnera*

ON said that will.win.3SING

Italian (Chierchia 1995: 109, ex.5b)

c. **Si è detto che vinceranno*
SI is said that will.win.3PL

Morphosyntactically, this is a very diverse group. I will now briefly summarize the morphological and syntactic properties of arbs; only some of these properties will become relevant in subsequent portions of this thesis.

The sentences in (3) show 3rd-person plural agreement on the verb. In Russian (3i) and Italian (3iii), the 3rd-person plural arbitrary construction must have phonologically null subject, while English uses an overt 3rd-person plural pronoun in subject position (3ii).

Alonso-Ovalle 2001, following Jaeggli 1986, argues for Romance languages that 3rd-person plural arbs cannot be 'derived subjects' on existential reading – that is, they cannot be subjects of passives or raising verbs. This generalization, however, is not borne out in Russian, English, or Italian, as the sentences in (10) illustrate[2].

(10) English

a. They were warned about this in the government
b. In San Quentin, they are given a warning when they try to speak
c. In Germany, they seem very excited about this match

Russian

d. *V Anglii byli preduprezhdeny ob etom*
In England were.3PL forewarned.3PL about this
'In England they were forewarned about this'

Italian

e. *Nel governo sono stati informati di questo*
In.the government are.3PL being informed about this
'In the government they were informed about this'

f. *In Germania sembrano molto eccitati circa questo gioco*

---

[2] Alonso-Ovalle's Spanish quasi-existential examples are given in [i]; my informants judge examples in [ii] (Spanish quasi-universal), and (10e) (Italian quasi-existential) acceptable and unmarked.

i. a. *Están siendo golpeados* (Spanish)
be.3PL being beaten
'They are being beaten' [Not: 'somebody…']

b. *Sono venuti a vedere* (Italian)
be.3PL come to see
'They have come to see'[Not: 'somebody…']

ii. *En España, parecen haber celebrado la*
In Spain seem.3pl to.have celebrated the
navidad con muchos festejos
Christmas with much festivities
'In Spain they seem to have celebrated Christmas with much joy'

In Germany seem.3PL much excited.PL about this game
'In Germany, they seem very excited about this game'

In (4), the standard passive morphology is used: patient occupies the subject position, copula agrees with the subject, while the arbitrary item is the implicit agent. Koenig and Mauner 1999 present evidence that the implicit agent in short verbal passives is encoded in the syntax: for instance, it can control a PRO in a purpose-clause and is compatible with agent-oriented adverbs (11a, b) (compare with an intransitive construction in 11c).

(11) Russian
a. *Dom byl prodan, (chtoby vyruchit' kuchu deneg) /(special'no)*
House.NOM was sold in.order to.collect pile.ACC money.GEN / intentionally
'The house was sold (to get a pile of money) / (intentionally)'

English
b. The house was sold (to get a pile of money) / (intentionally)
c. The house has sold (#to get a pile of money) / (#intentionally)

Both the Russian *sja*-passive (5i) and the Italian *si*-impersonal (5ii) constructions resemble passives in some respects, while differing from passives and from each other in others. Morphologically, the Russian *sja*[3] is a verbal suffix, while the Italian *si* is a clitic. Both participate in an enormous range of constructions, marking reflexivity(12i) middle voice (12ii), passive readings (12iii), unaccusativity (12iv), so-called inherent reflexivity (v), and inchoativity (vi), among other uses.

(12)	a. Russian	b. Italian (from D'Alessandro 2004:p.7)
i.	*Van'a mojets'a* John washes.SJA 'John washes himself'	*Luigi si lava* Luigi SI washes 'Luigi washes himself'
ii.	*Etot pol l'egko mojets'a* This floor easily washes.SJA 'This floor washes easily'	*Queste camicie si lavano facilmente* These shirts SI wash easily 'These shirts wash easily'
iii.	*Prodajuts'a mashiny* Sell.SJA cars.NOM 'Cars are being sold'	*Si vendono delle auto* SI sell some cars 'People sell some cars'
iv.	*Otkrylas' dver'*	*La porta si è aperta*

[3] Throughout, I actually gloss this suffix as *s'a* - to be consistent in my representation of Russian palatalized consonants.

	Opened.SJA door.NOM	The door SI is open
	'The/A door opened'	'The door opened'
v.	*Van'a usels'a na stul*	*Luigi si è seduto*
	John PRF.sat.SJA on chair	Luigi SI is sat
	'John sat down on a chair'	'Luigi sat down' '
vi.	*Masha prosypajets'a*	*Maria si sveglia*
	Mary wakes.up(SJA)	Maria SI wakes.up
	'Mary wakes up/Mary is waking up'	

I take these items to be morphological reflexes of underlying syntactic configurations (see, e.g. Embick 1997 for an implementation of similar multi-tasking morphology in Greek in a Distributed Morphology framework, and D'Alessandro 2004 for a detailed treatment of the syntax of impersonal *si*), rather than items with impersonal denotations in their own right.[4] This view implies that in the impersonal construction in (5) the actual arbitrary item is not *sja* or *si*, but an implicit agent argument. This argument is phonologically null, but encoded in the syntax, akin to the one in the passive examples in (4). The fact that an agent is encoded in these constructions, whether by the phonological null argument or by the *sja* or *si* themselves, is illustrated in (13) below.

(13) Russian

a. *Dom prodavals'a, (chtoby vyruchit' kuchu deneg) /(special'no)*
House.NOM was.selling.SJA in.order to.collect pile.ACC money.GEN / intentionally
'The house was being sold (to get a pile of money) / (intentionally)'

Italian

b. *In Italia si legge i giornali locali (per imparare le notizie)/(itenzionalmente)*
In Italy SI reads the newspapers local to learn the news / intentionally
'In Italy people read local newspapers (to learn all the news) / (intentionally)'

The Russian *sja*-passive and Italian *si*-impersonal constructions differ from each other substantially, particularly in the range of verb types with which they occur. The Russian construction complements the Russian verbal passive: both are used only with transitive (or ditransitive) verbs; while the passive can only occur with perfective aspect on the verb, the *sja*-passive is used (only) with the imperfective. In contrast, the Italian *si*-impersonals are used in transitive (14), and also in a wide range of intransitive constructions (14b, c), including passives (14c).

[4] A syntactic analysis that treats the reflexive and impersonal *sja* and *si* constructions in a unified way must divorce the impersonal meaning from these items themselves. Whether such an analysis is possible is a point on which I have nothing to say here, but which has been extensively debated in Babby 1975, 1989, 1993, Williams 1993, Franks 1995: ch. 8, Schoorlemmer 1996, Junghanns 1996 for Russian *sja* and in Napoli 1976, Manzini 1986, Burzio 1986, and Cinque 1988 for Italian *si*, among others.

(14) Italian

a. *In Italia, si beve molto vino* (Chierchia 1995a: 107)
In Italy SI drinks much wine
'In Italy, people drink a lot of wine'

b. *Spesso si è arriva in ritardo* (D'Alessandro 2004, p.63 from Cinque 1988)
Often SI is arrived in lateness
'People often arrive late'

c. *Spesso si è trattati male* (D'Alessandro 2004, p.63 from Cinque 1988)
Often SI is treated badly
'People are often ill-treated'

The impersonal pronouns in (6) exhibit fully active morphology, with the subject arbs appearing in a wide range of constructions with or without accusative-marked objects. The agreement on the verb is, both in the case of *man* and *on*, 3rd-person singular. There are good reasons to think that this agreement is simply the default, and that these pronouns are neither specified as 3rd-person, nor as singular. For instance, these items can be interpreted as referring to a (syntactically plural) group that includes the speaker (15a, b).

(15) German

a. *In meiner Familie spricht man höflich miteinander*
In my family talks MAN politely with.one.another
'In my family, we speak politely with each other'

French

b. *Dans ma famille, on se parle entre soi*
In my family ON MIDDLE talks between oneself
'In my family, we talk to each other'

The 2nd-person arbs are also used in a wide range of constructions, with the verbs showing 2nd-person singular agreement in Russian. In Russian, the subject may be null (16a) or an overt 2nd-person singular pronoun (16b). In English, the subject must, of course, be an overt 2nd-person pronoun, singular in those dialects in which the distinction exists. For instance, in a dialect spoken in South Philadelphia, the plural 2nd-person pronoun *[yɪz]* must refer to the addressee (similarly for Southern American English y'all) (16c), while the singular form *you* could be impersonal (16d)[5].

(16) Russian

[5] I am grateful to the owners, staff, and customers of 'Io e Tu' restaurant in Philadelphia for producing many wonderful utterances containing the deictic *[yɪz]* – impersonal *you* variation.

a. *Nashu pesn'u ne zadushish', ne ub'josh'*
Our.ACC song.ACC not will.strangle.2SING, not will.kill.2SING
'You can't strangle, you can't kill our song'

b. *Kogda ty molod, vs'o kazhets'a prekrasnym*
When you.SING young, everything seems wonderful.INSTR
'When you're young, everything seems wonderful'

English (South Philadelphia)
c. *[Yɪz]* could bring some beer to the party
addressees / *people

d. You could bring some beer to the party
addressee / people

Finally, the distribution of impersonal uses of the 2nd-person pronoun overlaps that of the English impersonal pronoun *one* (8). Both are unacceptable in episodic sentences (17).

(17) Russian
a. *Ty szhog dom tol'ko chto*
You.SING PRF.burned house only what
'You burned a house just now' (no impersonal reading: addressee only, *people)

English
b. You burned a house just now (no impersonal reading: addressee only, *people)
c. *One burned a house just now

Unlike *you*, *one* is generally dispreferred in sentences where it does not occur in the subject position (18).

(18) Russian
a. (*Iz ssylki luchshe vozvrashchat's'a k sem'je*)
(From exile better to.return to family)
Doma teb'a i primut, i lishnego ne spros'at
At.home you.ACC and accept.3PL, and extra not will.ask.3PL
'(From exile, it's best to return to family) At home they'll accept you and won't ask anything extra'

b. (From exile, it's best to come home to family.) At home, they'll accept you and won't ask you any questions
c. (From exile, it's best to come home to family.) ?* At home, they'll accept one and won't ask one any questions

In general, the use of *one* seems to be declining, and extremely infrequent in American English (Biber, Johansson, Leech, Conrad, and Finegan 1999), making data from native speakers often inconsistent; thus, I will only present a brief overview of this item and its interpretation in a mini-chapter 5a.

1.2 A brief history of pronouns

Early researchers in modern semantics treated pronouns as simple objects: a pronoun denotation was one of the countably-many variables of type *e* (individuals) available in the lexicon (19a). The variable had to be bound, eventually, by an operator (19b); alternatively, the variable could receive its denotation from an assignment function (as in the case of discourse pronouns (19c)) (Montague 1973, Heim and Kratzer 1998). Complications like feature-matching and binding constraints were the domain of syntactic inquiry; the meaning of pronouns was straightforward.

(19) Pronouns in Montague grammar
  a. $[\![\text{he}_8]\!] = x_8$
  b. $[\![\text{Every boy } \lambda_8 \text{ loves his}_8 \text{ mother}]\!] = \forall x.\ \text{Boy}(x) \rightarrow \text{loves}(x,\text{mother}(x))$
  c. $[\![\text{Mary loves him}_8]\!]^g = \text{loves}(m, g(8))$

This approach allowed researchers to capture the many similarities between pronouns and traces (Montague 1973), pronouns and tenses (Partee 1973), and matched the intuition that context determines which individual a pronoun ends up referring to.

Later frameworks like DRT (Kamp 1981, Kamp and Reyle 1990) and File-Change semantics (Heim 1982) kept the basic insights of Montague grammar regarding pronouns: the pronoun was still a variable of type *e* (a discourse referent). Operator binding was a matter of embedding discourse representations, in which the pronoun referent was equated with the variable bound by the operator (20a); representing discourse pronoun was a matter of conditions equating the referent introduced by the pronoun with a previously introduced discourse referent (20b).

(20) Pronouns in DRT
  a. Every boy loves his mother
  b. Mary loves him

Semantics of pronouns gained complexity when along came a new analysis of donkey-pronouns (21a) and other phenomena. In these contexts, the pronouns were analyzed in a seminal article by Gareth Evans as stand-ins for definite descriptions (Evans 1977) (21b). The true content of these E-type pronouns is still a matter of debate: some authors argue that the entire relation expressed by the antecedent description should be included in the

content of the pronoun (e.g., Heim 1990, Heim and Kratzer 1998) (21c), while some examples seem best analyzed by just including the head noun of the antecedent in the denotation of the pronoun (Elbourne 2001, Sauerland 2000) (21d).

(21) E-type pronouns
  a. Every man who owns a donkey, beats **it**
  b. Every man **x** who owns a donkey, beats **the donkey owned by x**
  c. i. $[\![\text{ it }]\!]_{\text{Heim \& Kratzer 98}} = \text{the } [R_{< 7, <e, et>>} \text{ pro}_{<1,e>}]$ ii. $[\![\text{ it }]\!]_{\text{Heim 1990}} = f(x)$
     pro = the subject (man x in [a]) x = the subject (man x in [a])
  d. Every man who owns a donkey, beats **the donkey**

This analysis proved very fruitful in analyzing other phenomena besides donkey pronouns, such as Bach-Peters sentences[6] (22a) (cf. analysis in Jacobson 1977) or paycheck pronouns (22b) (cf. analysis in Cooper 1979), and focus phenomena (Sauerland 2000). It suggested that pronoun denotations may be more complex than individual variables or discourse referents.

(22) More uses for E-type pronouns
  a. Every pilot who shot at it hit the MIG that was chasing him
  b. John gave his paycheck to his wife. Everyone else gave it to his mistress

More puzzles set researchers exploring what exactly is the role of features in pronoun interpretation. Features, when not mere signs of syntactic agreement (23a), were previously thought of as partial identity functions that combined with pronouns (denoting variables) and introduced presuppositions about the domain of the variable denoted by the pronoun: *she* was only defined for female individuals, while *I* only for those individuals who were speaking (23b) (the denotations in (23b) follow the implementation in Heim and Kratzer 1998; the view that features denote presuppositions was expressed as early as Cooper 1983).

(23) Pronoun features
  a. Russian
     Upala vilka. *Van'a* *podn'al* *jejo.*
     Fell.FEM fork.FEM.NOM John.NOM picked-up.MASC her(she.FEM.ACC)
     'A fork fell down. John picked it up'
  b. i. $[\![\text{She}_1]\!]^{g,c} = g(1)$ if female(g(1))=1, undefined otherwise
     ii. $[\![I_1]\!]^{g,c} = g(1)$ if g(1) includes the speaker in c, undefined otherwise
  c. $[\![\text{I arrived}]\!]^{c} = \text{arrived(speaker(c))}$

[6] As Karttunen 1971 points out in a footnote, 'James D. McCawley (1967) attributed the discovery *[of these sentences]* to *[Susumo]* Kuno, apparently without knowing that Bach and Peters (Bach, 1967) had independently presented the same argument.'

Kratzer 1998 points out examples (attributed to Irene Heim) which suggest that features of 1st and 2nd-person pronouns are only sometimes interpreted (whether as presuppositions or assertions) (24a). For plural 1st and 2nd-person pronouns, Hotze Rullman proposes an analysis in which different subparts in the denotation of the pronoun may behave differently with respect to quantification: in example (24b) (after Partee's 1989 sentence), the speaker remains a subpart of different musical situations with *we*, while the friend that John brings changes (Rullman 2004). Kratzer 2006 brings further examples pointing to the need for a systematic account of the interpretation of pronoun features – such as contrasts between (24c,d) in the availability of bound-variable interpretations for 1st-person pronouns. Such contrasts, she points out, are the product of availability of agreement chains between the bound-variable pronoun and its "actual 1st-person" antecedent. Thus, in (24c) the 3rd-person agreement on the verb disrupts the chain, while in (24d) the non-agreeing past tense form is compatible with 1st-person features.

(24) Features: pronouns have complex contents

a. Only I got a question that I understood **reading**: no one else is x such that x got a question x (NOT: I) understood

b. When John brings a friend, we usually/sometimes play trios.

c. ?I am the only one who **brushes** my teeth

d. I am the only one who **brushed** my teeth

Recent work in Distributed Morphology (cf., e.g. Halle and Maranz 1993, Embick and Noyer *to appear*) inspires current semantic research to analyze simple-looking expressions (Rullman 2004, Heim 2005, Kratzer 1998, 2006), focusing on the semantic contribution of various elements **within** the denotation of pronouns. The starting hypothesis of Kratzer's 2006 theory unifying these data is that pronouns may be "born" (i.e., may enter a syntactic derivation) with only a subset of features they seem to have by the time they're pronounced. In order to acquire a pronounceable shape, these Minimal Pronouns must acquire the features they lack via local agreement chains from a suitable antecedent[7].

Exactly which features a pronoun may lack (or which ones it may be born with) is determined by the semantics of features. To obtain semantically-driven constraints on feature combinations that may result in a pronoun, Kratzer abandons the view that all features are partial identity functions combining with individual-type variables. Instead, she argues for feature denotations of different types, which may combine via usual function-application mechanisms to give a DP in the syntax and an individual (type *e*) in the semantics. A summary of feature denotations in this framework is given in the table (25a) below; (25b) gives some possible pronoun denotations that result from the

[7] There is a set of exceptions that depend on a point-of-view; this complication serves to further assimilate bound-pronoun data to general anaphora facts (long-distance anaphora depend on local agreement chains, or else are sensitive to point of view), but does not change the architecture of the grammar; to simplify exposition, I will ignore these cases here.

definitions in (25a). Indexes are features, and as such they enter syntactic composition, signaling binding relations, forming pronouns, etc. Descriptive features, like *fem*, *masc*, etc. are properties of singularities. They can be pluralized using the standard 'pluralizer' operation – Link's 1983 star – to yield properties of singular or plural individuals. Two other 'pluralization' operations are available: group formation and sum formation. Thus, what we see as plural morphology is a reflection of one of these pluralizing operations.

(25) Kratzer 2006

a. TABLE 1: Pronoun features

Feature	Denotation	Type
Index	$[\![8]\!]^{g,c} = g(8)$	*E*
Descriptive:feminine masculine stuff ***	$[\![fem]\!]^{g,c} = \lambda x.\ female(x)$ $[\![masc]\!]^{g,c} = \lambda x.\ male(x)$ $[\![stuff]\!]^{g,c} = \lambda x.\ x$ is a portion of stuff	$< e, t >$
Definiteness	$[\![def]\!]^{g,c} = \lambda P_{<e,t>}.\ \sigma x\ P(x)$	$<< e, t >\ e >$
Participant: 1st 2nd $1^{st}+2^{nd}$	$[\![1^{st}]\!]^{g,c}$ = the speaker in c $[\![2^{nd}]\!]^{g,c}$ = the hearer in c $[\![1^{st}+2^{nd}]\!]^{g,c}$ = the sum of speaker and hearer in c	*e*
Star feature	$[\![*]\!]^{g,c} = \lambda P_{<e,t>}.*P$	$<< e, t > < e, t > >$
Group feature	$[\![group]\!]^{g,c} = \lambda x.[p]$[8] x's group for c	$< e, e >$
Sum feature	$[\![sum]\!]^{g,c} = \lambda x.\lambda y.\ x+y$	$<< e, e > e >$

b. TABLE 2: Some pronoun denotations

Features	Denotation	Pronoun shapes
def (star(fem))	Σx *female(x)	*they* (English) (Hebrew)
def (star(masc))	Σx *male(x)	*they* (English (Hebrew)
def(star(individual))	σx *individual(x)	*they* (English)
2nd	The hearer in c	*you* (English) *ty* (Russian)
Group (2nd)	the hearer's in c group for c	*you* (English) *vy* (Russian)
def (fem)	σx female(x)	*she* (English)

A bound-variable pronoun would then enter the syntactic derivation as an index feature, 'borrowing' other features (number, gender, or person) from a suitable antecedent via

[8] This presupposition p is "x's group for c is c-exclusive", meaning that if x is a conversational participant, no other conversational participant is part of x's group. This is to prevent plurals like *you* from including the speaker.

agreement, and thus acquiring a pronounceable shape (like *I*, *you*, or *she*) in the PF component of the derivation.

The feature types, both semantic (25a) and syntactic, constrain the combinations that may yield different pronouns, restricting the possible pronoun paradigms in natural language. Thus, for example, no language is predicted to have specialized pronouns that refer to pluralities of speakers, or pluralities of hearers. That is because the plural of 1st or 2nd-person pronouns is achieved via group formation, which allows non-speakers or non-hearer to be members of the resulting group; while a language without singular-plural distinction may use the simple 1st or 2nd-person feature to refer to both singularities and pluralities of speakers/hearers, no feature combination gives exclusively a plurality of speakers/hearers.

The empirical generalization emerging from the last two decades of research is the following: there is more to pronouns than just x_e.

The theories of pronouns seek to derive constraints on possible pronoun denotations from a reasonable set of building blocks (e.g., features) in interaction with the general principles of syntactic and semantic composition.

Inasmuch as impersonal pronouns can be assembled in the same way (and perhaps from some of the same components) as 'personal' ones, their semantics and typology are going to be constrained by the same principles.

In turn, a careful investigation of the semantics and typology of impersonals can contribute to the theory of pronouns in general, by answering foundational questions, such as: What is the range of possible pronoun components (features or other kinds of building blocks)? Are the constraints on pronoun-assembly universal, cross-linguistically and across various kinds of pronouns, or are (some) impersonals somehow special? Is arbitrariness a unified phenomenon, perhaps stemming from the semantics of a specialized *arb* feature? Or is arbitrariness, like morphological plurality, a product of different underlying representations? What is the role of person, number, and other features in the semantics of impersonal pronouns – and what does this role tell us about these features?

In this dissertation, I address all of these questions, some in more detail, and others in passing. I extend the line of research seeking to build pronoun denotations from more basic components, arguing that impersonal pronouns are unexceptional in the realm of pronouns in general: they, too, may have complex denotations. This argument draws a stronger semantic-morphology connection than the claim made in Jaeggli 1986, Cinque 1988, among others, that a special feature *arb* is responsible for the impersonal interpretations of 3rd-person plural and 2nd-person arbitrary pronouns. Instead, I show that different sources are responsible for the 'arbitrariness' of different arbitrary items.

1.3 Goals and working hypotheses

The two goals of this dissertation are to address the following questions:

First, what is the nature of arbitrariness? Can a unified typology of impersonals and passives be developed, based on their semantic and pragmatic properties?

Second, what do the semantic and pragmatic properties of arbs tell us about the semantics and pragmatics of pronouns and NPs in general?

While the arbs examined in this thesis show similar (and rather wide) ranges of interpretation, a closer examination of their semantic behavior reveals important differences. The chief semantic claim, addressing the first goal of this dissertation, is given in (26) below:

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(26) **Typology of arbitary interpretations:**

Arbs fall into two types that differ in their semantics and their effects on subsequent discourse. ***Type 1*** consists of the 3rd-person plural arbs and the implicit agents in passives and Russian *sja*-passives; ***Type 2*** arbs are the 2nd-person arbitrary pronouns, Italian *si*-impersonals, and the specialized impersonal pronouns *man, on,* and *one.*

The source of arbitrariness is different for the two types of arbs.

a. Semantically, Type 1 arbs are uniformly (plural) definites, while Type 2 arbs derive their arbitrariness from a variable (an indefinite) in their denotations.

b. In discourse, Type 1 arbs are possible, but unlikely (rare) topics and antecedents for discourse anaphora, while Type 2 arbs do not participate in topic structure or discourse anaphora at all.

The claim in (26a) goes against previous accounts of the semantics of 3rd-plural arbs (indefinite account of Chierchia 1995a, ambiguity account of Cabredo-Hofherr 2002, among others), implicit agents in verbal passives and *sja*-passives (among others Dowty 1978 and Markman 2001, respectively, treat them as indefinites), and impersonal pronouns *man* and *one* (argued to be uniformly definite by Kratzer 1997 and Safir 2004, respectively). At the same time, claim (26b) contradicts Koenig and Mauner 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 *on*, *man* or *si*-impersonals in discourse, in that they are not referentially impotent.

The second clause in (26b) provides an important clue as to the nature of arbitrariness cross-linguistically, as it provides an answer to the question, why are impersonals and passives used at all? My answer to this question follows the analysis provided in Prince 2003, 2006 for the impersonal pronoun *me(n)* in Yiddish. Since subjects cross-linguistically provide salient topics/antecedents for future discourse anaphora, passives serve to remove agent denotations from this top-ranked status. Impersonals are then a kind of asyntactic passive: Type 1 arbs put the agent/subject

denotations low on the list of potential topics or antecedents, while Type 2 arbs remove the subject denotation from salience computation altogether.

In accounting for the interpretation of passives and impersonals, the hypothesis in (26) raises several issues that go beyond the theory of arbitrariness. First, four of the items have readings that are indexical or indexical-like: the 2nd-person arbs may be interpreted as referring to the hearer (an unsurprising fact) (27), while *man* (in most dialects), *on*, and *si* have readings referring to some group involving the speaker, akin to *we* (28).

(27) Russian
a. *Ty tol'ko chto podzhog dom*!
You only what set.on.fire house
'You just set a house on fire!'

English
b. You just burned a house!

(28) German
a. *Letzte Weihnachten hat man zu Hause verbracht*
Last Christmas has MAN to home spend-time
'Last Christmas we spent at home'

French
b. *On a passé ce Noël entièrement à la maison*
ON has passed this Christmas entirely at the home
'This Christmas we spent entirely at home'

Italian
c. *Ieri si é arrivati tardi*
Yesterday SI is arrived late
'We arrived late yesterday'

The question presented by this group of items is thus, what sort of denotation would produce items that are at once indexical(-like) and impersonal? The possibility of impersonal interpretation seems contradictory to the very nature of indexicality. I flesh out this apparent contradiction in Chapters 4 and 5 in more detail, and provide two related (but distinct) solutions, one addressing this question for 2nd-person arbs, and another for *on/man/si*. In both cases, I argue that these arbs are composed of two elements, one responsible for the indexical(-like) behavior, and the other – an indefinite variable – for the impersonal interpretations. After examining the behavior of *man*, *si*, and *on* in logophoric contexts, I also address the residual question of the exact nature of the reference to speaker made by the indexical-like uses of *man*, *on*, and *si*. I will argue that

in the case of *man* and *si* [9] this reference is the result of a *de se* pronoun within the denotation of the arbs – in matrix clauses interpreted as the speaker, while in the case of *on* this reference is indeed a product of a 1st-person indexical.

Second, the claim in (26) has important consequences for the theory of interpretation of definite plurals. I analyze Type 1 arbs – the 3rd-person plural arbs and implicit agents in passives and *sja*-passives – as plural definites. While this treatment provides a natural account of their universal-like/generic uses (the [a] sentences in (3)-(5i)), the claim seems to present no explanation for their existential-like uses (the [b] sentences in (3)-(5i)). In Chapter 3 I present an overview of a solution proposed to this challenge by Alonso-Ovalle 2002 for Spanish 3rd-person arbs, and provide evidence that this solution is not tenable. I then proceed to develop a theory of context-dependency in definite plurals that allows for their existential uses (whether the plural is arbitrary or not).

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, and determines the distribution of individuals in the discourse model.

The second hypothesis, pursuing the second goal of this dissertation, argues for a relevance-based analysis of definite plurals, and is given in (29) below.

(29) Context-dependency in definite plurals (both arbitrary and not) is determined by relevance, rooted in speakers' communicative goals, and not in salience-guided distribution of individuals in the discourse model.

The approach to definite plurals presented here improves on previous accounts in Schwarzschild 1991 and Brisson 1998 by taking as its base a weak semantics for definite plurals based on Landman's 1996 framework, and building in pragmatic factors to derive stronger truth-conditions for sentences with definites.

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 (Carnap and Bar-Hillel 1953, Raiffa 1968) in order to capture the context-dependence of these NPs, and allow the treatment of arbs as unambiguously definite or unambiguously indefinite-like.

1.4 Organization of the thesis

In the next chapter I will present evidence for the typology in (26), first exploring the truth-conditional semantics of the two types of arbs (*section 2.3*), and then their effect on subsequent discourse (*section 2.4*).

[9] In some varieties of German and Italian, respectively.

Chapter 3 offers a formal semantic analysis of definite plurals, placing the arbs belonging to Type 1 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 (29) above.

Chapter 4 discusses in more detail the interpretation of 2nd-person singular arbs, reconciling their indexicality and their indefinite-impersonal use. The issue of monsters (context-changing operators) and shifting indexicals is also investigated in this chapter, and its applicability to the semantics of arbs is discussed.

Chapter 5 addresses the issue of indexical-like interpretations arising for *on*, *man*, and *si*, and the exact semantics of these arbs. A mini-chapter *5a* describes the behavior of American English *one*.

Chapter 6 summarizes the findings, and raises further issues in the interpretation of arbitrary items.

2 THE TYPOLOGY OF ARBS

2.1 Introduction

In this chapter, I pursue the central claim of this dissertation, repeated in (30).

(30) The central typological claim:
  a. Arbitrariness has two possible sources:
    i) first, a definite plural denotation with broad domain (e.g., *the people*, or *the agents*) and a discourse function of low salience, or
    ii) second, a variable with a discourse function of non-participation in the salience/anaphora computation
  b. Every arbitrary item derives its arbitrariness from just one of the two sources:
    i) 3rd-person plural arbs and implicit agents of passives and Russian *sja*-passives from the first source (Type 1 arbs)
    ii) Impersonal *you*, French *on*, German *man*, and Italian *si* construction from the second source (Type 2 arbs)

Several arguments support this central claim: morphological evidence, interaction of different arbs with quantification in two constructions with quantificational adverbs, and the interaction of different arbs with discourse anaphora.

2.2 Evidence from morphology

I will consider four types of morphological evidence for the content of the arbs: pronoun shape, verbal agreement, number concord with adjectival and nominal elements, and possibility of anteceding a reciprocal.

First, the 3rd-person plural arbs bear the features of the 3rd-person plural pronoun. In English, the 3rd-person plural arb also shares the phonological form of that pronoun - *they*; in Italian and Russian it triggers the same verbal agreement as the definite pronoun. In all three languages, the arb can be referred back to by 3rd-person plural pronominal forms, within and outside the sentence – an ability I will discuss in more detail in section 2.5. Moreover, an arbitrary pronoun with this feature set appears in several language families, suggesting a relationship between the 3rd-person plural arb and the pronoun with the same features.

How seriously should we take the (3rd-person plural) features of this arb? As (31) shows, the item supports plural reciprocals like *each other*, showing it must be semantically plural. In English, singular NPs that denote groups can also support reciprocals, at least when the verbal agreement is plural (32a). In Russian and Italian, however, singular NPs that denote groups lack this ability (32b, c).

(31) English

a. In a small town, they are intensely aware of each other… (from *The Future of the Past*, A. Stille, p. 75)

Russian

b. *Na etoj kafedre ochen' drug druga uvazhajut*
On this department very each other respect.3PL
'In this department, they respect each other a lot'

Italian

c. *Nella questa familia parlano l'uno con l'altro*
In.the this family talk.3PL the.one with the.other
'In this family, they talk to each other'

(32) English

a. This family ?talk/*talks to each other

Russian

b. **Eta sem'ja razgovarivajet/razgovarivajut drug s drugom*
This family talks/talk each with other

Italian

c. **Questa familia parla/parlano l'uno con l'altro*
This family talks/talk the.one with the.other

In addition, native speakers (and researchers, e.g. Cabredo-Hofherr 2002) reject scenarios in which the speaker or hearer are included in the denotation of the arb, except accidentally. That is, the sentences in (33) do not entail that the speaker or the hearer bathed only on Fridays (or went to the theater every Saturday); on the other hand, they don't seem to explicitly exclude them.

(33) English

a. When I was little, they bathed only on Fridays

Russian

b. *Kogda ja byla malen'koj, kupalis' tol'ko po p'atnicam*
When I was.FEM little.FEM.INSTR bathed.3PL only on Fridays
'When I was little, they bathed only on Fridays'

Italian

c. *Quando ero una piccola bambina, andavano al teatro ogni sabato*
When was.1SING a small.FEM girl went.3PL to.the theater every Saturday
'When I was a little girl, they went to the theater every Saturday'

If the 3rd-person feature denotes failure to include the speaker and hearer, as in Kratzer 2006, then we can safely assume that this arb is indeed a 3rd-person plural pronoun. If, however, the 3rd-person feature denotes exclusion of the speaker and hearer, then the arbitrary item is best interpreted as unspecified for person; the 3rd-person feature is then inserted as the default pronunciation. Note that English, Russian, and Italian seem to differ in this respect – sentence (34c), degraded in Italian on the impersonal reading of *they*, is perfectly acceptable in Russian and English (34a,b).

(34) English
a. They don't talk like that in our family!

Russian
b. *V nashej sem'je tak ne razgovarivajut*!
In our family so not talk.3PL
'They don't talk like that in our family!' = 'One doesn't talk like that in our family'

Italian
c. *??Nella nostra familia non parlano così*!
In.the our family not speak.3PL so
Intended: 'They don't talk like that in our family'

Thus, we have reason to argue that the analysis in this case should follow the form of the pronoun: what looks like a plural definite pronoun is indeed a plural definite (compare the analysis in Alonso-Ovalle 2002).

Similarly, 2nd-peson (singular) arb in English and Russian shares verbal agreement and phonological form of the 2nd-person (singular) pronoun. In English, singular and plural forms are not distinguished for the 2nd person. This arb, like the 3rd-person plural arb also appears in many unrelated languages, suggesting a relationship with the deictic pronoun. This relationship is indubitable in those languages that have different pronouns for polite/formal and regular form of address. In such languages, e.g., Russian, when the polite form is appropriate for the addressee, this form is also used to convey impersonal meaning (35).

(35) Russian
Byvalo, id'ot'e Vy po lesu, a vokrug – tishina…
Was.IMPFV.3NEUT.SING walk.2FORMAL you.FORMAL in forest, and around – quiet…
'Used to be, you're walking in the forest, and a quiet is all around you…'

The 2nd-person arb cannot show singular concord in either language (36). However, in English, but not in Russian 2nd-person arb can antecede reciprocals (37) (note that in English, but not in Russian singular NPs that denote groups can support reciprocals as long as the verbal agreement is plural (32), as it is in this case).

(36) English

a. In those days, you could be a good person/*good people and still win elections

Russian

b. *V te gody, ty mog byt' prilichnym chelovekom/*prilichnymi l'ud'mi*
In those years, you.SING could be decent.SING person / *decent.PL people
i tem ne meneje zanimat's'a politikoj
and by.that not less to.occupy.self by.politics
'In those days, you could be a decent person and still do politics'

(37) English

a. In those days, you couldn't talk to each other in the streets of New York

Russian

b. **V Nju Jorke ne pogovorish' drug s drugom na ulice*
In New York not will.speak.2SING each with other on street
Intended: 'In New York, you can't talk to each other on the street'

Within our theory of arbitrariness, if the features of this arb are taken at face value, its singular nature does not allow us to analyze it as a definite plural, leaving only the option of treating its arbitrariness as stemming from a variable in its denotation. The challenge of putting together the 2nd-person feature with the indefinite variable in this singular item remains, and will be addressed in Chapter 4.

Verbal agreement that accompanies *on* and *man* is 3rd-person singular, which is also the default agreement in French and German. At the same time, *on* supports plural nominal and adjectival concord, while German does not (38). Both *on* and *man* can support reciprocals (39), suggesting that these items are semantically plural. Note that singular NPs that denote groups cannot support reciprocals in French and German.

(38) French (adapted from Egerland 2003, ex.11, quoted from Grevisse 1980: 907)

a. *À cette époque, on a besoin d'être soignés*
In this time ON has need to.be taken.PL.care.of
'Nowadays, people need to be taken care of'

German

b. *In diesem Institut ist man gewöhnlich ein schlauer Mensch / *schlaue Leute*
In this institute is MAN usually a happy person / *happy people
'In this institute, a person is usually happy'

(39) French

a. *On se saluait à nouveau* (from Cabredo-Hofherr 2004:6, ex.17c)
ON self greeted anew
'People greeted each other again'

b. *Dans cette famille-là, on parle entre soi*

In that family ON speaks between oneself
'In that family, people talk to each other'

German

c. *Man grüsste einander wieder* (from Cabredo-Hofherr 2004:6, ex.17c)
MAN greeted each.other again
'People greeted each other again'

d. *Man redete miteinander*
MAN talked with.each.other
'People talked with each other'

I thus conclude that singular agreement morphology is the default agreement for *man* and *on*, which are semantically plural.

The Italian impersonal *si* comes with a complicated set of agreement patterns that do not reflect the arb's content (see D'Alessandro 2004 for detailed discussion). Semantically, *si* is plural, since it can show plural adjectival/nominal concord and support reciprocals (40).

(40) Italian

a. *Se si è belli, si è di solito anche biondi*
If SI is beautiful.PL SI is of usual also blond
'Most beautiful people are blond'

b. *Si era parlato l'uno con l'altro* (Cinque 1988, ex.39)
SI was talked the.one with the.other
'People talked with each other.'

Russian *sja*-passives and short verbal passives show agreement with the non-arbitrary patient. The denotation of the implicit agent (the arbitrary item in these constructions), however, may vary cross-linguistically. The implicit argument does not support nominal/adjectival modification or anaphora of any sort. Thus, morphological evidence of the nature of these arbs is not available.

The summary of the morphological evidence reviewed in this section is presented in the table below.

TABLE 3: Morphosyntactic/morphosemantic evidence

Arb	Pronoun shape	Verbal agreement	Nominal/adjectival concord	Anteceding reciprocals
3rd-person pl	3rd person plural or null	3rd person plural	plural	ok
2nd-person	2nd person (singular)	2nd person singular	singular	?/ok in English * in Russian

on	n/a	3rd person singular	plural or singular	ok
man	n/a	3rd person singular	singular	ok
si	n/a	3rd person plural/singular	plural or singular	ok
passives, *sja*-passives	n/a	n/a	n/a	n/a

2.3 Evidence from QVE

2.3.1 Background on definites, indefinites, QVE: frameworks

2.3.1.1 DRT and situations

As Ludlow and Segal 2004 point out, "philosophers of language (and semanticists) don't agree on much, but few have felt reason to doubt that there are at least two kinds of descriptions in natural language: definite descriptions (e.g. of the form 'the F'), used in sentences which say that there is a unique satisfier of F, and indefinite descriptions (e.g. of the form 'an F'), used in sentences which claim only that something or other satisfies F." Indeed, since the early work by Russell and Frege, definite and indefinite noun phrases were treated differently, to account for their different behavior with respect to reference/anaphora (41). In (41a), John is naturally interpreted as the antecedent of the definite NP *the stupid kid*; at the same time in (41b), the indefinite NP *a stupid kid* cannot be referring to John.

(41) Indefinites vs. definites: anaphora
  a. John came in. The stupid kid offended everyone at lunch
  b. John came in. A stupid kid offended everyone at lunch

Lewis 1975 notes that in sentences containing indefinites and adverbial quantification, the adverb seems to quantify directly over the variable introduced by the indefinite (QVE). These quantificational adverbs (Q-adverbs) like *always* or *usually* 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). The Q-adverbs yield the QVE both if the indefinite is singular, as in the classical QVE sentence in (42a, b), or plural (42c), or if it has the structure of a conditional ('donkey-sentence') (42d).

(42) Quantificational Variability Effect (QVE)
  a. A Penn student is usually/rarely smart

b. In this department, a student usually/rarely admires Maribel
c. Penn students are usually/rarely smart
d. If a student in this department deals with the Mafia, he always/usually/sometimes gets killed

Note that there is always a possibility that the Q-adverb quantifies over times – on this reading, (42a) would mean that some Penn student is smart most of the time, and stupid at other times (or, for the 'rarely' sentence, stupid most of the time and smart at other times). I will ignore these temporal readings – they tell us nothing about definite and indefinite NPs.

Crucially, definites and indefinites also behave differently with respect to adverbial quantification (43).

(43) Indefinites vs. definites: quantification
a. If a kid is tall, he's usually smart (has the reading: most tall kids are smart)
b. #If the kid is tall, he's usually smart (only has the reading: #a certain kid's height and intelligence mostly fluctuate together)

Several semantic analyses exist that can account for the differences with respect to anaphora and quantification. I will concentrate on their predictions with respect to quantification.

One influential framework, DRT (Kamp and Reyle 1993) (and a related independently developed framework of File-Change semantics (Heim 1982) treats indefinites and definites as fundamentally different semantically: definites are restricted to discourse referents or indices that are in some sense given, while indefinites are associated with referents or indices that have not been used or given.

This predicts both the facts in (41) and in (43): *The stupid kid* in (41a) is associated with a given referent, that is John, creating co-reference, while the index/referent of *A stupid kid* in (41b) has to be new, and so the indefinite expression cannot be co-referential with *John*. At the same time, in (43a), the new index associated with *a kid* in the restrictor *if*-clause of the construction becomes bound by the adverb *usually* (44a). However, the definite description *the kid* in (43b) is associated with a given index, referring to a given child, and so cannot be bound by the adverb (44b).

(44) Indefinites vs. definites: quantification in DRT
a. [Most [$x1^{\text{index 1 is unused}}$ | tall(x1)] [y| y=x1, smart(y)]]
b. [$x1^{\text{index 1 has been used}}$ Most [tall(x1)] [y| y=x1, smart(y)]]

A framework of situation semantics also predicts the differences between definites and indefinites, taking a different route. Here, the Fregean approach to the definite article is taken, where uniqueness (or maximality) and not givenness is taken to be its primary import. The facts in (43) are derived using minimal situations: in (43a), most minimal situations containing one tall kid extend to situations in which this kid is smart (45a), creating the effect of *usually* quantifying over kids. In (43b), however, most

minimal situations containing the unique kid in discourse extend to situations in which this kid is smart (45b) – there is no quantification over kids, and this reading means that the unique kid changes in intelligence from situation to situation[10].

(45) Indefinites vs. definites: quantification in situation semantics

a. $\lambda s_0.\text{Most } s_{min}[\exists x \text{ in } s_{min} \text{kid}(x)\&\text{tall}(x)] [\exists s' \, s_{min} < s' \text{ smart } (\iota y \text{ in } s_{min}. \text{ kid}(y)\&\text{tall}(y)),s')]$

b. $\lambda s_0.\text{Most } s_{min}[\text{kid}(\iota x \text{ in } s_0)\&\text{tall}(\iota x \text{ in } s_0)][\exists s' s_m < s' \text{ smart}(\iota y \text{ in } s_m.\text{kid}(y)\&\text{tall}(y)),s')]$

The effect is similar for plural definites and indefinites (46). In a sentence with an indefinite/bare plural (46a), a minimal situation contains a single member of the plural kid* (46b) is the same as a minimal situation containing a single kid, so quantification over minimal situations again results in the effect of *usually* quantifying over kids.

In contrast, a minimal situation for the sentence containing the plural definite (46c) is one that contains the maximal group of kids in discourse (46d); the whole sentence that asserts that most minimal situations in which that maximal group of kids is tall extend to situations in which that group is also smart.

(46) Indefinites vs. definites: quantification in situation semantics

a. If kids are tall, they are usually smart.

b. $\lambda s_0.\text{Most } s_m[\exists x \text{ in } s_m \text{kid}^*(x)\&\text{tall}^*(x)] [\exists s' \, s_m < s' \text{ smart } (\sigma y \text{ in } s_m.\text{kid}^*(y)\&\text{tall}^*(y)),s')]$

c. #If the kids are tall, they are usually smart.

d. $\lambda s_0.\text{Most } s_{min}[\text{kid}^*(\sigma x \text{ in } s_0)\&\text{tall}^*(\sigma x \text{ in } s_0)][\exists s' s_{ma} < s' \text{ smart}(\sigma y \text{ in } s_m \text{kid}^*(y)\&\text{tall}^*(y)),s')]$

2.3.1.2 Kinds and QVE

This approach, as articulated in Chierchia 1998, assumes that common nouns may sometimes be born in the guise of kinds – intensional individuals, which are semantically represented as functions from worlds into the plurality comprising all instances of the kind in the world. Thus, in English, *dogs* is such an intensional individual, the dog-kind. Depending on the language-particular parameter, nouns either always denote kinds (e.g., in Chinese), or always denote properties (e.g., in Romance languages like French or

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[10] Some definite descriptions are time-dependent, so that their reference varies in constructions with Q-adverbs. However, as the falsity of sentence [ib] in the scenario in [ia] shows, this variability is not true QVE, since what the quantifier 'counts' are the terms, not the people.

i. a. Scenario: in a certain country, over the last 50 years, presidential elections were held every two years. One stupid person, named John Smith, managed to get enough support to be elected every other election, but after a couple of terms, he was defeated every time by an intelligent opponent – a different opponent each time. So, over the last 50 year, the president, by term, was changing as follows: Smith – Smith – smart guy1 – Smith – Smith – smart guy2 – Smith – Smith – smart guy3 … .

b. The president of this country is usually smart
= 'Most of the time, the president's office is occupied by a smart person'
NOT 'Most people who occupied the president's office were smart'

Italian), or sometimes properties and sometimes kinds (e.g., in Germanic languages like English and German, or in Slavic ones like Russian).

The domain of individuals includes singular ones (atoms), and plural ones (sums or sets of atoms) (Link 1983). Languages which at least sometimes allow common nouns to have the basic denotation of properties (which is all the languages under consideration in this thesis) have the count/mass distinction. Singular count nouns denote sets of singular atoms (e.g., {apple1,apple2,apple2}), plural nouns denote sets of atom-sums or atom-sets (e.g.,{apple1,apple2,apple1+apple2} or {{apple1},{apple2},{apple1,apple2}}). Mass nouns are like plural count nouns in that they denote sets of sums that form a join semilattice under a part-whole relation. They differ from plural count nouns only in that the denotation of atomic/singular layer is vague in this case (what counts as the minimal unit of water?).

The definite article again receives the Fregean analysis: it denotes an iota operator when combining with count nouns (giving the unique maximal member of the denotation – a sum or a singular individual, the maximal set of apples or the unique apple), and a group-iota operator when combining with mass nouns (giving the atom/group corresponding to the unique maximal member of the denotation, the individual corresponding to the totality of water). The indefinite article turns a property denotation into a corresponding generalized existential quantifier ($[\![\textit{an apple}]\!] = \lambda P \exists x.apple(x)\&P(x)$). In addition, there are type-shifting operators that are applied as a last resort when no determiner with the same denotation is available. Two of them – $^{\cup}$ and $^{\cap}$ convert a kind into a property (e.g., $^{\cup}$furniture, the set of sub-pluralities of the plurality comprising the furniture-kind, so structurally, a mass noun) and, when defined, a property into a kind (e.g., $^{\cap}$Penn-students turns the property into the Penn-student kind; a property of sitting here does not have generalizeable behavior of a kind, so $^{\cap}$people-sitting-here is undefined; a property of being Gennaro Chierchia has only singular instantiations in every world, so $^{\cap}$Gennaro-Chierchia doesn't work either).

Additionally, there is an operation that can allow kind-denoting arguments (e.g., $^{\cap}$students) to combine with object-selecting predicates (e.g. are waiting in the hall), called Derived Kind Predication: waiting($^{\cap}$students) = $\exists$x[$^{\cup\cap}$students(x)&waiting(x)], creating narrow-scope existential readings.

A language like Russian has a simple system – since it has no articles, no determiner exactly corresponds in meaning to the type-shifting operations[11]. The nouns, which could be born as kinds (mass denotations) or properties (count denotations) are type-shifted freely into kind, definite, and indefinite denotations (by the $^{\cap}$, $^{\cup}$, $\exists$, and ι shifters).

In Romance, all nouns are properties, and so they require a determiner to be turned into arguments – Italian permits a null determiner in certain syntactic contexts (focus positions, object position), while French always requires an overt determiner. To create kind-denoting expressions, an intensionalized iota operator ($^{\wedge}\iota$), pronounced as its

[11] See Chierchia 1998 for arguments that *some* is ambiguous between the existential quantifier and free-choice denotation, thus failing to match the type-shifter (which has just the existential meaning).

non-intensionalized version, the definite article, applies to appropriate plural nouns (47a, b).

(47) French: eat.grass(^ι cows)
a. *Les vaches mangent de l'herbe*
The cows eat of the.grass
'Cows eat grass'

Italian: widespread (^ι dogs)
b. *I cani sono diffusi*
The dogs are widespread
'Dogs are widespread'

English: widespread (∩ dogs)
c. Dogs are widespread
d. *The dogs are widespread

In Germanic languages, nouns are either properties (count nouns) or kinds (mass nouns). Existence of articles blocks the kind of universal type-shifting by ∃ and ι that is attested in Russian. The shifter ∩ is needed to turn plural count nouns into arguments, allowing bare plurals in argument positions (47c). In English, the availability of this shifter blocks the use of the intensionalized denotation of the definite article (^ι) to create the same meaning (47d). For reasons requiring further research, in German this is not ruled out: thus, while bare plurals are the normal way to express kind terms in German, the language also permits definite plurals as kinds.

In Russian, German, and English bare plurals are kind-denoting, and are subject to QVE by providing (part of) the restriction for the adverb (illustrated in (48a) for *rarely*). Singular indefinites in English and German (and bare singulars in Russian, shifted to the indefinite/existential interpretation) are, presumably, also subject to QVE, interacting with the adverb either via situational-semantic or existential-disclosure mechanism ((48b) illustrates the result of the latter for *rarely*). With demonstratives (or English plural definites), Q-adverbs do not create QVE ((48c), paraphrased as (48d)), since the same unique maximal group of students participates in every situation (in essence, the variable *x* is bound by iota, and so cannot be bound by the adverb). The difference between definites and indefinites stems from exactly the same source as in the situation semantics.

(48) QVE and kinds:
a. Few x,s [$^{\cup\cap}$Penn-students(x)&C(x,s)][stupid(x)] (Penn students are rarely stupid)
b. Few x,s [~~∃x~~Penn-student(x)&C(x,s)][stupid(x)] (A Penn student is rarely stupid)
c. Few x,s [ιPenn-students(x)&C(x,s)][stupid(x)] (The Penn students are rarely stupid)
d. In few situations, this group of Penn students is stupid

Chierchia 1998 derives the possibility of Q-adverbs creating QVE with (kind-denoting) definite plurals in Romance (49a) by exploiting the part-whole relationships among the members of the kind (49b).

(49) QVE and kinds
  a. *Les étudiants sont en général intelligents* (French)
     I studenti sono di solito intelligenti (Italian)
     The students are of usual smart
     'Students are usually smart'
  b. Most x,s [x $\trianglelefteq$ ι students & C(x,s)] [smart(x)]
  c. These students are usually smart (Intended: Most of these students are smart)
  d. Most x,s [$^{\cup}\wedge$ι students(x)&C(x,s)] [smart(x)]

This mechanism, however, could also be used to derive QVE readings for demonstratives (or English definites) with Q-adverbs (49c), which are not attested (compare (47c, d)). I thus conclude that the mechanism for creating QVE readings for kind terms should be the same cross-linguistically, by using the $^{\cup}$ shifter to create a property/set denotation (49d). This is a strategy only defined for kinds, and so will not be applicable to demonstratives or to English definite plurals.

Part-whole relationships are only exploited by adverbs that denote quantification over parts, like *for the most part*, or even *mostly*, but not *usually*, as we shall see.

2.3.2 The facts on definites and indefinites

All three frameworks presented in the previous section predict differences in the interaction of (at least some) definites and indefinites with Q-adverbs. Empirically, the differences between definites and indefinites emerge in two constructions involving adverbial quantification: simple sentences with Q-adverbs (50, 50') and conditionals (so-called 'donkey sentences') (52, 52').

In sentences in (50), indefinites can result in QVE readings, where the adverb creates the effect of quantifying over the noun denotation.

(50) Regular QVE: indefinites
  a. A Penn student is usually smart.
     (QVE available: 'Most Penn students are smart')
  b. In the math class this term, a student is usually smart.
     (QVE available: 'Most students in the class are smart')
  c. A sports car is usually red
     (QVE available: 'Most sports cars are red')

Definites are not susceptible to quantification by these adverbs (Endriss and Hinterwimmer 2003) (50) (or, in some cases, cooperative speakers can coerce the

readings into existence, resulting in an 'acceptable but degraded' judgment, as in (50c)). Instead, as noted in Nakanishi and Romero 2003, quantifiers over parts must be used to achieve the QVE (51). Note that the reading in (51e) is not "most sports cars", but rather "most of the sports car", as expected from quantification over parts.

(50') Regular QVE: definites
a. #These students are usually smart.
(no QVE: the only reading is '#Now they are smart, now they are not')
b. The Yankees are usually smart.
(no QVE: the only reading is 'The team plays intelligently most of the time')
c. At Woodstock in 1975, the students were usually smart
(QVE absent or degraded:
the available reading is: 'All were acting smart, most times'
Sentence judged not very good for expressing 'Most of them were smart people')
d. #The students in the math class this term are usually smart
(no QVE: the only reading is '#Now they are smart, now they are not')
e. # The sports car is usually red.
(no QVE: the only reading is 'Now it's red, now it's not')

(51) Quantification over parts
a. These students are for the most part smart
b. The Yankees are for the most part smart
c. At Woodstock in 1975, the students were for the most part smart
d. The students in the math class this term are for the most part smart
e. The sports car is for the most part red.

The contrast between indefinites and definites is very strong in another construction with Q-adverbs: the 'donkey' sentences (52, 52').

(52) Donkey QVE: indefinites
a. If a student is tall, he is usually smart
(QVE available: 'Most tall students are smart')
b. If Penn students are tall, they are usually blond
(QVE available: 'Most tall students at Penn are blond')

(52') Donkey QVE: definites
a. ?#If these students are tall, they are usually smart
(no QVE: the only reading is '?#All of the tall ones act smart, most times')
b. #If the students in this room are tall, they are usually blond
(no QVE: the only reading is 'now they are tall/blond, now they are not')

However, quantification over parts does not achieve the normal QVE reading in the donkey sentences, since the if-clause still fails to provide the restriction appropriate for the QVE readings (53):

(53) Donkey with parts
  a. #If these students are tall, they are for the most part smart.
  b. #If the students in this room are tall, they are for the most part blond

A similar pattern holds in Russian, French, Italian, and German. In Russian, while there is no definite or indefinite article, bare nominals are susceptible to QVE with Q-adverbs, while demonstrative phrases are not (54).

(54) Russian QVE patterns
  a. *Student/Studenty MGU redko znajet/znajut japonskij*
  Student/Students of.Moscow.State.University rarely knows/know Japanese
  'An MSU student rarely knows Japanese / MSU students rarely know Japanese'

  b. *Etot/Eti student/studenty MGU redko znajet/znajut japonskij*
  This/These student/students of.Moscow.State rarely knows/know Japanese
  'This MSU student rarely knows/These MSU students rarely know Japanese'

In French and Italian, definites are the normal way to express kind terms, which are susceptible to QVE; in German, definites can express kind terms as well. 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 (55-57).

(55) French QVE patterns
  a. *A Penn, un étudiant est rarement stupide*
  At Penn a student is rarely stupid
  'At Penn, a student is rarely stupid'
  (QVE available: 'Few students at Penn are stupid')

  b. *A Penn, ces étudiants sont rarement stupides*
  At Penn, these students are rarely stupid
  'At Penn, these students are rarely stupid'
  (no QVE: now they act stupid, now they don't)

(56) Italian QVE patterns
  a. *In questa città, uno studente è di solito tifoso dell'Atalanta*
  In this city a student is of usual fan of.the.Atalanta
  'In this city, a student is usually a fan of the Atalanta'
  (QVE available: 'Most students in this city are fans of the team')

  b. *Questi studenti sono di solito tifosi dell'Atalanta*
  These students are of usual fans of.the.Atalanta
  'These students are usually fans of the Atalanta'
  (no QVE: now they are fans of Atalanta, now they are fans of Juventus)

(57) German QVE patterns

a. *(Die)Studenten in Penn sind gewöhnlich stolz auf den Präsidenten*
(The)Students in Penn are usually proud of the president
'Penn students are usually proud of the president'
(QVE available: 'Most Penn students are proud of the president')

b. *Diese studenten in Penn sind gewöhnlich stolz auf den Präsidenten*
These students in Penn are usually proud of the president
'These Penn students are usually proud of the president'
(no QVE: now they are proud, now they are not)

Of course, quantification over parts creates QVE effects with the demonstratives in Russian, French, Italian, and German (58).

(58) Quantification over parts of the whole

Russian

a. *Eti studenty MGU bol'shej chast'ju znajut japonskij*
These students of.MSU most.INSTR part.INSTR know Japanese
'These MSU students for the most part know Japanese'

French

b. *Ces étudiants sont dans l'ensemble stupides*
These students are on the.whole stupid
'These students are on the whole stupid'

Italian

c. *Questi studenti sono in gran parte tifosi dell'Atalanta*
These students are in most part fans of.the.Atalanta
'These students are for the most part fans of the Atalanta'

German

d. *Diese studenten in Penn sind grossenteils stolz auf den Präsidenten*
These students in Penn are in.most.part proud of the president
'These Penn students are for the most part proud of the president'

2.3.3 The facts on arbs

2.3.3.1 Type 1 arbs: no QVE with Q-adverbs

Notably, QVE readings with 3rd-person plural arbs in English, Russian, and Italian are achieved with *for the most part*, but not with Q-adverbs (59).

(59) 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 l'ub'at 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*)

d. *Na etom fakul'tete obychno l'ub'at 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 cittá 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 cittá 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*')

In the if-clauses of donkey sentences, the 3rd-person plural arbs also fail to give rise to QVE readings (60). Just as non-arbitrary demonstratives and English definites, the 3rd-person plural in the if-clause fails to be bound by the adverb.

(60) English
a. In this department, if they're smart, they're rarely proud of the dean

Russian

b. *Na etom fakul'tete, jesli l'ub'at dekana, to obychno/redko gord'ats'a*
On this department if love.3PL dean.ACC then usually/rarely proud.of.3PL
prezidentom
president.INSTR
'In this department, if they admire the dean they are usually/rarely proud of the president'

Italian

c. *In questa cittá, se sono tifosi dell'Yankees, di solito/raramente parlano inglese*
In this city, if are.3PL fans of.the.Yankees of usual/rarely speak.3PL English
'In this city, if they are fans of the Yankees, they usually/rarely speak English'

As this pattern of QVE readings indicates, 3rd-person plural arbs cross-linguistically are strikingly similar to non-arbitrary definite plurals in English and to demonstrative phrases.

Moreover, 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 non-arbitrary demonstratives and English definites (61).

(61) English

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 non-arbitrary definites in QVE contexts (62):

(62) Russian

a. *V Rossii, ``Pravda'' bol'shej chast'ju prezirajets'a*
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 prezirajets'a*
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

(63), where neither the quantificational adverb, nor *for the most part* have the agent denotation to quantify over.

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

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

2.3.3.2 Type 2 arbs: QVE readings with Q-adverbs

An investigation taking into account other types of arbs shows that not all of them pattern the same way with respect to quantification. 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 other arbs produces an entirely different result. Q-adverbs succeed in producing the QVE on the denotation of 2nd-person (singular) arbs (64a, b), *man* (64c), *on* (64d), and subjects of *si*-impersonals (64e), just as they do with overt indefinites (compare 50-58)[12].

(64) English *you*
a. In the Middle Ages, you usually/rarely lived to be 90
(QVE available: *Most/few people in the Middle Ages…*)

Russian
b. *V te vremena ty obychno/redko/inogda dozhival (azh) do 60-ti*
In those times you.SING usually/rarely/sometimes lived (even) till 60-ty
'In those days you usually/rarely/sometimes lived (even) until 60'

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…*)

[12] 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 here to show that Q-adverbs, which are powerless to produce QVE in non-kind definites and demonstratives, work perfectly to create these effects in sentences with *man* and *si*.

French *on*

d. *Au Moyen Age, on vivait rarement jusqú à l'âge de 60 ans*
In Middle Age ON lived rarely until the.age of 60 years
'In the Middle Ages, people rarely lived to be 60'

Italian

e. *Qui si è di solito tifosi dell'Atalanta*[13].
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*)

The sentences above involve quantification over individuals, not over times or events. E.g., (64d) cannot be paraphrased as "Most/few times/events during the Middle Ages contained people living till 90."

Even more strikingly, when the variable introduced with *you, man*, *on*, or *si* is inside the if-clause of a donkey sentence, it can be bound by quantificational adverbs (65). This is hallmark behavior of indefinites (compare (52))[14].

(65) English

a. If you're smart, you're rarely/usually proud
(QVE available: *Most smart people are proud*)

Russian

b. *Jesli zhivesh' v nischete, to obycho/redko dozhivajesh' to shestides'ati*[15]
If live.2SG in poverty then usually/rarely reach.2SG till sixty
'If you live in poverty, you usually/rarely reach 60 (years of age)'

---

[13] Special thanks to Roberto Zamparelli for examples involving Atalanta, Bergamo's football team (p.c.).

[14] These examples are complicated by the fact that *man/si/on/you* are the only forms available to refer back to *man/si/on/you*; so, they are used instead of regular pronouns in the consequent clause of the donkey sentences. Since these examples involve variables co-varying under quantification, the two occurrences of the arbs cannot be analyzed as simple coreference or mediated by extra-linguistic reasoning (as is argued in Koenig and Mauner 1999 for the French *on*). These examples are discussed in more detail in Chapter 5.

[15] The use of 2nd-person singular arb in Russian is much more restricted than in English, both in terms of syntactic environments in which it can occur and in frequency. For some reason, the following sentences are judged to be degraded:

i. *Jesli ty amerikanec, ty obychno/redko znajesh' ispanskij*
If you.SING American you.SING usually/rarely know.2SING Spanish
'If you're American, you usually/rarely know Spanish'

ii. *Jesli ne znajesh' gramoty, to redko zhivesh' (vs'u zhizn') v roskoshi*
If not know.2SING literacy then rarely live.2SING (all life) in luxury
'If you're illiterate, you rarely live in luxury all your life'

German

c. *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*)

French

d. *Si on est intelligent, on est en général/rarement fier*
If ON is intelligent, ON is in general /rarely proud
'If a person is smart, he/she is usually/rarely proud'

Italian

e. *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*)

This pattern shows that constructions with *you*, *man*, *on*, and *si* behave like indefinites (or plural kinds), both in the scope of quantification adverbs and in the *if*-clauses of donkey sentences.

2.4 Evidence from Centering

2.4.1 Background & non-arbs

Once we establish a similarity between the truth-conditional semantics of arbs and non-arbitrary NPs, the nature of arbitrary interpretations becomes a bit more mysterious – what is it that makes arbs any different?

A natural place to look for a difference between arbitrary and non-arbitrary NPs is in non-semantic aspects of their interpretation. In particular, I will examine the effects arbs and non-arbitrary NPs have on subsequent discourse. The investigation shows that the two types of arbs differ both from each other, and from non-arbitrary NPs in this respect.

An important aspect of non-truth-conditional meaning of NPs is their influence on the attentional and topic structure of discourse. A crucial tool for investigating this pragmatic meaning is Centering, a formal framework that provides contentful definitions of topicality and attentional prominence.

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.

(66) 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. In English and Italian previous studies have determined the ranking as being roughly (67) (Walker and Prince 1996, DiEugenio 1998).

(67) SUBJECT >> INDIRECT OBJECT >> OBJECT >> OBLIQUE ARGUMENTS >> OTHER

Once the entities are ranked, two special ones are determined:

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

(69) DEFINITION 3. *Cb* or *the backward-looking center* is the most salient (highest-ranked) entity from preceding utterance realized 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 centerpiece of the theory is Pronoun Rule (or a modified Pro-drop Rule for pro-drop languages), which provides a connection between salience and anaphora, and allows empirical investigation of salience-ranking, topic structure, and discourse coherence. The Pronoun Rule states that the backward-looking center is the item most likely to be realized as a pronoun in the current utterance.

(70) a. PRONOUN RULE. If any entity in $Cf(U_n)$ is realized as a pronoun, then $Cb(U_n)$ is realized as a pronoun.
b. PRO-DROP RULE. In a pro-drop language, if any entity in $Cf(U_n)$ is pro-dropped (realized as a zero pronoun), then $Cb(U_n)$ is pro-dropped (realized as a zero pronoun).

Based on the change and retention of backward-looking centers and preferred centers, transitions of different levels of coherence are defined between adjacent utterances. For example, in (71a) below, the same backward-looking center (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*.

Two other frequent transitions are illustrated in (71b, c). In (71b), the same backward-looking center (John) is retained in utterance 2 and 3, but the Cp of utterance 3 (the referent of *the girl*) is a different entity. This is a transition type called *Retain*. On the other hand, in (71c), 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 center between utterance 2 and utterance 3, making this transition a *Smooth-Shift*.

The roughest type of transition is illustrated in (71d), where the topic (i.e., the backward-looking center) changes from John in utterance 2 to Mary in utterance 3, and the projected topic for subsequent discourse (i.e., the preferred center, which is Bill) is also different from the Cb (Mary).

(71) Centering transitions
  a. CONTINUE
     1. John went to school this morning.
     2. He met Mary on his way.
     3. He was in a good mood.
  b. RETAIN
     1. John went to school this morning.
     2. He met Mary on his way.
     3. The girl hit him on the head.
  c. SMOOTH-SHIFT
     1. John went to school this morning.
     2. He met Mary on his way.
     3. She carried a pink bag.
  d. ROUGH-SHIFT
     1. John went to school this morning.
     2. He met Mary on his way.
     3. Bill had been teasing her.

Principles determining the ranking of forward-looking centers in the utterance are, in the original framework, assumed to be language-specific. Understandably, they were the subject of much research, with the ranking in (67) established for English, Italian, Spanish, Greek, Turkish, Finnish, and Hindi.

The same ranking was established for Russian as well (Malamud 2001), with a caveat that in OVS and VOS word orders, the (sentence-final) subjects of transitive verbs are lower than objects in salience.

In German, Rambow 1993 argues that the ranking is left-to-right in post-V2 position, and proposes a complex rule for the pre-verbal 'topic' position. However in an ongoing study, Augustin Speyer and I have provisionally established that the ranking in (67) is a better fit for German as well.

In fact, it looks like at least in the languages examined by researchers so far, ranking principles are universal:

i. (67) is the basic ranking.
ii. in languages where empathy is grammatically encoded, empathy-marked argument outranks subject.
iii. intonational or syntactic marking whose discourse function interacts with salience can affect the ranking (e.g., in Russian sentence-final subjects)

Whether these principles are indeed universal has interesting consequences for our predictions with respect to the existence of certain types of impersonals in the world's languages. I discuss these consequences at the end of section 2.4.3.

2.4.2 Discourse functions of arb

2.4.2.1 Type 1 arbs can provide antecedents for discourse anaphora

Koenig and Mauner 1999 show that implicit agents in English short verbal passives can, under certain circumstances, be subsequently followed by intersentential anaphora (72). They argue that this co-reference is achieved by an inferential coercive process (accommodation) rather than normal mechanisms.

(72) The ship was sunk. They wanted to collect the insurance

The question at stake is: discourse pronouns pick up salient discourse referents. Are arbs capable of providing such referents?

However, since impersonal and personal *they* sound exactly the same in English, it is impossible to tell whether the pronoun in the second sentence of (72) is an arb or a discourse pronoun. In fact, depending on the context, a sequence of two impersonal *they* in (73) can be interpreted as two entirely different arbitrary groups of people, or as the same arbitrary group, indicating that the relationship between the agents in the two sentences in (72) may be more complex than simple coreference.

(73) They found a motorbike in the courtyard. Then, they found the owner in the morgue.

We cannot test whether impersonals provide antecedents for discourse anaphora, unless we can distinguish real anaphoric pronouns from arbs. In Russian, conveniently, 3rd-person plural arbs must be null, while anaphoric pronouns must be overt. This allows us to distinguish discourse anaphora: null subjects with 3rd-person plural agreement indicate the impersonals, while the overt pronoun *oni* – 'they' – is anaphoric. Examples like (72) have several variants in Russian, among them a (null) impersonal followed by another (null) impersonal (74a), and an impersonal followed by an overt pronoun (in **bold** in (74b)).

(74) Russian

a. *Kreslo uzhe prigotovili.*
Chair.ACC already prepared.3PL.
Ego zaranee vyvolokli na scenu, i teper' zhdali artista
It.ACC beforehand dragged.3PL onto stage.ACC and now waited.for performer
'[In the theater] They prepared the armchair already. They dragged it out onto the

stage beforehand and now waited for the performer.'

b. *Kreslo uzhe prigotovili.*
Chair.ACC already prepared.3PL.
***Oni** zaraneje vyvolokli ego na scenu, i teper' zhdali artista*
They beforehand dragged.3PL it.ACC onto stage.ACC and now waited.for performer
'[In the theater] They prepared the armchair already. They dragged it out onto the stage beforehand and now waited for the performer.'

Similarly, a short verbal passive in Russian can be followed by an overt pronoun referring to the agent(s) (75).

(75) Russian
Kreslo uzhe bylo prigotovleno.
Chair.ACC already was prepared.
***Oni** zaraneje vyvolokli ego na scenu, i teper' zhdali artista*
They beforehand dragged.out it.ACC onto stage, and now waited.for performer
'The chair was already prepared. They dragged it out onto the stage beforehand, and now waited for the performer.'

Thus, at least in Russian, the definite arbs can provide antecedents for discourse pronouns. Should we conclude, then, that 3rd-person plural arbs and implicit agents of passives act as regular referential expressions with respect to salience/anaphora?

2.4.2.2 Type 1 arbs are low on the salience scale

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 pronominalization patterns for 3rd-person plural arbs. 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, the novel '*Master and Margarita*'). They are also Cps, and were followed by subsequent

mention/anaphora in approximately 71% of cases in my corpus. In general, non-arbitrary subjects in Russian rank at the top of the salience scale – they are the most likely antecedents for subsequent anaphora. Thus, the reference of the plural pronoun ***oni*** in (76) is uncontroversially 'the cooks' (and not 'the pies').

(76) Russian
Povara zdes' pekut horoshije pirogi. ***Oni*** *starajuts'a ugodit' klientam*
Cooks here bake.3PL good.ACC pies.ACC. **They** try.3PL to.please clients.DAT
'The cooks here bake good pies. They try to please the clients.'

While a much larger corpus is necessary to achieve statistical significance for these results, the corpus study strongly suggests that Russian 3rd-person plural arbs are not topical or salient, in contrast to Russian definite 3rd-person plural pronouns.

A study of Russian passives and *sja*-passives showed that implicit agents in them are, predictably, neither Cbs, nor Cps of their utterances. In two cases, however, these items were followed by subsequent mention/anaphora, demonstrating that while this possibility might be available in Russian (74b), it is strongly dispreferred.

So, while Type 1 arbs can provide antecedents for future anaphora, they almost never 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, so that sentences like (77) sound funny.

(77) Russian
a. *Zdes' pekut horoshije pirogi. Oni starajuts'a ugodit' klijentam.*
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' klijentam.*
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' klijentam.*
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 (77a, b) is one where the pies or the tickets are trying to please the clients; similarly for the tickets in (77c) (with slightly less of a preference). Of course, overt and sensible antecedents are unbeatable competition (78).

(78) Russian
a. *Zdes' vybirajut horoshih artistov. Oni starajuts'a ugodit' klijentam.*
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' nanimajuts'a horoshije artisty. Oni starajuts'a ugodit' klijentam.*
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 prekrasnyje artisty. Oni staralis' ugodit' klijentam.*
Here were killed wonderful artists. They tried to.please clients
'Wonderful artists were killed here. They tried to please clients.'

The only reading in (78) is the one where the performers, and not their employers or murderers, try to please the clients. Thus, the pronoun (which refers to the Cb, the most central, the highest-ranked salient entity from the preceding utterance) is preferentially (and in (78), 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 utilizing 3rd-person plural impersonals, short passives and *sja*-passives has the effect of drastically 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.

2.4.2.3 Type 2 arbs are invisible for Centering

In contrast to *they* and passives, it has been noted by many researchers that *man*, European French *on,* and *si*-impersonals cannot provide antecedents for discourse pronouns of any kind (Chierchia 1995a, Kratzer 1997, inter alia) (79, compare with 80). Quebeque French may be rather different, since it provides antecedents for discourse pronouns (Sankoff, p.c.)

(79) Type 2 arbs and anaphora
German
a. *In Deutschland trinkt man viel Bier. *Sie sind glückliche Leute.*
In Germany drinks MAN much beer *They are happy people

b. *Gestern, hat man ein Haus abgebrannt. *Er wurde verhaftet.*
Yesterday has MAN a house burned *He was arrested

French
c. *En Allemagne, on boît beaucoup de bière. *Ils aiment s'amuser.*
In Germany, ON drinks lots of beer *They like to.party

d. *Hier, on a bruilé une maison. *Il a été arrêté.*
Yesterday ON has burned a house *He has been arrested

Italian

e. *In Italia, si beve molto vino. *Loro sono gente felice.*
In Italy, SI drinks much wine *They are happy people

f. *Ieri, si è telefonato a Maria. *Lui ha chiesto scusa.*
Yesterday, SI is called to Maria *He has asked forgiveness

(80) German

a. *In Deutschland trinken Studenten viel Bier. Sie sind glückliche Leute.*
In Germany drink students much beer. They are happy people
'In Germany, students drink a lot of beer. They are happy people.'

b. *Gestern, hat ein Mann ein Haus abgebrannt. Er wurde verhaftet.*
Yesterday, has a man a house burned. He was arrested
'Yesterday, a man burned a house. He was arrested.'

French

c. *En Allemagne, les étudiants boivent beaucoup de bière. Ils aiment s'amuser.*
In Germany the students drink lots of beer. They like to.party
'In Germany, students drink lots of beer. They like to party.'

d. *Hier, un étudiant a bruilé une maison. Il a été arrêté.*
Yesterday a student has burned a house. He has been arrested
'Yesterday, a student burned a house. He was arrested.'

Italian

e. *In Italia, studenti bevono molto vino. Loro sono gente felice.*
In Italy students drink much wine They are happy people
'In Italy, students drink a lot of wine. They are happy people.'

f. *Ieri, un uomo ha telefonato a Maria. Lui ha chiesto scusa.*
Yesterday, a man has called to Maria He has asked forgiveness
'Yesterday, a man called Maria. He apologized.'

Prince 2006 reports on a Centering study of a Yiddish corpus containing *me(n)*, the Yiddish correlate of German *man*. The patterns of pro-drop and pronominalization force a conclusion that *me(n)* fails to place an antecedent for consideration for future anaphora; 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, French, and Italian[16]. In each case, there were zero instances for discourse pronouns and pro-drop following *man*, *on*, 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 pronominalized in subsequent discourse. This evidence from pronominalization and pro-drop shows that an entity other than the agent denotation in sentences with *man*, *on*, or *si* was the preferred topic for future discourse and preferred antecedent for discourse anaphora.

This provides a striking contrast with non-arbitrary 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*, *on*, and *si*-impersonals is to remove the subject/agent denotation from the topic-structure of its sentence, allowing the next-highest-ranked entity to become the preferred topic/antecedent.

2.4.2.4 Another reason to need Centering

To sum up the properties of arbs with respect to salience, the corpus studies (in particular, the rareness of subsequent pronominalization of definite arbs, and the absence of pronominalization or pro-drop for indefinite ones) support the analysis in which the definite arbs are placed on the bottom of the salience hierarchy, 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, 2006 for Yiddish *me(n)*.

Koenig and Mauner 1999 strive to capture the differences between non-arbitrary NPs (81a), arbs (81b), and intransitive constructions (81c) by using Discourse Representation Theory:

(81) Koenig and Mauner 1999: discourse effects of arbs

a. The vase was sold by someone	b. The vase was sold	c. The vase had sold
someone: referent, argument	no referent, argument	neither
discourse anaphora: perfect	anaphora: dispreferred	anaphora: awful

Non-arbitrary NPs introduce a discourse referent into the representation and also satisfy the need of the verb for an argument. Arbs, they argue, just satisfy the verb without introducing a discourse referent, while intransitive constructions do neither. They proceed to explain the capability of (Type 1) arbs to support a pronoun by suggesting that the presence of the syntactic argument helps the hearer to accommodate the use of the pronoun by constructing a new discourse referent as its antecedent.

The different effects of Type 1 and Type 2 arbs on discourse point to the need to enrich this representation with a ranking of discourse entities. Otherwise, the presence of

[16] The corpus used, in each case, was the text of 'The Little Prince' in German, French, and Italian.

a syntactic argument in sentences with Type 2 arbs would allow them to accommodate a pronoun just as well as the Type 1 arbs do. With the introduction of a ranking, we can draw all the necessary distinctions between high-salience non-arbitrary verb arguments, low-salience (Type 1) arbitrary verb arguments, Type 2 arbs that are verb arguments yet do not participate in salience ranking, and intransitive constructions.

2.4.3 Arbs and salience: some consequences

This investigation into the discourse functions of arbs clarifies the following empirical mystery. Following the QVE data, we might treat Type 2 arbs as indefinites. However, *man*, *on*, and *you* exhibit strong definiteness effect in existential *there*-construction: that is, they are entirely unacceptable in the pivot position in existential *there*-sentences (82).

(82) Existential there and arbs:
German (Kratzer 1997, examples 1-3)

a. **Es war man gekommen*
*There was MAN come

b. *Es war wer/jemand gekommen*
There was someone come
'Someone had come'

French

c. ** Il y a on dans le jardin*
*There was ON in the garden

d. *Il y a quelqu'un dans le jardin*
There was someone in the garden
'There was someone in the garden'

English

e. *There was/were you in the garden

f. There was a student in the garden

Impersonal *you* is generally unacceptable in episodic sentences (property I address in Chapter 4), and on the (remaining) deictic use *you* may be argued to be a definite pronoun, preventing its acceptability in (82e). However, the restriction would seem strange in our view of *man* and *on* as indefinite items.

In their seminal investigation of the discourse-functions of the existential there-construction, Ward and Birner 1995 conclude that the expression serving as the pivot (the post-verbal NP) must denote a hearer-new entity. In fact, small corpus studies I conducted indicate that the discourse function of this construction is exactly to place the hearer-new referent of the pivot at the top of the competition for future discourse anaphora (the Cp position).

The function of the *man*/*on* (to remove the subject denotation from the Cf-list), and the function of the existential there-construction (to place the pivot denotation on top of the Cf-list) are incompatible, resulting in unacceptable sentences (82).

The same functional incompatibility may be used to address another cross-linguistic universal – impersonals (including Type 1 and Type 2 arbs) are universally incapable of bearing intonational prominence (83).

(83) Yiddish (Prince 2003: example [1e])
a. *EMITSER / #MEN, zog ikh dir, iz do geven*
Someone / #MEN, say I you, is here been
'SOMEONE / #ONE, I'm telling you, was here'

German
b. *JEMAND / #MAN, sage ich, war hier*[17]
Someone / #MAN, say I, was here
'SOMEONE /#ONE, I'm telling you, was here'

French
c. *QUELQU'UN/#ON, je te dis, est venu ici*
Someone / #ON, I you say, is come here
'SOMEONE/#ONE, I'm telling you, came here'

English
d. #YOU, for one, have to take care of your parents
(only deictic interpretation for *you*)

e. #THEY, for one, speak English in America
(only anaphoric interpretation for *they*)

In languages like Dutch that distinguish strong and weak forms of the 2nd-person pronoun, only the weak form may have the impersonal reading (84).
(84) Dutch
a. *In die dagen kon je voor niks naar Barcelona gaan*
In those days could you(weak) for nothing to Barcelona go
'In those days you could go to Barcelona for free' ok deictic / ok impersonal

b. *In die dagen kon jÿ voor niks naar Barcelona gaan*
In those days could you(strong) for nothing to Barcelona go
'In those days you could go to Barcelona for free' ok deictic / *impersonal

This unfocusability of the impersonal pronouns follows straightforwardly from their discourse function – if its main purpose is to allow hearer's attention to focus on another entity, specifically focusing the hearer's attention on it would violate its *raison d'être*.

[17] The German indefinite *wer* is also unfocusable (i), but it is just fine as an antecedent of pronouns or as the pivot in *there*-sentences (82). This only means that there can be several sources for unfocusability of an item, only one of them relating to its interaction with salience and discourse anaphora.
i. German
#WER, sage ich, war hier
#SOMEONE say I was here

The special discourse function – to allow the hearer's attention to focus on an entity other than the subject or agent – goes some way towards answering a very general question: why should any language employ impersonal pronouns or short passives? The ranking of forward-looking centers in (67) predicts that normally, a referential expression in the subject position has massive influence on subsequent discourse. The role of the passive would then be to allow the patient into that position (preventing the agent from exerting such influence). An impersonal pronoun then functions, to quote Prince 2003, as a sort of 'asyntactic passive,' demoting the subject position in salience.

If the ranking in (67) is found not to be universal, in a language where the subject would not carry the highest salience, we predict that impersonal pronouns specialized for the subject position (like German *man* or French *on*) would have no reason for existence.

Similarly, in the languages where ranking is the one in (67), we would not expect impersonals specialized for the object position to exist. Rivero and Sheppard 2003 analyze certain uses of Slavic reflexive *się/se/sja*[18] as exactly such an object impersonal. They distinguish Slavic languages where this item is used both as a subject and object impersonal, such as Polish and Slovenian, and those where the reflexive is never used as a subject impersonal, such as Bulgarian and Czech. In all cases, the item is analyzed as an indefinite (existentially quantified term). The differences between Polish and Bulgarian are syntactic: in Polish, *się* is an independent pronoun, and so may occur as a subject of transitive sentences with accusative objects, while in Bulgarian, *se* is an implicit argument of the sort that we see in passives, and so cannot co-occur with accusative-checking verb.

From the point of view of Centering, Polish data is unsurprising. The impersonal pronoun may be used to replace the subject or the object; in both uses, it displays the quantificational variability typical of indefinites (85).

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[18] Slavic clitics/suffixes of this form have an enormous variety of uses: with sometimes different sets of verbs, they mark reflexivity (their traditional grammatical function) (i), middle voice (ii), passive readings (iii), impersonal readings (iv), unaccusativity (v), so-called inherent reflexivity (vi), or inchoativity (vii), among other uses (see also Chapter 1: example 12).

i. *Van'a mojets'a* (Russian, reflexive)
John washes.SJA = John washes himself

ii. *Etot pol l'egko mojets'a* (Russian, middle)
This floor easily washes.SJA = This floor washes easily

iii. *Prodajuts'a mashiny* (Russian, *sja*-passive)
Sell.SJA cars.NOM = Cars are being sold

iv. *Tuk se raboti mnogo* (Bulgarian, impersonal; this construction does not appear in Russian; the closest Russian construction is non-agentive, has a modal feel, and may appear with dative experiencer)
Here se works much = Here people work a lot

v. *Otkrylas' dver'* (Russian, unaccusative)
Opened.SJA door.NOM = The/A door opened

vi. *Van'a usels'a na stul* (Russian, inherent reflexive)
John PRF.sat.SJA on chair

vii. *Masha prosypajets'a* (Russian, inchoativity)
Mary wakes.up.SJA = Mary wakes up/Mary is waking up

(85) Polish

a. *Jeśli się gra źle , zazwycza j / rzadko się przegrywa*
If SIE plays badly usually / rarely SIE loses
If one plays badly, usually/rarely one loses

b. *Gdy Marek się bije, zazwyca / rzadko się przedrzeźnia*
When Marek SIE hits usually / rarely SIE mocks
If Marek hits a person, usually/rarely he mocks him/her[19]

Thus, it is natural that this clitic is used to fill the function of demoting the subject denotation in salience (or removing it from salience calculation, as the case may be). In other words, Polish *się* is not a specialized object impersonal – it is an all-around valency-changing clitic pronoun that has acquired, as one of its roles, the function of a subject-demoting impersonal.

More interesting is Bulgarian *se* , or Russian *sja* which, like the Bulgarian item cannot be the subject of accusative-checking verbs (86a,c), but can be used to replace the object of certain verbs with nominative subjects (86b,d). Rivero and Sheppard claim that when the reflexive replaces the object of a verb, it is functioning as an impersonal, interpreted as an indefinite.

(86) Bulgarian

a. **V tova učilište učenizite se nakazva*
In this school.the students.the SE punishes
Intended: 'In this school, they punish students'

b. *Peter se bie*
Peter SE beats
'Peter fights/hits'

Russian

c. **V toj derevne stroits'a / strojats'a chasovn'u*
In that village builds.SJA/build.SJA chapel.ACC
Intended: 'In that village, they are building a chapel'

d. *Van'a kusajets'a*
John.NOM bites.SJA
'John bites'

[19] The QVE reading, paraphraseable as "Most/Few people M. hits, he mocks" is often judged to be less prominent than "Most/Few occasions when M. is the agent of a hitting event, are also occasions in which M. is the agent of a mocking event." However, on scenarios that distinguish between the two, it becomes clear that QVE reading is available.

If neither in Bulgarian nor in Russian this item functions as a subject impersonal, we could be dealing with a specialized object impersonal, surprising in our Centering-based view of impersonals. I argue that this is not the case, for several reasons. First, in Bulgarian, impersonal *se* can occur as the subject of intransitive verbs (87).

(87) Bulgarian
Tuk se raboti mnogo
Here SE works much
'They work a lot here'

Thus, regardless of what causes its inability to co-occur with accusative-marked NPs, Bulgarian *se* can be both a subject and an object impersonal, like its Polish correlate. This argument is not available for Russian *sja*, however[20]. First, *sja* always appears with nominative-marked NP in subject position, with the exception of one non-agentive construction[21]. While an analysis of this construction is beyond the scope of this work, we can, at least for the sake of the argument, assume that *sja* is not serving as a subject/agent impersonal there.

In *sja*-passives and middles, the subject NP is the patient; in the putative object-impersonal cases, the subject NP is the agent. From the Centering point of view, *sja*-passives are no more surprising that regular verbal passives: they are a way of allowing the patient to occupy the high-salience subject position.

In the putative object-impersonal sentences, *sja* does not function as an indefinite pronoun replacing the object; instead, it functions as a marker of unergativity in the transitive-unergative alternation. That is, verbs that participate in this alternation appear without *sja* in transitive and with *sja* in unergative sentences. Unlike the object-impersonal account proposed in Rivero and Sheppard 2003 for Polish, the unergativity-marker analysis accounts for the properties of object *sja*. First, it explains why only an extremely limited set of verbs is compatible with this use of *sja*, since very few verbs participate in this alternation (88). Transitives that do not participate in the transitive-unergative alternation (88b,d) cannot have *sja* replacing their objects in Russian (88a,b), just as in English such non-alternating verbs cannot appear without objects (88c,d).

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[20] In Bulgarian, the use of object *se* is even more limited than in Russian; it is basically restricted to child language (Rivero and Sheppard 2003, Olga Arnaudova p.c.). For this reason, and also because Bulgarian subject *se* can occur with intransitive verbs, I will concentrate on Russian *sja* as the potential specialized object impersonal.

[21] This construction (i) has been given many confusing names in the literature; at first glance it resembles the Bulgarian impersonal construction (87), but there are many important differences. The construction in (i) is non-agentive: it is incompative with purpose clauses or agent-oriented adverbs; it can appear with a dative experiencer; it requires an adverb like 'easily' and has a modal feel to it. See Markman 2001, Markman 2004 for recent analyses.

(i) (Mne) Zdes' l'egko rabotajets'a (#narochno) (#chtoby dol'she rabotat')
me.DAT here easily works.SJA on.purpose to longer work
'(I work)/One works easily here (#on purpose) (#to work longer)

(88) Russian
  a. *Van'a kusajets'a*
     John bites.SJA
     'John bites'

  b. **Van'a pozhirajets'a*
     John devours.SJA
     English
  c. John bites
  d. *John devours

Also, unlike its Polish cognate, Russian object *sja* never exhibits the quantificational variability effect with Q-adverbs (89), showing that it cannot be analyzed as an indefinite. That is, the sentence in (89a) is false in the scenario (89b), showing that the QVE reading paraphrased in (89c) in unavailable, and the only available reading (89d) involves quantification over times.

(89) Russian
  a. *Kogda Van'a der'ots'a, on redko carapajets'a*[22]
     When John.NOM fights.SJA he rarely scratches.SJA
     'When John fights, he rarely scratches' (No QVE)
  b. **Scenario:** John is a violent kid. In his kindergarten group, he already started ten fights, trying to hit, bite, and scratch several other kids every time. During the ten fights, he scratched one kid out of five he attacked, each time. So, in total, he scratched 10 kids out of 50 he attacked.
  c. **QVE reading:** Few of those people whom John attacks, he scratches
  d. **Times/actual reading:** Few of those occasions when John attacks people, are also occasions when he scratches people

Moreover, unlike the *sja*-passive, this unergative-marking *sja* fails to show quantificational variability with part-whole quantifiers like *for the most part* (90), showing that it cannot be analyzed as a definite either. That is, (90a) is judged to be 'not really true' in the scenario (90b), because in (90b) John always scratches when he fights, rather than most of the times.

[22] Sentences with *jesli* = *if* are mildly infelicitous, since they fail to produce donkey readings of any kind. Thus, the only reading of (i) below is (ii).
  i. *Jesli Van'a der'ots'a, on redko kusajets'a*
     If John fights.SJA he rarely bites.SJA
  ii. If it is the case that John beats people, then it's true that he rarely bites.

(90) Russian
  a. *Kogda Van'a der'ots'a, on bol'shej chas'ju carapajets'a*
  When John fights.SJA he most.INSTR part.INSTR scratches.SJA
  'When John fights, he for the most part scratches'
  b. **Scenario:** John is a violent kid. In his kindergarten group, he already started ten fights, trying to hit, bite, and scratch several other kids every time. During the fights, he scratched four kids out of five he attacked, each time. So, in total, he scratched 40 kids out of 50 he attacked.
  c. **QVE reading:** Most of those people whom John attacks, he scratches
  d. **Actual reading:** When John fights, he fights mostly by scratching (as opposed to hitting or biting)

Instead, I argue that this item makes no semantic contribution at all, and that inferences about existence of patients (if/when any such inferences are made) are due to extra-linguistic knowledge, the way existence of agents is inferred in (91), since vases don't literally sell themselves.

(91) The vase sold quickly

Thus, a closer examination of Polish and Russian shows that neither of these languages has a specialized object impersonal – an item unexpected in our Centering-based view of impersonals. In Polish, the impersonal pronoun *się* can appear in both the subject and object position, thus failing to be specialized for objects; in Russian, the putative object impersonal *sja* is not an impersonal pronoun at all, but an unergativity marker.

2.5 Summary

Table 4 below summarizes the findings and claims made in this chapter.

TABLE 4: Summary of Chapter 2

Type 1	**QVE w/ Q-adverbs**	**QVE w/ most part**	**QVE in donkey sentences**	**Anaphora**
3rd pl	*	✓	*	Dispreferred
Passive	*	✓	*	Dispreferred
Sja	*	✓	*	Dispreferred
Type 2	**QVE w/ Q-adverbs**	**QVE w/ most part**	**QVE in donkey sentences**	**Anaphora**
Man	✓	n/a	✓	*
Si	✓	n/a	✓	*
On	✓	n/a	✓	*

The arbs of Type 1 semantically behave like plural definites: they exhibit no QVE with Q-adverbs, both in the regular QVE structure and in donkey-sentences, as is expected under this analysis.

The arbs in of Type 2 semantically behave like indefinites: they show the usual indefinite QVE in sentences with Q-adverbs (both regular and donkey-sentences).

While the arbs of Type 1 allow intersentential anaphora, this anaphora is strongly dispreferred for these items. In contrast, intersentential anaphora with Type 2 arbs is entirely impossible, a direct consequence of their chief discourse function. The Centering analysis of the two types of arbs indirectly supports the nature of the distinction between them. Definites are semantically analyzed as old/given referents; it thus comes as no surprise that subsequent discourse anaphora would be possible to items that are already given, even if their discourse function makes this anaphora dispreferred. At the same time, referents of indefinite expressions are not given, and have not been introduced in preceding discourse. While the usual discourse effect of non-arbitrary indefinites is to introduce the new entities into the competition for future anaphora, the function of indefinite arbs is to *not* introduce entities into this competition.

Both the interaction with adverbial quantification and the effect of different arbs on discourse serve to differentiate the two types of arbs, in accordance with the central claims I put forth: that 3rd-person plural arbs and implicit agents are plural definites, denoting groups, like "the people" or "the culprits" (with low-salience discourse function), while 2nd-person singular arbs, *on*, *man*, and *si* are indefinites (with the special discourse function), their denotations containing variables.

This analysis faces several challenges that I address in the rest of this dissertation. The first challenge is presented by Type 1 arbs, which, I claim, are plural definites. While their quasi-universal interpretation (repeated in 92i) naturally follows from this semantics, the existential-looking readings (repeated in 92ii) are unexpected. An exploration of the semantics of these arbs, and a theory of definite plurals that allows us to derive the existential-like readings are the subject matter of Chapter 3.

(92) Quasi-universal and quasi-existential readings of Type 1 arbs
Russian 3rd-person plurals

a. *V Amerike govor'at po-anglijski* (i)
In America speak.3PL in-English
'They speak English in America'

b. *Segodn'a v Bejrute ubili nevinnogo cheloveka* (ii)
Today in Beirut killed.3PL innocent person
'Today in Beirut they killed an innocent person'

Italian 3rd-person plurals

c. *In America parlano inglese* (i)
In America speak.3PL English
'They speak English in America'

d. *Oggi a Beirut hanno ucciso un innocente* (ii)
Today in Beirut have.3PL killed an innocent
'Today in Beirut they killed an innocent person'

English 3rd-person plurals
e. They speak English in America (i)
f. Today in Beirut they killed an innocent person (ii)

Russian short passives
g. *V Amerike vchera byl radostno otmechen Den' Nezavisimosti* (i)
In America yesterday was joyfully celebrated Day of.Independence
'Independence Day was joyfully celebrated in America yesterday'

h. *Vchera byl potoplen vrazheskij korabl'* (ii)
Yesterday was sunk enemy ship
'Yesterday, an enemy ship was sunk'

English short passives
i. Independence Day was joyfully celebrated in America yesterday (i)
j. Yesterday, an enemy ship was sunk (ii)

Russian *sja*-passives
k. *V Rossii Novyj god prazdnovals'a dolgo i radostno v etot raz* (i)
In Russia New year celebrated.SJA long and joyfully in this time
'In Russia, New Year was celebrated long and joyfully this time around'

l. *V restorane 'Odessa' segodn'a prazdnujets'a dva dn'a rozhden'ja* (ii)
In restaurant 'Odessa' today celebrates.SJA two days of.birth
'In the restaurant 'Odessa' today, two birthdays are being celebrated'

Secondly, several of the indefinite (Type 2) arbs have indexical or very indexical-like readings (2nd-person singular arbs, some dialects of *man, on, and si*). This is something that plain indefinite analysis cannot derive, thus raising the question whether these items are ambiguous between an indefinite and an indexical denotation, or whether the two uses can be derived from a single underlying denotation. I address this, and other questions in the interpretation of Type 2 arbs in detail in Chapter 4 in the case of 2nd-person arbs, and in Chapter 5 in the case of *on*, *man*, and *si*.

3 Definite arbs within a theory of definite plurals

In this chapter I will concentrate on 3rd-person plural arbitrary pronouns in English, Russian, and Italian, and implicit agents in short verbal passives in English and Russian and in Russian *sja*-passives, arguing that a uniform treatment of these items as definite descriptions accounts for the full range of available interpretations. The analysis accounts for the influence of linguistic and extra-linguistic context on the reading preferences for these items. The quest for a uniform account of these Type 1 arbs leads me to develop a general framework for treating context-dependency in definite plurals, gaining new empirical and theoretical ground for the theory of language interpretation.

3.1 Type 1 arbs: the challenges

3.1.1 Some previous proposals

Many researchers have claimed that the 3rd-person plural arb is translated always as an indefinite (Jaeggli 1986, Condoravdi 1989, Kim 1991, Chierchia 1995a:547, inter alia).

The semantics of passives has not been discussed much in the literature; inasmuch as anything at all was said about it, the general assumption was that the implicit agent denotes a variable (Dowty 1978), so (93a) is truth-conditionally equivalent to (93b).

(93) Passives
  a. The ship was sunk
  b. The ship was sunk by someone

In these accounts, the variable introduced by the indefinite arb 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.

This has the effect of existential quantification over the agent in episodic sentences (94), and of universal-like quantification of the agent in the scope of generic or habitual operators (95).

(94) Existential-like readings in episodic contexts
  Russian
  a. *Korabl' vchera potopili*
  Ship yesterday sank.3PL
  'Yesterday, they sank a/the ship'

  b. *Vchera byl potoplen vrazheskij korabl'*
  Yesterday was sunk enemy ship
  'Yesterday, an enemy ship was sunk'

c. *Vchera sdvinuls'a s otverstija shahty poslednij kusok skaly*
Yesterday PRF.moved.SJA from opening of.mine last piece of.rock
'Yesterday, the last piece of rock was moved from the opening of the mine'
Italian
d. *Oggi a Beirut hanno ucciso un innocente*
Today in Beirut have.3PL killed an innocent
'Today in Beirut they killed an innocent person'

English
e. They found a motorbike in the courtyard
f. Yesterday, an enemy ship was sunk

(95) Universal-like readings in generic contexts[23]
Russian
a. *V Amerike govor'at po-anglijski*
In America speak.3PL in.English
'They speak English in America'

b. *V Amerike upotrebl'ajets'a anglijskij jazyk*
In America uses.SJA English language
'In America, English language is used'

Italian
c. *In America parlano inglese*
In America speak.3PL English
'They speak English in America'

English
d. They speak English in America
e. Portuguese is spoken in Brazil

While elegant, this account undergenerates, however. As Cabredo-Hofherr 2002 points out, arbs have a wider range of interpretations than this account predicts. Consider the sentences in (96, 97) below.

(96) Existential-like readings in generic contexts
Russian
a. *Zdes' igrajut v karty na urokah*
Here play.3pl in cards on lessons

[23] Regular verbal passive in Russian is formed with perfective form of the verb, which makes it incompatible with generic contexts. *Sja*-passives, which can appear in generic or episodic contexts, are used instead.

'They play cards here during classes'

b. *V Moskve dokumenty s anglijskogo perevod'ats'a za kopejki*
In Moscow documents from English translate.SJA for kopecks
'In Moscow, documents are translated from English very cheaply'
Italian
c. *In questo parco, giocano al calcio di pomeriggio*
In this park play.3PL at football in afternoon
'In this park, they play football in the afternoon'

English
d. They play cards here during classes
e. At this market, wallets are stolen every day

(97) Universal-like readings in episodic contexts
Russian
a. *V N'ju Jorke sejchas sp'at*
In New York now sleep.3PL
'They're sleeping now in New York'

b. *V Rossii eti novosti byli prin'aty s vostorgom*
In Russia these news were accepted with euphoria
'In Russia, these news were accepted with euphoria'

c. Italian
In Italia, hanno celebrato il Natale con molto vino
In Italy, have.3PL celebrated the Christmas with much wine
'In Italy, they've celebrated Christmas with much wine'

English
d. They're sleeping now in New York
e. In Russia, the news of victory were accepted with absolute joy

The sentence in (96a) has a reading in which only a couple of hooligans play cards during classes - so the sentence is existential with respect to the agents. At the same time, the most natural reading of the sentence in (97a) is almost-universal over the agents - pretty much everyone in New York is asleep. An account in which indefinites are existentially quantified items (as in Chierchia's 1995a analysis of impersonal *si*) can derive examples in (96). However, the existence of generic/universal arbs in episodic sentences (97), as well as the failure of these arbs to yield QVE readings with Q-adverbs (Chapter 2) suggests that any uniform account translating these Type 1 arbs as indefinites is

inadequate. Thus, while attractive, the uniform *indefinite* analysis for the arbs is untenable.

Cabredo-Hofherr 2002 proposes to replace the indefinite approach with an ambiguity analysis, claiming that 3rd-person plural arbs 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 encyclopaedic 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.

Neither the indefinite proposals, nor the definite-indefinite ambiguity proposal do very well to account for the full range of data involving Type 1 arbs: both the original indefinite account and Cabredo-Hofherr's ambiguity analysis posit the existence of a regular indefinite translation for these arbs. If such translation is really available, it is mysterious why *they*, passives, and *sja*-passives would behave differently from regular indefinites with respect to Q-adverbs. In fact, as we showed in Chapter 2, indefinite translations should be completely unavailable, to rule out formation of donkey-sentences and QVE readings for *they*, passives, and *sja*-passives.

3.1.2 What to do when they are knocking on the door

I propose to treat Type 1 arbs uniformly as definite plurals with very general content: 'the people' in the case of 3rd-person plural arbs, and 'the agents/the causes' in the case of passives and *sja*-passives which don't carry the humanness restriction.

This analysis faces several challenges. First, definites are usually analysed as referring to entities of groups that are already given. However, the agents of the events in (98) below don't seem to be given in any sense[24].

(98) Russian

a. *V dver' stuchat!*
In door knock.3PL
'They're knocking on the door!'

b. *Van'a byl ranen v ruku*
John was wounded in arm
'John was wounded in the arm'

c. *Tak ne delajets'a!*
So not does.SJA
'This is not done!'

[24] This challenge was pointed out to me by Anna Szabolczi (p.c.).

Italian

d. *Battono alla porta!*
Knock.3PL on.the door
'They're knocking on the door!'
English

e. They find abandoned cars all the time nowadays

f. John was wounded

g. That's how this is done!

Alonso-Ovalle 2002 proposes an ambiguity account for 3rd-person plural arbs in Spanish, claiming they can be either contributing a definite semantics, or making no semantic contribution to the sentence at all.

The definite translation derives both the regular, anaphoric meaning of Spanish 3rd-person plural null pronoun and the quasi-universal impersonal readings. In episodic sentences where the arb doesn't contribute to the semantics, existential quantification over events provides the entailment giving rise to existential readings.

Alonso-Ovalle also shows that quasi-universal and quasi-existential uses of 3rd-person plural arbs have different syntactic properties, supporting the idea that they are derived differently. Thus, in Spanish, he shows that quasi-existential 3rd-person plural arbs cannot be derived subjects (99a), unlike quasi-universal arbs (99b).

(99) Spanish

a. *Están siendo golpeados*
be.3PL being beaten
'They are being beaten' Not: 'somebody is being beaten'

b. *En España, parecen haber celebrado la navidad con muchos festejos*
In Spain seem to.have celebrated the Christmas with much festivities
'In Spain, they seem to have celebrated Christmas with much joy'

This account naturally derives both the QVE data showing that Type 1 arbs pattern with definites with respect to Q-adverb quantification, as well as the episodic sentences in (98), since the arbs are not definites in these sentences, and so do not have to be given.

However, the analysis encounters several theoretical and empirical problems. First, the way existential readings of the arb are derived with episodic sentences presents a problem. Alonso-Ovalle prevents the arb from making a semantic contribution in such sentences by removing the agent-introducing phrase from the LF. He utilizes the framework of Kratzer 1996, who proposes that agents are not introduced by the verbs, but are added to events by a separate Voice head. Thus, in Alonso-Ovalle's account, a sentence like (100a) receives the interpretation in (100b).

(100) Arbitrary agents and events
a. They sank the ship yesterday
b. λs.∃e [Sink(e,s)&Theme(e, ιx[ship(x,s)])& time(e)⊆ yesterday]

This, however, is not the correct interpretation: (100b) describes the situation in which a ship is in the state of being sunken, underwater. For all we know, the ship has always been underwater, having materialized there in the beginning of time. In Kratzer's framework (and in Parsons' 1990 theory of events and theta-roles), what distinguishes a description of such a state from a description of an end result of some sinking event is exactly the presence of an agent[25]. In fact, Spanish distinguishes adjectival (101a) and verbal (101b) passives, where the difference is captured precisely by an added agent denotation in the verbal variant. The 3rd-person plural arb (100a) yields a sentence which is synonymous with (101b), rather than Alonso-Ovalle's prediction (101a, 100b).

(101) Spanish
a. *La nave está hundida*
The ship is sunk
'The ship is sunk' => λs.∃e [Sink(e,s)&Theme(e, ιx[ship(x,s)])]

b. *La nave fue hundida*
The ship was sunk
'The ship was sunk' => λs.∃e∃y [Sink(e,s)&Theme(e, ιx[ship(x,s)])&Agent(e,y)]

In addition, the account runs into difficulties with two kinds of generic sentences with arbs. First, it still cannot account for the generic sentences like those in (98c, e, g) ((98a) and (98g) repeated below). The agents of these sentences don't seem to be given in any sense, so the definite translation of the arbs is equivalent to my uniform-definite proposal, and faces the challenge of deriving these existential-like readings.

(98) Russian
a. *V dver' stuchat!*
In door knock.3PL
'They're knocking on the door!'

English
g. That's how it's done!

[25] Alonso-Ovalle adds the entailment that there is, in fact, some agent to the sinking event by using a meaning postulate "activities have agents." This, of course, derives the presence of the agents – but defeats the purpose of Parsons 1990 and Kratzer 1996, who derive the distinction between activities and states rather than postulate it.

At the same time, if the arbs have no semantic contribution in these sentences, two problems arise. Semantically, it is not clear what these sentences should entail about the agents. If sentences with generic quantification over (activity-type) events still have only existential quantification over the agents, the meaning of sentences like (98g) cannot be derived – since it simultaneously involves no given agents, generic quantification over events, and almost-universal entailment over agents.

Otherwise, if sentences with generic quantification produce generic quantification over agents, it is not clear how existential-like readings can be derived in generic sentences like (96) ((96d) repeated below).

(96) d. They play cards here during classes

Syntactically, Alonso-Ovalle argues that there is a difference between the quasi-universal and the quasi-existential interpretation of arbs (99), further motivating the different analyses he proposes for these readings. Deriving the quasi-universal arbs like (98g) in the same way as the quasi-existential arbs in (98a) erases this difference.

Note that sentences in (96) seem to present a major challenge for my proposal as well. If *the people* is interpreted as 'the maximal group of people', it is not clear how existential-like readings for Type 1 arbs can be derived at all in the uniform-definite approach, whether in generic sentences in (96) or in episodic sentences in (93).

Before I address this challenge, consider the interpretation of non-arbitrary definite plurals in sentences like (102) below. Brisson 1998 calls the rise of these 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.

(102) Pragmatic weakening:

a. **Scenario:** Ann, Belle, and Cathy were playing at the riverbank, Diana was watching but not really doing anything.
   Utterance: The girls built a raft, and then went to get some ice-cream
b. **Scenario:** Boys and girls were competing in building rafts. The girls' team – Ann, Belle, Cathy, and Diana – started building a raft. Early on, Belle broke her leg, so Cathy and Diana had to take her to the doctor. However, Ann kept working on it, and completed the raft doing almost all the work by herself
   Utterance: At the end of the day, the girls built a raft.

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 in (93, 96) are derived, a mechanism for doing so is independently necessary to account for non-maximal readings in non-arbitrary plural definites. In the second part of this chapter, I propose a solution to this challenge.

Once these existential-like readings for definite plurals are derivable, there are two ways to account for the problematic data in (98).

Under my uniform-definite approach, I would claim that the definite arbs in (98) are non-maximal (98a-f) or maximal (98g) references to 'the humans' or 'the individuals,' very large groups which are always given in a conversation. This solution seems to contradict the generalization (Elbourne 2001) that pronouns cannot refer to entities that are simply inferable, rather than actually mentioned in previous discourse. Thus, in (103), the pronoun *he* in the second sentence cannot refer to Sue's husband, whose existence is entailed by the first sentence.

(103) Sue is married. #He works at the bank.

I am forced to claim that either the Type 1 arbs are exceptional among pronominal elements, or the referents 'the humans' and 'the individuals' are exceptional among referents.

If we adopt Alonso-Ovalle's account of the arbs, together with some mechanism that can derive existential-like readings for sentences in (101), then in the episodic sentences (98a-e), arbs would be making no semantic contribution. However, generic sentences like (98g) would still remain problematic.

In the rest of this chapter, I propose a new framework that derives the existential-like readings for Type 1 arbs and definite plurals in general. Previous semantic analyses that could derive such non-maximal readings for sentences with definite plurals are Landman 1989 and Brisson 1998. As I show in the next section, however, these accounts did not cover the full range of readings for sentences with definite plurals. The new proposal builds on the insights of these predecessors, deriving the influence of contextual factors on the interpretation of definite plurals in a principled and systematic way.

3.2 Non-maximal readings for definite arbs and non-arbs

3.2.1 Introduction

3.2.1.1 An aside: vagueness in questions

Following Merin's 1999 approach to relevance, van Rooy 2003a,b uses Decision Theory (DT) to give a formal definition of relevance and its application to questions. In his analysis, questions are inherently underspecified or vague (104): their denotation contains a variable Op (104b) that depends on a decision problem facing the speaker (i.e., the questioner).

In the context of the decision problem, vagueness is resolved and a partition is chosen as the true import of the question (104d).

(104) Vagueness in questions: granularity

a. Where do you live?

b. $\{\lambda v[g \in Op(P)(v)]:w \in W \& g \in Op(P)(w)\}$, with $P=\lambda w \lambda x$ You live in x in w

c. *Possible partitions*: i. {You live in USA, You live in France,…}
ii. {You live at 1 High St. Enid OK,…}
d. *Goal 1*: At LSA, questioner interested in background of hearer → partition i
Goal 2: At LSA, questioner has to mail hearer a package → partition ii

The DT approach derives two main types of vagueness: level of granularity as in (104), and degree of exhaustivity (105), where the desired answer could be strongly exhaustive (mention-all) or mention-some.

(105) Where can I buy an Italian newspaper?

3.2.1.2 Vagueness in plurals

Striking parallels exist between the types of vagueness inherent in questions and those in definite plurals. First, as repeatedly noted in the literature, definite plurals are vague with respect to the level of granularity (distributivity) (106).

(106) Vagueness in plurals: distributivity
a. The boys built a raft
b. *Possible interpretations*:
i. Team1={Andy,Bill} built a raft and Team2={Chris,Dan} built a raft
ii.Andy built a raft & Bill built a raft & Chris built a raft & Dan built a raft

Second, definites are vague with respect to exhaustivity: (106) is compatible with the maximal (all the windows) or non-maximal construal of the definite, e.g. excepting a few closed windows if the hearer is wondering if his home is storm-proof (Krifka 1996).

(107) Vagueness in plurals: maximality
a. The windows are open
b. *Possible interpretations*:
i. All of the windows are open
ii. Some of the windows are open

In resolving the vagueness, what factors affect the final interpretation for sentences with definite plurals?

First, the nature of the VP plays a role. Many predicates require a certain level of distributivity or collectivity in the subject NP (108a, b) (Dowty 1987), while others seem to produce a preference for maximal (108c) or non-maximal (108d) interpretation (Yoon 1996).

(108) Influence of the VP
a. The boys took a deep breath
b. The boys surrounded the castle

c. The children are healthy
d. The children are sick

While the VP clearly plays a role, it doesn't fully determine the final interpretation – extra-linguistic factors play a role in resolving the vagueness in both distributivity and maximality.

Schwarzschild 1991 notes the influence of extra-linguistic situation on distributivity with (109a, from Schwarzschild 1991); Krifka 1996 shows the effect of context over-riding Yoon's observation on VP influence with (109b, c, from Krifka 1996).

(109) Influence of situation

a. **Situation:** Vegetables arrive at a grocery pre-packaged in baskets. The grocery has a big rough scale suitable for small truckloads, and a small scale for weighing only a few veggies or fruits at a time.
   Utterance: The vegetables are too light for the big scale and too heavy for the small scale
b. **Situation:** I am about to travel, and want to ensure my house is safe in my absence.
   Utterance: I returned to the house because I thought I had left the windows/doors open
c. **Situation:** The local bank has a safe that is accessible only through a hallway with three doors, all of which must be open to reach the safe.
   Utterance: I could reach the safe because the doors were open

To refine these observations, note that every scenario in (109) describes an actual salient arrangement of the entities within the NP into 'packages' (veggies pre-packaged in baskets, windows on the outside of the house, doors in a sequence), as well as the goals of conversational participants, as spelled out in (109').

(109') Influence of 'packaging' and goals:

a. **Utterance:** The veggies are too light for the big scale (excludes collective interpretation)
   Packaging: Vegetables arrive at a grocery pre-packaged in baskets.
   Goal1: To double-check the amount of veggies delivered → Utterance is False
   Goal2: To price veggies for sale in pre-packaged baskets → Utterance is True
b. **Utterance:** The windows are open
   Packaging: The house has a dozen windows in its outside.
   Goal1: To prepare house for the arrival of window-frame painters →All windows
   Goal2: To ensure the house is rain-proof before a thunderstorm →Some windows

The empirical data thus indicates the conditions for a theory of interpretation of definite plurals. First, such a theory needs a vague or underspecified semantics that allows for the full range of the collective/distributive and maximal/non-maximal variation. Second, we need a way to encode the effects of the VP, the packaging of

entities within the NP denotation, and the speaker/hearer goals in computing the truth-conditions of sentences with definite plurals.

The idea that both packaging and speaker/hearer goals play a role in determining interpretation of definite plurals is fairly uncontroversial. Existing accounts, however, have either not spelled out the role of extra-linguistic factors, or focused on the role of packaging.

In the next section, I will sketch three promising approaches to distributivity and maximality in definite plurals, and point to the need for an upgraded account.

3.2.2 Existing approaches

3.2.2.1 Landman 1989

Building on the work of Link 1983, Landman 1989 offers a semantic theory that permits varying levels of distributivity and (non)-maximality. He uses the star (*) operator to pluralize VPs, creating distributive interpretations, and permits predicates to distribute over sums of individuals (a⊔b⊔c), but not over groups (↑(a⊔b⊔c) or the team of a, b, and c). All non-maximal interpretations are instances of collective predication (where the plural is interpreted as a group).

Thus, the interpretations for the sentences in (108ab, 109bc) would arise from representations in (110), in a situation where Andy, Bill, Chris, and Dan are the boys, and d1,…d5 are the doors (or windows) (following the arrow I include a simplified formula that indicates more precisely a situation in which the interpretation is true).

Note that the only way to require a fully maximal interpretation is to make it fully distributive (110d).

(110) Definite plurals in Landman 1989:

a. ⟦108a⟧= ⟦The boys took a deep breath⟧ =
   = λw.∃e *TOOK.A.DEEP.BREATH(e,w) & *Ag(e)= σx *boy(x,w) ➔
   ➔ (a⊔b⊔c⊔d)∈ *TOOK.A.DEEP.BREATH(w) **distributive**

b. ⟦108b⟧= ⟦The boys surrounded the castle⟧ =
   = λw.∃e *SURROUNDED.THE.CASTLE(e,w) & *Ag(e)= ↑σx *boy(x,w) ➔
   ➔ ↑(a⊔b⊔c⊔d) ∈ SURROUNDED.THE.CASTLE(w) **collective**

c. ⟦109b⟧= ⟦The doors are open⟧=
   = λw.∃e *OPEN(e,w) & *Ag(e)= ↑σx *door(x,w) ➔
   ➔ ↑(d1⊔d2⊔d3⊔d4⊔d5) ∈ OPEN(w)[26] **collective**

[26] I am allowing here, counter-intuitively, that predicates like 'open' or 'take a breath,' do not have a built-in lexical requirement that they must distribute fully down to individuals. Then, Landman 1989 and 1996

d. ⟦109c⟧= ⟦The doors are open⟧ =
= λw.∃e OPEN*(e,w) & *Ag(e) = σx door*(x,w) ➔
➔ (d1⊔d2⊔d3⊔d4⊔d5) ∈ OPEN*(w) **distributive**

It is not clear whether Landman's original 1989 theory allows for the intermediate-distributive interpretations like (109a), repeated below. However, his 1996 paper explicitly derives them via adaptation of Schwarzschild's 1991 proposal described below in ***subsection 3.2.2.3*** and exemplified in (109e), where artichoke, Brussels sprout, cauliflower, daikon, and endive are the vegetables. The definition for the notion of cover-agent ^{c}Ag(e) is given in ***subsection 3.2.2.3*** below.

(110) e. ⟦109a⟧= ⟦The vegetables are too light for the big scale⟧ =
= λw.∃e *TOO-LIGHT(e,w) & ^{c}Ag(e)= ↑σx veg*(x,w) ➔
➔ (↑(a⊔b) ⊔ ↑(c⊔d⊔e)) ∈ *TOO-LIGHT(w) **intermediate-distributive**

Landman's theory posits a pervasive ambiguity between singular and plural VPs, and does not distinguish between the maximal and non-maximal interpretations in the representation (cf. 110b and 110c)[27].

More importantly for us, as can be seen from (110), the theory does not provide an explanation of how and when the various interpretations arise, since it does not include an account of pragmatic factors: neither the structure of a situation nor the intent of any conversational agent plays a role.

3.2.2.2 Schwarzschild 1991 and Brisson 1998

Schwarzschild 1991 proposes an account of distributivity, focusing on spelling out the role of packaging. He does so by building a free variable over covers (Cov_i) into the denotation of VPs, which allows them to distribute up to sub-pluralities of the definite plural given by the cover. A cover is defined in (111a); the specific cover in (111b) derives the intermediate-distributive interpretations (109a, 111c) from the representation in (111d).

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can derive non-maximal interpretations for 'open' (or 'take a breath') by giving the windows or doors a collective responsibility for the state of being open. If instead we say that selectional requirements of 'open' and 'take a breath' demand full distributivity, then neither Landman 1989 nor the theory described in section 3.2.2.3 below can derive non-maximal readings, and a pragmatic mechanism is necessary, like the one in Brisson 1998 or the one I propose below.

[27] This inability to distinguish between maximal and non-maximal interpretations in theory matches empirical data for collective predicates: since the plural agent bears collective responsibility for the action, we cannot distinguish whether all or some of the agent's subparts actually participated.

(111) Definite plurals in Schwarzschild 1991:

a. Cover: a set of sets of entities, such that the union of the sets in the cover is the universe of discourse.
b. {{artich1, artich2, Bruss.sprout1,Bruss.sprout2},{caulifl,daikon,endive},{John…}}
c. The vegetables are too heavy for the big scale and too light for the small scale
d. $\forall x[x \in [[Cov_i]] \& x \subseteq [[the.veg']] \rightarrow x \subseteq [[too\text{-}heavy\text{-}for\text{-}sc1 \& too\text{-}light\text{-}for\text{-}sc2']]]$

Brisson 1998 builds on Schwarzschild 1991 to permit exceptions, deriving non-maximal interpretations for definite plurals. This is accomplished by allowing mismatches between the distribution of individuals into the cover-cells and the NP denotations – ill-fitting covers (defined in (112a)).

Unlike Landman 1989, she only derives cases of a few salient exceptional items (112c, from representation in 112d), rather than existential interpretations like (109b, 109'b-2).

(112) Definite plurals in Brisson 1998:

a. A cover is *ill-fitting with respect to NP denotation* if some members of NP denotation are in the same cover-cell as non-members, so no union of cells in the cover equals the NP denotation
b. {{window1}, {window2}, {window3},{window4},{window5,Mary, door}}
c. The windows are open (but we didn't get to the bathroom window yet)
d. $\forall x[x \in [[Cov_i]] \& x \subseteq [[the.windows']] \rightarrow x \subseteq [[open']]]$

There are serious drawbacks in the cover-based account. First, the final interpretation depends on the distribution of individuals into cover-cells, making non-maximality essentially a matter of narrowing the domain to a relevant set. In this, the cover-based account of Brisson 1998 inherits the problem of any theory that derives non-maximality through domain narrowing.

In fact, as examples (109b, 109'b) repeated below demonstrate, non-maximality is not a matter of domain selection of any kind: there is no "relevant set" of open windows, and no window is more relevant than any other – it is simply irrelevant which or how many windows are open, as long as some of them are. This problem is intrinsic in the cover-based approach, and derives incorrect interpretations for many non-maximal uses of definite plurals.

(109b) I returned to the house because I thought I had left the windows open.

Second, the distribution of individuals into cover-cells is denoted by a free, deictic variable, whose denotation is fixed when a particular cover is made salient in preceding discourse or extra-linguistic context. This deictic nature of Cov_i requires at least the speaker to know the exact composition of cells in the cover and in the special cell containing exceptions, in the same way this is required for a pronoun.

This is strikingly contrary to fact: the speaker doesn't need to know the identity of the vegetables for the intermediate distributivity interpretation to arise in (109c, 108c), nor does he need to know the identity of the exceptional windows for the non-maximal interpretation to obtain in (107, 109b, 109'b).

One way to avoid making demands on speaker knowledge is to intensionalize the Cov_i variable, varying the distribution of individuals into cells with each possible world compatible with what the speaker knows. As Kratzer 2003 notes, "amending Schwarzschild's account of plural predication, we would want to say that plural predication depends on contextually provided cover functions, not just on contextually provided covers."

In terms of the needs outlined in the previous section, the cover account derives (at least some of) the influence of the VP (since the Cov_i variable is part of the VP) and of the "packaging" aspect of scenarios (inasmuch as the situation always provides a salient cover), but does not have a mechanism for integrating the influence of speaker/hearer goals into the analysis.

3.2.2.3 Landman 1996 and his recasting of Schwarzschild 1991

In his wide-reaching article "Plurality", Landman 1996 provides a recasting of Schwarzschild's 1991 proposal in his own framework (what he dubs 'Theory IV' of plurality). This is done by allowing *cover roles*, defined as in (113a), and illustrated in the proof (113d) for the denotation (113c) for the sentence (113b), in a situation where Andy, Bill, Chris, and Dan are the boys (compare with 109c,111c).

(113) Definite plurals in 'Theory IV'

a. Let R be a thematic role. Then ^{c}R, the *cover role based on* R, is the partial function from D_e (domain of events) into D_d (domain of individuals) defined by

   $^{c}R(e) = \mathbf{a}$ iff $\mathbf{a} \in ATOM \;\&\; \sqcup(\{\downarrow(d) \in SUM: d \in AT(*R(e))\}) = \downarrow(\mathbf{a})$, i.e. **a** is either a singular atom or a group, and the set underlying **a** is the union of the elements underlying atomic subparts of the plural role based on R.

b. The boys built a raft. (in a situation where there are two teams of boys)

c. $\lambda w.\ \exists e\ *\text{BUILT-A-RAFT}\ (e,w) \;\&\; {}^{c}Ag(e) = \uparrow\sigma x\ *boy(x,w)$ ➔

   ➔ $\lambda w.\ \uparrow(a \sqcup b) \sqcup \uparrow(c \sqcup d) \in *\text{BUILT-A-RAFT}(w)$

d. $e = f \sqcup g$, $Ag(f) = \uparrow(a \sqcup b)$, $Ag(g) = \uparrow(c \sqcup d)$; then $*Ag(e) = \uparrow(a \sqcup b) \sqcup \uparrow(c \sqcup d)$

   $\{\downarrow(d): d \in AT(*R(e))\} = \{a \sqcup b\ ,\ c \sqcup d\}$, and

   $\sqcup(\{\downarrow(d): d \in AT(*R(e))\}) = \sqcup(\{a \sqcup b\ ,\ c \sqcup d\}) = a \sqcup b \sqcup c \sqcup d = \downarrow(\uparrow \sigma x\ *boy(x,w))$

The cover roles are a very powerful mechanism: we can derive the interpretations in (108ab, 109abc) in a similar way, using the cover-Agent to allow the different levels of collectivity and distributivity available for definite plurals (114).

(114) Definite plurals in 'Theory IV' (continued):

a. ⟦108a⟧ = ⟦The boys took a deep breath⟧ =
= λw.∃e *TOOK.A.DEEP.BREATH(e,w) & ^{c}Ag(e)= σx *boy(x,w)
e=f⊔g⊔h⊔i, Ag(f)=a, Ag(g)=b, Ag(h)=c, Ag(i)=d, *Ag(e)=a⊔b⊔c⊔d, so
⊔({↓(d): d∈AT(*R(e))}) =⊔({a,b,c,d})=a⊔b⊔c⊔d=↓(↑ σx *boy(x,w))

b. ⟦108b⟧ = ⟦The boys surrounded the castle⟧ =
= λw.∃e *SURROUNDED.THE.CASTLE(e,w) & *Ag(e)= ↑σx *boy(x,w)
e is atomic, Ag(e)= *Ag(e)=↑(a⊔b⊔c⊔d), so
⊔({↓(d): d∈AT(*R(e))}) = ⊔ ({a⊔b⊔c⊔d})=a⊔b⊔c⊔d=↓(↑ σx *boy(x,w))

c. ⟦109b⟧= ⟦The doors/windows are open⟧ =
= λw.∃e *OPEN(e,w) & *Ag(e)= ↑σx *door(x,w) (see footnote 30)
e is atomic, Ag(e)=*Ag(e)=↑(d1⊔d2⊔d3⊔d4⊔d5), so
⊔({↓(d)}) = ⊔({d1⊔d2⊔d3⊔d4⊔d5})= d1⊔d2⊔d3⊔d4⊔d5=↓(↑ σx *door(x,w))

d. ⟦109c⟧ = ⟦The doors are open⟧ = λw.∃e OPEN*(e,w) & *Ag(e)= σx door*(x,w)
e=f⊔g⊔h⊔i⊔j, Ag(f)=d1, …, Ag(j)=d5, thus *Ag(e)= (d1⊔d2⊔d3⊔d4⊔d5), so
⊔({↓(d) }) = ⊔({(d1,d2,d3,d4,d5)})= d1⊔d2⊔d3⊔d4⊔d5=↓(↑ σx *door(x,w))

Landman's reinterpretation preserves the flexibility of Schwarzschild's theory, allowing for the intermediate-distributive interpretations like (109a, 111c, 113d). Representation no longer contains the free, deictic variable Cov_i.

On this approach, the speaker only has to know that **there is a cover** making the statement true. That is, the speaker must only be sure of the existence of a proof like the one in (113b), where knowledge that the teams are boy-made will point to the existence of such a proof.

The resulting analysis allows the full range of empirically attested interpretations, and says nothing about the way these various interpretations are derived and the factors that influence the derivation.

Sentences like (115) just mean that subparts of the given group of windows/boys, in some packaging, are agents for (potentially plural) states of being open / events of raft-building.

(115) Definite plurals in 'Theory IV' (continued):

a. The windows are open
b. The boys built a raft

This semantics is very weak. The only information transmitted with the use of a cover-role is that there exists **some** proof like the ones in (113, 114). This incorrectly

predicts that in a situation (112c), repeated below as (116), the speaker can utter '*The doors are open*' on the **collective** interpretation (114c) allowing some of the doors to be actually closed, since a proof exists as long as **some** doors are open.

(116) **Scenario:** The hearer works in a bank and must get to a safe that can only be reached via three consecutive doors.
Utterance: The doors are open
Interpretation allowed in Theory IV: Some/All of the doors are open
Actual interpretation: All of the doors are open

This is much less information than is actually be transmitted by such utterance in the situation (116).

Similarly, this account predicts that in a situation from (112a), repeated below in (117), the speaker can truthfully utter 'The vegetables are not too light for the big scale' on the collective interpretation, even when the baskets are **actually too light** for the scale. After all, the possibility of putting all the baskets on the scale at once points to the existence of some way to make the sentence true.

(117) **Scenario:** The vegetables arrive to the grocery store pre-packaged in baskets, and need to be priced by weight. The store has a scale suitable for truckloads of stuff.
Utterance: The vegetables are not too light for this scale
Interpretation: The veggies, weighed by the basket, are not too light for this scale.

Thus, by getting rid of the deictic cover variable, we have lost crucial information in this case.

While clearly too weak to stand on its own, this semantics is the perfect starting point for an account drawing on pragmatic factors to derive a stronger interpretation – after all, in a particular scenario (108, 109), hearers are perfectly clear on whether all or some windows/doors are required to be open, and on which packaging is meant when baskets of vegetables need to be weighed.

3.2.2.4 Interim conclusions

In a theory of definite plurals, we must take into account including the influence of packaging on interpretation is sometimes necessary and at other times detrimental to deriving the correct interpretation.

Deixis to packaging is necessary in some cases (e.g., 109a, 117) – without it, the semantics is too weak (116, 117).

At the same time, deixis to packaging is wrong in some cases, as in (112b), repeated below as (118), because it makes non-maximality a matter of domain selection, and so the interpretations derived using it are contrary to fact.

(118) **Scenario:** The house has a dozen windows on the outside. The hearer and speaker are going on a trip and want to make sure the house is safe.
Utterance: The windows are open
Cover-derived interpretation: The relevant/salient set of windows is open
Actually: Some of the windows are open (doesn't matter/don't know which)

In addition, we still need to incorporate speaker/hearer goals into the analysis.

In the proposal I lay out in the next section, I will introduce a deictic variable that will always include reference to hearer's goals, and encode information about packaging only when such information is relevant to hearer's goals.

3.2.3 Decision Theory approach

3.2.3.1 The proposal

I apply Merin's 1999 and van Rooy's 2003 Decision Theory (DT) based definition of relevance to definite plurals, replacing the cover analysis, integrating Landman's 1996 recasting of Schwarzschild's proposal with a principled account of how and when the various interpretations arise.

The chief innovation is thus the unification of the vague/flexible semantics with a formal analysis of pragmatic factors influencing the truth-conditions of sentences with definite plurals.

Agents in conversation are constantly modeling each other's goals. As a part of cooperative communication, each speaker aims to change the hearers' states of knowledge so as to help them progress towards their goals. This is the heart of the Cooperative Principle (Grice 1975), and in particular, of the Relation (Relevance) maxim.

When interpreting a vague utterance (in this case, one containing a definite plural), hearers select propositions which can influence their actions in achieving the goal. Agents' goals (and more) can be represented as decision problems (DeP) they are solving. A DeP is a triple <P,U,A>, where the probability function P represents agent's beliefs, utility function U reflects the agent's preferences, and a set of (mutually exclusive) actions A the agent chooses from.

A proposition *q* changes agent's beliefs (P), resolving the DeP if, after *q* is learned, a single action has, in each resulting world, the highest utility. In making an utterance, the speaker aims to resolve hearers' DeP [28].

[28] Or, rather, the speaker aims to resolve his/her estimate or hearer's DeP. While practically all linguists agree that conversational participants represent each other's goals and knowledge during a conversation, the processes and representations utilized during such modeling are subject of much ongoing research. For the purposes of this paper and of (109), it is enough if speakers have an idea about the actions their hearers are choosing from, and can figure out the effect of learning various propositions on that action set.

A relevance ordering between propositions (119) yields the contextual criterion for licensing and choosing an interpretation for plural definites, just as it does for questions, with relevance defined as helpfulness in resolving the DeP.

(119) Proposition *p* is more relevant (better to learn) for resolving DeP than *q* ($p >_{DeP} q$) 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 relevance ordering, built into the definition of the variable REL (120)[29], allows the hearer to choose an appropriate interpretation for the vague definite. [30]

(120) The relevance operator:

a. **Definition:** REL(DeP)(VP)(NP)(w) =

$$\{g: \boxed{\sqcup\{\downarrow d: d \in AT(\downarrow g)\} \subseteq \downarrow NP(w)} \,\&\, \neg\exists h[\sqcup\{\downarrow d: d \in AT(\downarrow h)\} \subseteq \downarrow NP(w) \,\&\, \underline{[\lambda w.VP(e,w) \,\&\, {}^{*}Ag(e)=h >_{DeP} \lambda w.VP(e,w) \,\&\, {}^{c}Ag(e)=g]]}\}$$

b. **Paraphrase:** REL is a function that takes the decision problem, VP and NP denotations, and a world, and outputs a set of individuals **g**, which could be groups or sums.
The framed conjunct assures that when you boil **g** down to singularities, all of those singular individuals are atoms in the NP denotation (e.g., 'the boys').
The second conjunct assures that no other such NP-made (e.g., boy-made) thing **h** is more relevant than **g** – i.e., there is no **h** such that, as the underlined portion states, it's better to learn that "h VPs" than that "g VPs."

REL replaces Schwarzschild's 1991 Cov_i in encoding the vagueness and context-dependence. REL operator comes as part of the VP, following syntactic assumptions in Schwarzschild 1991 and preceding literature on distributivity (121c). The operator containing REL introduces a set of alternatives – O_{Rel} is a function from VP and NP denotations to the set of optimally relevant propositions (121a). The sentential existential quantifier converts the set into a single proposition at the top (121c). This last operation is the one introduced for the Hamblin semantics in Kratzer and Shimoyama 2002 (see also Keshet 2006). The schema for the entire sentence is given in (121b).

[29] REL for 'relevant,' instead of a similar variable Op proposed by van Rooy.
[30] If x is an atom, ↓x=x (Landman 1989). If x a sum, rather than an atom, I assume ↓x=x.

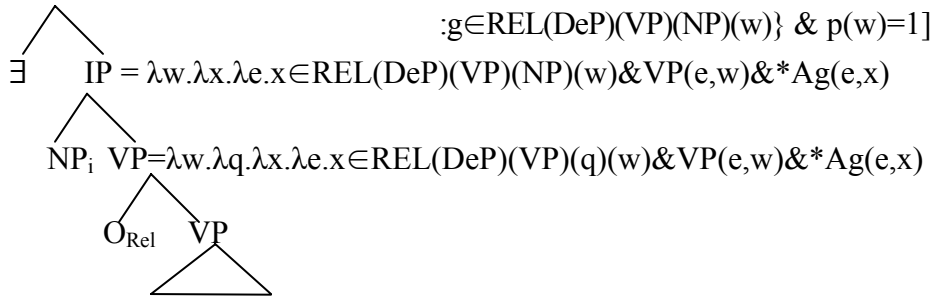
(121) The relevance operator (continued):

a. O_{Rel} = λw.λP.λq.λxλe. x∈Rel(DeP)(P)(q)(w) & P(e,w)&*Ag(e,x)

b. λw.∃p[p∈{λv.[g∈Rel(DeP)(VP)(NP)(v)&VP(e,v)&*Ag(e)=g]:g∈Rel(DeP)(VP)(NP)(w)} & p(w)=1]

'There is a true proposition, taken from the set of optimally-relevant propositions saying that some subpart(s) of the NP do the VPing.'

c. λw.∃p[p∈{λv.[g∈REL(DeP)(VP)(NP)(v)&VP(e,v)&*Ag(e)=g]:g∈REL(DeP)(VP)(NP)(w)} & p(w)=1]



3.2.3.2 Deriving (non)-maximality

I provide several worked-out examples to illustrate the schema in (121) in deriving maximal and non-maximal interpretations for definite plurals.[31]

(122) Example:

a. **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.

b. **Utterance:** The windows are closed=

= λw.∃p [p∈{ g(w)∈REL(DeP)(win)(clos)(w) & g(w) is closed} &p=1]

c. **Pool of propositions REL chooses from:** [32]

w1⊔w2⊔w3 is closed

~~w1⊔w2 closed~~ ~~w2⊔w3 closed~~ ~~w1⊔w3 is closed~~
~~w1 is closed~~ ~~w2 is closed~~ ~~w3 is closed~~

~~↑(w1⊔w2⊔w3) is closed~~ ~~↑(w1⊔w2)closed~~ ~~↑(w2⊔w3)closed~~ ~~↑(w1⊔w3)closed~~

~~↑(w1⊔w2) ⊔w3 is closed~~ ... ~~↑(w1⊔w2) ⊔↑(w1⊔w3) is closed~~…

[31] In (122c), the propositions with a single strike-through don't resolve the DeP, and are eliminated by REL.
[32] I simplify (c,d) keeping them extensional; VPs are (maybe vacuously) plural: *is closed* = *closed

d. **Some possible interpretations:**

☺ i. ∃p [p∈{∃e.*clos(e)&w1+w2+w3+w4+w5=*Ag(e)} & p=1]
(all of the windows are closed)

ii. ∃p[p∈{∃e*clos(e)&w1=*Ag(e),∃e*clos(e)&w2=*Ag(e),…}&p=1]
(some of the windows are closed)

Consider an agent facing the problem in (122a).
If he hears (122b), he has to select one of the interpretations [i] or [ii] as the true import of the vague literal statement. While [i] resolves the decision problem (by pointing to *Action1*), [ii] fails to do so, since it is compatible both with a scenario where all windows are closed, and one in which some are open and some closed. So, [i] is the only relevant interpretation.

A built-in consequence of the framework is this: the only way to force a maximal interpretation is for REL to produce a single most-relevant proposition, so that the existential quantification over propositions is over a singleton set. Further, we inherit from Landman the fact that maximal interpretations are simply fully distributive ones, where a unique optimal proposition involves distributive predication over a sum.

To illustrate what happens when these conditions fail to hold, consider the example in (123) below.[33]

(123) Example:

a. **Decision Problem:** Hearer is preparing his house for arrival of painters, who will paint all the window-frames. He has to decide if he can relax till they arrive (Action 1), if all the windows are open, or if he still needs to do something to prepare for the painters (Action 2), if some of the windows are closed.

b. **Utterance - same as in (122b):** The windows are closed=

= λw.∃p [p∈{ g(w)∈REL(DeP)(win)(clos)(w) & g(w) is closed} &p=1]

c. **Pool of propositions REL chooses from:** (see footnotes 26, 31, 32, 33)

~~w1⊔w2⊔w3 is closed~~ ~~w1⊔w2 closed~~ ~~w2⊔w3 closed~~ ~~w1⊔w3 closed~~
w1 is closed w2 is closed w3 is closed
↑(w1⊔w2⊔w3) is closed ↑(w1⊔w2)closed ↑(w2⊔w3)closed ↑(w1⊔w3)closed
~~↑(w1⊔w2) ⊔w3 is closed~~ … ~~↑(w1⊔w2) ⊔↑(w1⊔w3) is closed~~…

d. **Some possible interpretations:**

i. ∃p[p∈{∃e.*clos(e)&w1+w2+w3+w4+w5=*Ag(e)} & p=1]
(all of the windows are closed)

☺ ii. ∃p[p∈{∃e.*clos(e)&w1=*Ag(e),∃e.*clos(e)&w2=*Ag(e),…}&p=1]
(some of the windows are closed)

[33] Propositions with a double strike-through are over-informative and so are eliminated by REL.

Now, consider an agent facing a different problem (123a).
If he hears the same utterance (122b, 123b), now both [i] and [ii] resolve the decision problem (by pointing to *Action2*) and thus are both relevant. But [i] entails [ii] and thus is over-informative (hence less relevant according to (119)). This points to [ii] as the intended message.

Thus, whenever REL fails to winnow the set down to a single fully-distributive proposition, the existential quantification over propositions will result in a weaker meaning, stating that one of the most-helpful propositions is true. In the case when the hearer doesn't care which windows are closed, all propositions stating that one of the windows is closed are equally most-helpful. Thus, the existential quantification over propositions creates the effect of existential quantification over the windows, i.e., the non-maximal reading.

3.2.3.3 Deriving distributivity

The worked example below illustrates that the hearer chooses the level of distributivity based on (124) in a (by now) familiar fashion.

(124) Example:

a. **Decision Problem:** Hearer is deciding whether to pass the various boys' teams in a raft-building competition. *Action1*: pass Team1, fail Team2; Action2: pass Team2, fail Team1; A*ction3*: pass both; *Action4*: fail both.

b. **Utterance:** The boys built a raft== $\lambda w.\exists p\ [p\in\{g(w)\in REL(DeP)(boys)(built.raft)(w)\ \&\ g(w)\ built\ a\ raft\}\ \&p=1]$

c. **Pool of propositions REL chooses from:**

~~a⊔b⊔c⊔d built.raft~~

~~a⊔b⊔c built.raft~~ ~~a⊔b⊔d built.raft~~ …

a⊔b built.raft b⊔d built.raft a⊔c built.raft …

<u>a built.raft</u> ≈ Team1(=a) ⊔Team2(=a) built.raft

<u>b built.raft</u> ≈ Team1(=b) ⊔ Team2(=b) built.raft…

<u>↑(a⊔b⊔c⊔d) built.raft</u> ≈ Team1(=↑(a⊔b⊔c⊔d)) ⊔Team2(=↑(a⊔b⊔c⊔d)) built.raft

<u>↑(a⊔b⊔c) built.raft</u> ≈ Team1(=↑(a⊔b⊔c)) ⊔Team2(=↑(a⊔b⊔c)) built.raft…

<u>↑(a⊔b) built.raft</u> ≈≈ Team1=↑(a⊔b) ⊔Team2=↑(a⊔b) built.raft …

~~a⊔b⊔↑(c⊔d)built.raft~~… ~~↑(a⊔b) ⊔c⊔a built.raft~~ …

↑(a⊔b) ⊔↑(c⊔d) built.raft ↑(a⊔c) ⊔↑(b⊔d) built.raft

↑(a⊔b⊔c) ⊔d built.raft

↑(a⊔b⊔c) ⊔↑(c⊔d) built.raft …

…

d. **Some possible interpretations:**
i. Andy built a raft & Bill built one & Chris & Dan (as a group) collectively built one
☺ ii. Team 1 built a raft & team 2 built a raft
iii. Andy built a raft & Bill built a raft & Chris built a raft & Dan built a raft

Suppose that exact composition of the teams is not known (but it is known that there are two boy-made teams in the competition).

Interpretation [i] fails to resolve the question of the teams' performance. Both the interpretations [ii] and [iii] resolve the problem, and so are relevant. But [iii] is over-informative, and so [ii] is the interpretation of choice.

The remaining propositions in the set represent the set of speaker's epistemic possibilities, i.e., the speaker's uncertainty about the composition of the teams.[34] In this framework, speaker's uncertainty about the exact distribution of individuals into "packages" will prevent REL from eliminating the propositions that involve the correct level of distributivity. The existential quantification over propositions will then capture the speaker's inability to choose among the remaining propositions.[35]

The framework also opens up a possibility of having non-maximal intermediate-level interpretations, impossible to derive in Landman 1989 or Theory IV (Landman's 1996 recasting of Schwarzschild 1991). Empirically, such readings do arise sometimes. For instance, in an international soccer competition, where men's and women's teams from various countries compete, an observer can say "The African men won" to mean that some of the men's teams from Africa won (say, Ghana and Tunisia), even if some lost (say, Togo).

3.2.4 Some consequences of this approach to vagueness

3.2.4.1 Consequence 1: Non-maximality without collectivity

In presenting the semantic frameworks of Landman 1989 and Landman 1996, I have made the counter-intuitive assumption that predicates like 'open' or 'take a breath,' do not have a built-in lexical requirement that they must distribute fully down to individuals. This was done in order to allow non-maximal interpretations to arise for these items. Landman 1989, 1996 can derive non-maximal interpretations for 'open' (or 'take a breath') only by giving the windows a collective responsibility for the state of being open.

However, Landman 1996 provides examples of predicates that do not have collective readings (125a). Since the women cannot be assigned collective responsibility

[34] Thanks to Chris Potts for pointing this out.
[35] In a more intensionalized framework, REL would output not the individuals (boys), but functions g(w) that, for each world, give correct "cover" (the two boys' teams) in that world. The resulting set of propositions that remain after REL applies is then a singleton: {teams(w) built.raft}. It's not immediately clear if such system permits non-maximal intermediate-distributive readings.

for giving birth, (125a) sounds weird out of the blue, since fifteen women cannot physically give birth to fewer than fifteen children. However, even these verbs have non-maximal readings: (125b) is completely normal out of the blue.

(125) Non-maximality without collectivity
a. ?#Fifteen women gave birth to only seven children (Landman 1996: 435, ex.18)
b. The women in Bogoduhov gave birth to only seven children.

It seems plausible that denotations of 'open' and 'take a breath' include only individual entities of a certain shape (that enables them to open or close), or entities that have lungs (enabling them to take a breath), respectively. These selectional requirements are incompatible with collective readings: for instance, a set of windows does not have the requisite shape for opening, and a collective of people does not (per se) have lungs.

If we follow this intuitive requirement, then the relevance-based mechanism described in the preceding section is required to enable such predicates to give rise to non-maximal interpretations. Then, the initial set of propositions that REL winnows down in interpreting (123b, 126b), does not contain collective propositions (126c):[36]

(126) Deriving non-maximality without collectivity:
a. **Decision Problem:** Hearer is preparing his house for arrival of painters, who will paint all the window-frames. He has to decide if he can relax till they arrive (Action 1), if all the windows are open, or if he still needs to do something to prepare for the painters (Action 2), if some of the windows are closed.
b. **Utterance - same as in (122b, 123b):** The windows are closed=
$= \lambda w.\exists p\ [p \in \{ g(w) \in REL(DeP)(win)(clos)(w)\ \&\ g(w) \text{ is closed}\}\ \&p=1]$
c. **Pool of propositions REL chooses from:**
~~w1⊔w2⊔w3 is closed~~ ~~w1⊔w2 closed~~ ~~w2⊔w3 closed~~ ~~w1⊔w3 closed~~
w1 is closed w2 is closed w3 is closed

After all over-informative propositions are eliminated by REL, the sentence means that at least one of the windows is closed, the desired interpretation.

As before, fully maximal readings are fully distributive ones, while non-maximality can be divorced from collectivity.

3.2.3.2 Consequence 2: Back to questions

The DT approach takes as its base a weak semantics for definite plurals, and builds in pragmatic factors to derive stronger truth-conditions for sentences with definites.

Speakers' estimates for each other's beliefs, goals, and available actions are incorporated into selection of maximally relevant propositions with subparts of the plural

[36] Double-strikethrough means that propositions are eliminated as over-informative.

definite (109, 109'). The framework derives the (non)-maximality and distributivity patterns while making correct predictions regarding speaker/hearer knowledge.

This framework makes interpretation of definite plurals parallel to that of questions (van Rooy 2003a), where speakers' estimates for each other's Decision Problems are incorporated into selecting the set of maximally relevant answers (127-8).

(127) DT and questions: granularity:
a. Where do you live?
b. {λv[g∈REL(place)(P)(v)]:w∈W&g∈REL(place)(P)(w)},
with P=λwλx. You live in x in w
c. **Possible partitions:** i. {You live in USA, You live in France,…}
ii. {You live at 1 High St. Enid OK,…}
d. **Decision Problem1:** At LSA, questioner interested in background of hearer to select a conversation topic: US sports (Action1), French cuisine (Action2), etc.
Decision Problem2: At LSA, questioner has to mail hearer a package to (actions corresponding to different addresses)

(128) DT and questions: exhaustivity:
a. Where can I buy an Italian newspaper?
b. {λv[g∈REL(place)(P)(v)]:w∈W&g∈REL(place)(P)(w)},
with P=λw.λx.Italian newspaper sold at x in w
c. **Possible sets:** i. {{u=It. news sold at the palace},{v=It.news sold at the station},
{w=It.news sold both at the palace and at the station}
ii. {{u,w},{v,w}}
d. **Decision Problem1:** In Amsterdam, questioner wants to read news in Italian by buying the newspaper at the station (Action1), or at the palace (Action2)
Decision Problem2: In Amsterdam, questioner is surveying availability of Italian press for a travel website (actions corresponding to writing down different sets of places where Italian newspapers are sold)

3.2.4.3 Consequence 3: Overt distributivity and maximality operators

Not all sentences with definite plurals are vague. Operators like *all* or *each* force maximal (and, in the case of *each*, fully distributive) interpretations in sentences with definite plurals (129), compare with (130).

(129) Overt operators:
a. All the boys surrounded the castle
b. The boys built a raft each
(130) Without overt operators:
a. The boys surrounded the castle
b. The boys built a raft

How do these lexical items achieve this effect? Theoretically, two mechanisms are possible:

1. The lexical operator (*all* or *each*) can work in the semantics to limit or change the available interpretations.
2. Another possibility is for these operators to contribute information about extra-linguistic factors (affecting the Decision Problem), so that REL, as a result, will give the desired interpretations.

Winter 1998, 2002 adopts the former approach to these operators, while Brisson 1998 pursues the latter. Empirical data suggests that no extra-linguistic factors can force a maximal interpretation in collective sentences like (130a). Thus, it cannot be that *all* affects the context to force a maximal interpretation in (129a).

This is matched by inability of REL, on our account, to distinguish between maximal and non-maximal interpretations for collective predication. Thus, I will adopt Winter's approach, in which *all* (and *each*) work in the semantics to introduce universal quantification (and full distributivity) over atoms in the NP.

In Winter's 2002 framework NP and VP denotations can denote sets of atomic entities, or sets of sets of entities. He defines *all* as a composite determiner *dfit(every)*, where *every* has the usual denotation (a relation between sets of atomic entities), while *dfit* operation is defined as in (131).

(131) DEFINITION: Let *D* be a relation between sets of elements in a domain E of *atoms*. The operator *dfit* (determiner fitting) maps *D* to a relation *dfit(D)* between sets of sets of atoms in p(E), which is defined as follows:

for any two sets $A, B \in p(E)$, the relation $(dfit(D))(A,B)$ holds iff

the relation $D(\cup A, \cup (A \cap B))$ holds.

Translating this into notation used here (with groups and sums), and making this specific to *all*, we get (132). Without REL, this would produce the denotation in (133) for (129a).

(132) *All* in group notation:

$all = dfit(every) = \lambda P.\lambda Q.\ \text{Every}\ (\sqcup\downarrow P, \sqcup\ (\downarrow P \sqcap \downarrow Q))$

(133) *all the boys surrounded the castle*

$= \text{Every}\ (\sigma x.{*}\text{boy}(x), \sqcup\ (\sigma x.{*}\text{boy}(x) \sqcap \sigma x.\text{surrounded.castle}\ (x)))$

= Every boy participated in a set of boys that surrounded the castle

As in the case without *all*, REL will produce a set of propositions in the end (because of the type mismatch, combining via function combination, as before). This will be a singleton set.

Translating Winter's framework to the notation used in this paper, with some adjustments we will get (132')

(132') *All* and REL:

$\lambda Q.\text{Every}\ (\sqcup\downarrow NP,\ \sqcup\ (\downarrow NP \sqcap \downarrow Q))\ (\lambda x.\ x \in \text{Rel(DeP)(VP)(NP)\&VP}(x)) =$

$= \text{Every}\ (\sqcup\downarrow NP,\ \sqcup\ (\downarrow NP \sqcap\ (\{\downarrow x:\ x \in \text{Rel(DeP)(VP)(NP)\&VP}(x)\}))$

This will result in the denotation for (129a) given in (133'a) and paraphrased in (133'b):

(133') *all the boys surrounded the castle* =

a. $\text{Every}(\sigma x^{*}\text{boy}(x), \sqcup(\sigma x^{*}\text{boy}(x) \sqcap \sqcup\{\downarrow d: d \in AT(\downarrow x): x \in \text{Rel(DeP)(srd)}(\sigma x^{*}\text{boy}(x) \& \text{srd}(x))\})$
b. Every boy participated in a set of relevant boys that surrounded the castle.

Notice that (133'b) is equivalent to (131'b), except that (133'b) can be taken to contribute an additional statement about the Decision Problem (namely, that the proposition with "all the boys" is optimally relevant).

3.2.4.4 Some further issues

The Decision Theory approach, unifying the interpretation of interrogatives and definite plurals, lays the groundwork for explaining the parallel behavior of questions and plurals with respect to QVE (Lahiri 1991, 1998, Williams 2000, Beck and Sharvit 2002) (134).

(134) Quantification over parts, questions, and plurals:
a. For the most part, Al knows about which kids are drunk
b. For the most part, Al hates the kids on his block
c. For the most part, Al knows where the kids are hiding

Quantification over parts can apply to wh-phrase denotations (134a) as well as to definite plurals (134b). Sometimes, it can apply to either, depending on the context (Williams 2000) (134c).

3.3 Conclusions

In this chapter 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 propose a new approach to the interpretation of definite plurals, integrating pragmatic factors into the weak semantics based on Landman's 1989, 1996 semantic framework. This allows us to follow through with the uniform analysis of Type 1 arbs, treating them as definite plurals, and deriving both the quasi-universal (maximal) and quasi-existential (non-maximal) readings for these items.

4 YOU AND MONSTERS

4.1 Background

4.1.1 Monsters and indexicals

The existence of indexicals that can shift their reference under influence of linguistic context has been the subject of much debate (Kaplan 1989, Schlenker 2003, inter alia). Kaplan 1989 argues that such indexicals never occur, since linguistic operators capable of shifting contexts don't exist in natural language. Kaplan terms such operators *monsters*.

Schlenker 2003, 2004, on the other hand, argues that such operators are pervasive in natural languages. Some recent proposals also argue for existence of both monsters and shifting indexicals, but limit the types of such phenomena that exist in natural languages (Adesola 2004, Anand and Nevins 2004, Sharvit 2004). As Anand and Nevins 2004 point out, "Indexical shifting has been observed in a variety of languages over the past two decades: Aghem (Hyman 1979), Amharic (Leslau 1995, Schlenker 2003), Navajo (Speas 1999)." In his 2003 plea for monsters, Philippe Schlenker argues for the existence of shifting indexicals, bringing two examples to bear on the issue: the present tense in Russian, the reference of which shifts when it is embedded into past-tense attitude reports (135), and Amharic *I*, which also shifts in complement clauses of attitude verbs (135b).

Present tense is usually taken to be an indexical referring to the utterance time. In (135a) below it refers to the reported time. In Amharic, the meaning of the first person (agreement) shifts in attitude reports: first person, which is usually taken to be deictic to the speaker, refers to the reported speaker in (135b).

(135) Russian

a. Scenario: Last month, John said "I am building a house."
   V proshlom mes'ace Van'a 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[37]

b. Scenario: John says "I'm a hero." (example from Schlenker 2003: p.25)
   ğon ğägna nä-ňň yəl-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')

The theoretical challenge presented by Amharic and Russian is reconciling the indexical nature of present tense or first-person with their shifting behavior in attitude reports.

[37] Special thanks to Aviad Eilam for correcting my Amharic transcriptions in accordance with the conventions of Leslau 1995.

Schlenker addresses this challenge by treating attitude verbs like *say* as monsters: operators that quantify over contexts, affecting the reference of indexicals in their scope.

In this discussion, impersonals that behave like indefinites with respect to quantification (Type 2 arbs) present an important opportunity. Very obviously with 2nd-person arbs, and, as we shall see in Chapter 5, also with *man*, *on*, and *si*-impersonals, these constructions are on the one hand used indexically, and on the other, exhibit variability under the influence of Q-adverbs. This is remarkably similar to the challenge presented by shifting indexicals in attitude reports. Indeed, some previous work suggests that one way to resolve this challenge is to analyse the 2nd-person arbs as shifting indexicals and the contexts that cause impersonal readings as monsters (Malamud 2005). In this chapter, I will focus on the semantics of 2nd-person arbs in English and Russian, fleshing out the challenges they pose, and proposing solutions in a unified semantic framework.

4.1.2 The 2nd-person challenge

The semantics of the arbitrary 2nd-person pronoun has largely avoided semantic analysis with the exception of Alonso-Ovalle's 2002 proposal for Spanish. In his paper, Alonso-Ovalle claims that the Spanish 2nd-person arb does not show quantificational variability with Q-adverbs, citing examples such as (136a). This, however, is not the empirical import of the examples: first, while some native speakers agree that the QVE reading is absent with *raras veces* (136a,b), other (naïve) native speakers find these readings are, in fact, present (136a, b). Second, Q-adverbs other than *raras veces* show QVE (136c, d) in both regular (136c) and conditional donkey-sentences (136d). Thus, Spanish 2nd-person arb does show QVE with Q-adverbs.

(136) Spanish 2nd-person arb and QVE

a. *(En las fiestas de ese departamento) raras veces bebes vino*
In the parties of that department few times drink.2SING wine
'At the parties of that department, people rarely drink wine'
Alonso-Ovalle's claim: NOT 'At the parties…, few people drink wine'

b. *En aquella epoca, rara vez vivias hasta cumplir los 50*
In that time rare time live.2SING till to.complete the 50
'In those days, you rarely lived to be 50'

c. *En aquella epoca, siempre/normalmente/a veces vivias hasta cumplir los 50*
In that time always/usually /sometimes live.2SING till to.complete the 50
'In those days, you always/usually/sometimes lived to be 50'

d. *Si engañas a la mafia, siempre/normalmente/rara vez vives para contarlo*
If cheat/lie to the Mafia always/ usually / rarely live.2SING to tell.it
'If you lie to the Mafia, you always/usually/rarely live to tell it'

Alonso-Ovalle's analysis for the 2nd-person arb in Spanish does not account for the QVE facts, since in fact it was not designed to do so.

In this chapter, I will consider several possible accounts that would capture both the indexical uses and the QVE data of the 2nd-person arbs, and present a semantics of the construction that captures their indefinite behavior, 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 behavior as a bound, indefinite-like variable in QVE constructions.

I am going to entertain three possible ways of resolving the puzzle presented by *you*, in turn:

Take one: ambiguous *you* – I will entertain and reject the hypothesis that deictic and impersonal *you* are different lexical items. Deictic *you* on this account is a normal indexical, while impersonal *you* is a regular indefinite.

Take two: *you* as a shifting indexical – I will next consider the idea that *you* is a shifting indexical. On the deictic use, no context-shift has occurred, and so *you* refers to the addressee. On the impersonal use, a particular kind of context-shift has been induced by the Q-adverb. I will ultimately reject this hypothesis as well.

Take three and final: quantification over personas – I will finally argue that the contradiction in the behavior of 2nd-person arbs is only apparent, because distinct elements in the semantics of the items are responsible for the impersonal and the indexical aspects of the pattern. This derives the full range of data without positing the existence of monsters outside the domain of attitudes.

4.2 Take one: ambiguous you – and why not

First hypothesis (wrong): Should we say that there are really two lexical items: the deictic *you*, and the impersonal *you*, and that the impersonal *you* is simply an indefinite?

There are several strong arguments against this approach.

Argument 1

The chief argument against the ambiguity hypothesis is that impersonal *you* (singular, wherever such distinction exists for the 2nd-person) appears with astounding systematicity in language after language. The impersonal use of singular 2nd-person pronoun is attested in Slavic, Romance, Germanic, and Dravidian languages, among many others. The explanatory power of our theory would be lost if we were to ignore this ubiquitous connection.

The ambiguity hypothesis is equivalent to the claim that *you* is like the word *bark* in English, with the senses "the sound of a dog" and "a small boat" being entirely unrelated. Thus, we would expect the frequency of co-occurrence of deictic and

impersonal *you* in the same language to be similar to frequency of co-occurrence of "the sound of a dog" and "a small boat" with the same sound.

Argument 2

In fact, even on its impersonal use, *you* has an intimate connection to the addressee. In particular, every use of impersonal *you* involves an appeal for addressee's empathy, so that the addressees are asked to put themselves into someone else's shoes. This is most noticeable when impersonal *you* occurs in the same sentence with another arb (137). In (137a,c,d) the actual addressee is asked to empathize with those persons who receive respect in England. Arbitrary *one* is not very good in object position (137b); however, to the extent to which the sentence in (137b) is acceptable, the addressee is asked to empathize with those persons who show respect in England.

(137) Empathy-tracking with *you*

English

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
c. In those days in England, you had to be given some respect

Russian

d. *V te gody v Anglii tebe vykazyvalos'/vykazyvali uvazhenije*
In those years in England you.DAT showed.SJA / showed.3PL respect.NOM
'In those days in England you were shown respect / they showed you respect'

Argument 3

Here, I point out previously unobserved pattern of arbitrary and deictic interpretations for sentences involving several 2nd-person pronouns. In multiple-pronoun contexts (138), *you* does not have all logically possible readings[38]. However, when the order of the arguments is switched so that the subject, and not the object contains the embedded pronoun, all four readings are available (139).

(138) In those days, you could marry your cousin

a. Addressee could marry addressee's cousin
b. One could marry one's cousin
c. *Addressee could marry one's cousin
d. One could marry addressee's cousin

(139) In those days, your cousin could marry you

[38] Russian uses a special possessive anaphor *svoj/svoja* where English uses possessive pronouns, making it impossible to test the behavior of 2nd-person pronoun in multiple-pronoun clauses.

a. Addressee's cousin could marry addressee
b. One's cousin could marry one
c. Addressee's cousin could marry one
d. One's cousin could marry addressee

The missing reading in (139c) is entirely mysterious if the impersonal and deictic uses of *you* are unrelated, since under this account the rise of this reading is not different from the interpretation of (140) below.

(140) In those days, this man had to support a pauper's children

In fact, behavior of the 2nd-person pronoun in multiple-pronoun sentences replicates the behavior of other variables in such sentences – *de se* pronouns in dream reports, and sloppy variables in VP-ellipsis.

Percus and Sauerland 2003 present the following data, 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, but also to some mixed readings. Note that the (c) reading for (141) (<real-self, dream-self>) is unavailable, while in (142) where the arguments are switched, all four readings are present.

(141) John dreamed he married his granddaughter
a. ok John dreamed John married John's granddaughter
b. ok John dreamed that he, as Bill, married Bill's granddaughter
c. * John dreamed that John married his=Bill's granddaughter
d. ok John dreamed that he, as Bill, married John's granddaughter

(142) John dreamed his granddaughter married him
a. ok John dreamed John's granddaughter married John
b. ok John dreamed that his=Bill's granddaughter married Bill
c. ok John dreamed that this dude John's granddaughter married him=Bill
d. ok John dreamed that his=Bill's granddaughter married this guy, John

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) (143). The (c) reading (strict-sloppy) is again absent in (143). As Fiengo and May 1994 observe, all four readings are available in (144) where the arguments have been switched and the sloppy pronoun is embedded in the subject rather than the object.

(143) John said he saw his mother, and Bill did, too
a. ok Bill said John saw John's mother
b. ok Bill said Bill saw Bill's mother
c. * Bill said John saw Bill's mother

d. ok Bill said Bill saw John's mother

(144) John said his mother saw him, and Bill did, too
a. ok Bill said John's mother saw John
b. ok Bill said Bill's mother saw Bill
c. ok Bill said John's mother saw Bill
d. ok Bill said Bill's mother saw John

An account that has a hope of capturing this data[39] should be treating the two uses of 2nd-person pronoun (deictic vs. impersonal use), the different readings for the *de se* pronouns (dream-self vs. real-self reading), and the variable in VP-ellipsis (strict vs. sloppy reading) in a parallel fashion.

The pattern in (143, 144) has been the subject of much research (Dahl 1973, Fiengo and May 1994, Fox 2000, Hardt 2003, inter alia). The various accounts strive to state the structural and interpretive conditions under which various constituents may be elided (e.g. Fox 2000 presents an influential proposal). By design, they therefore are not suited to account for the parallel patterns in dream reports (141, 142) or in sentences with multiple 2nd-person pronouns (138, 139), where nothing is elided. Fiengo and May 1994 observe that c-command relationship between the two pronouns affects the interpretation: a strict variable forces all those it c-commands to be strict as well.

Percus and Sauerland 2003 observe that the data in (141, 142) are also constrained in the same way, a generalization they term the Oneric Reference Constraint (ORC) (145): a real-self *de se* pronoun forces all the *de se* pronouns it c-commands to also refer to the real self. They propose a restriction on crossing binding paths to account for this data. However, the restriction cannot derive the c-command generalization for the VP-ellipsis data (143, 144).

(145) A sentence of the form *X dreamed that ...pronoun...* allows a reading in which the pronoun has *the dream-self* as its correlate only when the following condition is met:
some pronoun whose correlate is *the dream-self* on the reading in question must not be asymmetrically c-commanded by any pronoun whose correlate is *X*.

Chris Potts (p.c.) observes that the generalization involving c-command holds for (138, 139) as well: a deictic *you* forces all the *you*'s it c-commands to be also deictic. The simple structural constraint describing a common pattern for 2nd-person pronouns, dream reports, and VP-ellipsis calls for a unified account for all three phenomena (see

[39] I will not be providing an analysis for all three patterns. For an attempt at a unified account for the dream-reports and Dahl's puzzle, see Hardt 2003. This account, however, relies on a syntactic movement which makes wrong predictions about multiple pronouns inside islands. How to account for the multiple-pronoun data in all three domains is a question that, while extremely interesting, lies beyond the scope of this thesis.

footnote 38 above) and, in particular, a unified treatment of deictic and impersonal uses of the 2nd-person pronoun.

Argument 4

Even if we accept the ambiguity hypothesis, impersonal *you* is not a regular indefinite. As Alonso-Ovalle 2002 notes for the Spanish counterpart of *you*, in sentences lacking overt Q-adverbs or silent generic quantification, regular indefinites are interpreted as existentially quantified (146a).

In contrast, impersonal *you* is impossible in such sentences, and only the deictic interpretation of *you* is available there (146b).

(146) *You* is not a regular indefinite
a. A linguist/linguists just burned a house
b. You just burned a house (*arbitrary *you*)

I thus reject the ambiguity proposal as untenable, and will look for a unified semantics for the impersonal and deictic *you*.

4.3 Take two: *you* as a shifting indexical

I have already noted the similarity between the challenge presented by the 2nd-person impersonals and the similar challenge addressed by Schlenker 2003, 2004 in proposing a semantics for the 1st-person pronoun (usually treated as deixis to the speaker) in Amharic and for the present tense (a deictic to the utterance time) in Russian. There, the interpretation of these indexicals shifts in attitude reports to the holder and time of reported attitude, respectively (135, repeated in 147 below), so that the indexicals appear to be bound by the attitude verbs.

(147) Russian
a. Scenario: Last month, John said "I am building a house."
V proshlom mes'ace Van'a 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)
ğon ğägna nä-ňň yəl-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')

Schlenker reanalyses attitude verbs, previously treated as quantifiers over worlds or situations, as quantifiers over contexts. A context is a tuple <author of attitude, recipient of attitude, time, world>; an indexical then refers to one of the coordinates of this tuple. This analysis for (135b, 147b) would be as indicated in (147c), where <John, x2, t1, w1> is the context of the reported speech act.

(147) c. $\text{SAY}_{<\text{John,x2,t1,w1}>}c_i$ be.hero(AUTH(c_i), time(c_i), world(c_i))

4.3.1 *Always*, a monster

Second hypothesis (also wrong): *You* is a shifting indexical, like Amharic *I*, and Q-adverbs are monsters. Q-adverbs quantify over contexts, shifting the meaning of *you*.

We can treat *you*, both on its arbitrary and deictic use, as an indexical, always referring to the addressee coordinate of the context. Extending Schlenker 2003, we could reanalyse quantificational adverbs (previously treated as quantifiers over situations, cf. Lewis 1975, Kratzer 1989, von Fintel 1994) as quantifiers over contexts.

The new contexts introduced (and the worlds or situations in them) are imaginary contexts with a speaker and an addressee in an act of speech partially described by some restrictor phrase (e.g., for (138) an act of speech occurring in those days). The actual speaker and, via recognition of speaker's intent, the actual addressee pretend to place themselves into the imaginary context's speaker and addressee respectively.

This restriction is part of the presupposition associated with *you*: the hearers are asked to place themselves (and attend to) the context introduced in the sentence (148).

(148) $[\![\text{you/}ty]\!]^{g,c}$ = addressee(c) if the hearer is placed in c and attending to c
undefined otherwise

In sentences that involve no quantification over contexts, *you* will be forced to pick the addressee of the speech context, resulting in the obligatory deictic interpretation as in (149a). *You* picks out the addressee coordinate of the context c_0, while the verb refers to the situation s_0, which is one of the coordinates of the context c_0 (149b).

The presupposition is then filtered out, since the addressee is already in the context of speech, and presumably attending to it.

(149) Deictic readings of *you*

a. You burned a house

b. $\lambda c_0.\exists x.\text{house}(x) \,\&\, \text{burn}(\text{you}(c_0),x, s_0)$

When quantification over contexts is introduced, *you* will additionally have the option of referring to the addressee coordinate of the quantified context, leading to QVE as in (150a). *You* then co-varies with the context, acquiring the quantificational force of

the Q-adverb (150b); in predicates that require situation variables, the variable *s* is one of the coordinates of the context *c*.

The empathy effect results from the nature of the context: the addressee of the imaginary context is simply the self of the addressee of the actual speech context placed in somebody else's shoes.

(150) Impersonal readings of *you*
- a. [In those days] You usually/rarely loved the queen
- b. λc_0. Most c/ Few c. love(you(c), ιx[queen(x,s)], s)
- c. Paraphrase: Imagine the contexts of hypothetical speech acts in those days in which I am the speaker and you identify with the hearer. For most such speech acts, the hearer loves the queen.

One consequence of this proposal is that languages will differ along three dimensions: which items can quantify over contexts in them (verbs of attitude or Q-adverbs), which indexicals can use this quantification to shift, and which indexicals shift with which operators. This is because in Amharic, where verbs of attitude quantify over contexts, Q-adverbs don't, since first-person pronoun doesn't show impersonal-like QVE (151).

(151) əne kä-niw york səlä-hon-ku bəzugize yä-yanəkin budən ə-dägf-allähu
I from-New York as-be.PRF-1S usually PM-yankee team S-support.IMP-AUX.1S
'If I am from New York, I am usually a supporter of the Yankees'
(No QVE reading, just temporal '*sometimes I support them, sometimes I defect*')

At the same time in Russian, attitude verbs shift the indexical present tense. However, attitude verbs do not shift the 2nd-person pronoun *ty*(=*you*). Thus, in Russian, attitude verbs may be associated with operators that just shift the time, while Q-adverbs may be associated with operators that just shift the addressee.

4.3.2 Why *always* is not a monster: against second hypothesis

There are several arguments against treating *you* as a shifting indexical and Q-adverbs as monsters.

Argument 1

It is not clear what kind of contexts Q-adverbs introduce. Attitude reports, by virtue of being attitude reports, have an author (attitude holder), possible addressee (if the attitude is expressed), a time and a world that are associated with the act of speech or thought that the attitude verb describes (152).

(152) Attitude verbs and contexts

a. John told me that a unicorn was in the garden
b. Context introduced by *told*: author=John, addressee=Sophia, time = t1 < t_{now}, world = w1 in which unicorns exist
   Context of utterance: author=Sophia, time=tnow, world=w0 in which, to my knowledge, unicorns do not exist

In contrast, Q-adverbs like *rarely* may be quantifying over situations, times, or worlds; however, no speech acts are naturally associated with them[40]. Indeed, in sentences like (153), the situations described may have no speech or thought going on in them at all. So, if *rarely* does not introduce contexts of thought or speech, what contexts does it introduce?

(153) Q-adverbs and contexts
a. In those days, you usually/rarely lived to be 60
b. John rarely eats meat

Argument 2

Moreover, it is not clear how we can count those contexts: in (153a), it really seems like we are counting people who live in those days, not "contexts."

In principle, we could have dozens of imaginary speech acts per person "in those days" – but the only things we are counting are persons, not imaginary speech acts. This is similar to the way in which QVE readings are derived for sentences with indefinites in situation semantics. This is because contexts/speech acts are different from situations in that they involve (minimally) two people and the event of speech or thought. Thus, while minimal situations – the solution to QVE in situation semantics – are intuitively and technically feasible, minimal speech acts or minimal contexts are much more complicated.

Argument 3

Notice also that quantification over contexts alone is not sufficient – we must restrict ourselves to the worlds in which the hearer imagines himself in someone else's shoes. This is an additional assumption not motivated independently. In fact, as I will argue in the next section, this is the only assumption we need to derive the impersonal and deictic uses of *you*. Once we put the hearer into someone else's shoes, we will not need quantification over contexts to derive the QVE data.

Argument 4

In a recent paper, Anand and Nevins 2004 argue for a *Shift-Together* constraint on shifting indexicals (p.5):

[40] This argument was first pointed out by Anand's 2005 response to Malamud 2005.

(154) Shift-Together Constraint:
All indexicals within a *speech-context domain* must pick up reference from the same context, where a speech-context domain is the scope of a verb-of-saying up to the scope of the next c-commanded verb-of-saying.
a. C_A [. . . modal C_B . . . [$i_{\{A/B\}}$ . . . $in_{\{A/B\}}$]]
b. *C_A [. . . modal C_B . . . [$i_{\{A/B\}}$ . . . $in_{\{B/A\}}$]]

The multiple-pronoun data in (138), (139) violates this constraint by allowing some mixed readings. That is, unlike true shifting indexicals (155a), which must shift together even when the two items are not in a c-command relationship, 2nd-person pronouns are allowed to have different interpretations in such contexts (155b-d).

(155) 2nd-person pronouns don't shift together
Zazaki (from Anand and Nevins 2003: p.7 example (21))
a. *Hɛsen va kɛ* [*pyaay kɛ mɨ-ra hes kene*] [*pyaay kɛ mɨ-ra hes ne kene*]
Hesen said that [people that me.OBL like do] [people that me.OBL like not do]
ame zuja
came together
i. ok 'H. said that people who like me and the people who don't like me met'
ii. ok 'H. said that people that like AUTH(u) and the people that don't like AUTH(u) met'
iii. * 'H. said that the people that like me and the people that don't like AUTH(u) met'
iv. * 'H. said that the people that like AUTH(u) and the people that don't like me met'

English
b. In those days, your sister and your stepdad could meet in private
i. ok Addressee's sister and addressee's stepdad could meet
ii. ok One's sister and one's stepdad could meet
iii. ok Addressee's sister and one's stepdad could meet
iv. ok One's sister and addressee's stepdad could meet

I thus conclude that the 2nd-person cannot be analysed as a shifting indexical.

4.4 The proposal for *you*: body and soul

Like Alonso-Ovalle 2002 (an analysis that doesn't account for QVE data) and Malamud 2005 (an account that treats 2nd-person arbs as shifting indexicals), I propose a unified analysis for the impersonal and deictic use of *you*.

I do so by, first, separating addressee's *self* and addressee's *persona* in the reference of *you*. This separation is independently made in accounting for individuals in counterfactuals like (156). In (156), *you/I* refer to addressee/speaker themselves (their souls/minds/selves), describing a (counterfactual) situation where they are in Mary's shoes/persona/role.

(156) Counterfactuals
a. If you/I were Mary, you/I wouldn't be dating this horrid guy she's with! =
b. If your/my *self* had Mary's *persona*/role, this self (in Mary's role) wouldn't be dating this guy

In his seminal proposal, Lewis 1973 analyses counterfactuals using possible world semantics. There, he defines the notion of a counterpart (157).

(157) Lewis 1973, p.39: "Something has for *counterparts* at a given world those things existing there that resemble it closely enough in important respects of intrinsic quality and extrinsic relations, and that resemble it no less closely than do other things existing there."

Using this notion, we can define more precisely our notions of *self* and *persona* (158).

(158) Definitions:
a. *Self of x*, defined in this framework, is then the bundle (conjunction) of properties P, such that $\Box P(x)$ - i.e., in every world *w* accessible from the actual world, counterparts of *x* have the properties *P*.
b. *Persona of x from y*, then, is a subset of properties *Q* of *y* that in some accessible worlds is true of a counterpart of *x*. Persona thus is a two-place predicate, relating two individuals in a world: the actor *x* (providing your self or my self in (156)) and the role-provider *y* (Mary in (156)).

As sentences with counterfactuals show, the particular subset *Q* picked out by the *persona* relation varies widely depending on the sentence (159)[41]. In (159a), my counterpart acquires Bush's presidential powers as part of the subset *Q* of *persona*, but retains my own ideas about war and peace in the Middle East. In contrast, in (159b), my counterpart acquires Bush's ideas about war as a part of *Q*.

(159) Variation in *personas*
a. If I were President Bush, I would not have started the war in Iraq
b. If I were President Bush, I would be a raving war-monger

I propose that in addition to the reference to addressee's self, *you* contains a variable over personas/potential role-providers (an indefinite) (160).

(160) $[\![\text{you}]\!]^{c,w} = \lambda s.\lambda P.\exists y.\text{persona}(y,\text{addressee}(c),s)\&P(y,s)$

[41] These types of examples were brought to my attention by audiences at Carnegie Mellon University philosophy department talk, and at Umass-Amherst semantics seminar on pronouns.

In a context without any adverbial quantification in (146b, 161a), the reading would be 'There is an individual, such that the addressee, inhabiting this individual's persona, burned a house' as shown in (161b).

(161) Deictic uses of *you*:
a. You burned a house
b. $\lambda s_0.\exists y \exists z$ House(z,s_0)&Persona$(y,$addressee$(c),s_0)$&Burned(y,z,s_0)

Normally, the individual whose persona/guise/body the addressee's *self* occupied when burning the house would be taken to be the addressee him/herself – that is, we usually assume that people inhabit their own shoes. However, if prior context provides a belief that the addressee is a witch and can possess other people's bodies, and so could burn a house while in someone else's shoes, that reading also becomes possible.

In QVE contexts, the variable over personas is bound by the Q-adverb (depending on the framework, by situational-semantic or other means). Thus, (162a) would read 'For most people living then, you're in the shoes of that person, that person lives to be 60' as shown in (162b).

(162) Arbitrary uses of *you*:
a. You usually lived to be 60
b. λs_0.Most $s_{min}[\exists y$ persona$(y,$addressee$(c),s_{min})]$ $[\exists s'$ $s_{min} < s'$ Lived-to-60$(\iota y$ in $s_{min}, s')]$

In contrast to *you*, *I* is not specified for persona (163a), allowing counterfactuals (156, 159), as shown in (163b), but not the impersonal use[42].

(163) The meaning of *I*:
a. $[\![$ I $]\!]^{c,w}$ =speaker(c)
b. $[\![$ If I were Mary, I wouldn't be dating that horrid guy$]\!]^{c,w}$ =
= $\lambda w_0.\forall$w[persona(Mary,speaker(c),w)] [¬date(speaker(c), the-horrid-guy,w)]

4.5 Conclusions of this chapter

The analysis presented above derives the QVE data, unlike Alonso-Ovalle 2002, while presenting a unified analysis for the deictic and impersonal uses of 2nd-person pronouns. This account also avoids analysing them as shifting indexicals (Kaplan 1989) and adverbs as monsters, unlike the account of *you* presented in Malamud 2005, since in the present analysis only the non-indexical element, variable over personas, shifts in QVE contexts, while the indexical element stays free.

[42] I omit such complications as modal base and ordering source in the formulas for conditionals in general and counterfactuals in particular, to simplify the presentation

The semantics of 2nd-person proposed here has consequences for the general theory of pronouns, raising important issues:

The possibility of impersonal readings for *you* is created by the presence of the variable over *personas* in the denotation of the pronoun. How is this variable introduced into this denotation? That is, where do we place the difference between languages that allow impersonal uses of 2nd-person pronouns, and those that do not? One possibility is that the 2nd-person feature itself has different semantic contributions in these two types of languages. This raises the question of cross-linguistic variability in the semantics of features, making the universal claims and empirical falsifiability of Kratzer's (in progress) theory of pronouns rather weak – after all, what prevents us from assigning arbitrarily different meanings to the same feature in different languages?

This leaves the possibility that the cross-linguistic variation with respect to 2nd-person pronouns is due to the difference in featural composition: that is, languages that allow impersonal *you* have an additional feature that introduces the variable over personas into the denotation of a 2nd-person pronoun. This conjecture has a different drawback, namely, nothing prevents this special feature from appearing on other pronouns. Thus, we would predict that a language like English or Russian in which *you* can be impersonal but not *I* is as probable as a language in which only *I* can be used as an impersonals. However, to my knowledge, no languages of the second type are attested.

I leave this question of locating the source of the variable in the denotation of 2nd-person pronouns to future research.

5 Impersonals, indexicals, and reference *de se*

In the discussion of shifting behavior of indexical pronouns, impersonals pronouns *on* (in French), *man* (in German), and *si* (in Italian)[42] present a challenge akin to that posed by the impersonal *you*. As I will show in this chapter, *on*, *man*, and *si*-impersonals can have indexical uses, and, as we have seen in Chapter 2, they also exhibit variability under the influence of Q-adverbs.

In addition, (in some dialects) *man* and *si* show another type of shifting behavior, changing their reference in attitude reports, like shifting indexicals familiar from Schlenker 2003 (Amharic), and Anand and Nevins 2004 (Zazaki and Slave), among others . Here, I present novel data, showing that *man* and *si* nevertheless differ from these shifting indexicals, and proposing denotations for these items that derive their interpretations.

5.1 Background: logophors vs. shifting indexicals

In his seminal cross-linguistic study, Clemens 1975 summarized the properties of logophoric pronouns as follows:

(164) Logophoric pronouns
- (i) logophoric pronouns are restricted to *reportive contexts* transmitting the words or thought of an individual or individuals other than the speaker or narrator;
- (ii) the antecedent does not occur in the same reportive context as the logophoric pronoun;
- (iii) the antecedent designates the individual or individuals whose words or thoughts are transmitted in the reportive context in which the logophoric pronoun occurs.

This characterization is strikingly similar to a hypothetical item *he** discussed by Castañeda 1968. Both *he** and Ewe logophors differ from shifting indexicals like Amharic *I* in two respects:

First, logophoric pronouns cannot occur outside reports.

This restriction, however, seems to be language-specific: "indirect reflexives" in Ancient Greek and Latin and some uses of *myself* in English, while sharing properties (ii) and (iii) with Ewe logophors, do occur outside reports (Schlenker 2003). Chierchia 1989,

[42] I will treat *si* as a pronominal element in this chapter, following D'Alessandro 2004; however, I want to remain neutral as to the actual syntactic status of this item. On an analysis that treats *si* as a verbal marker of some sort, with the actual argument of the verb being phonologically null (cf. Napoli 1976, Manzini 1986, Burzio 1986, and Cinque 1988), my account fully applies to the denotation of the implicit argument.

Schlenker 2003 and many other researchers, however, do not account for logophors occurring outside reports.

Second, logophoric pronouns cannot be interpreted *de re*:
If John's reported thought is of the form "I am a hero", a logophor can be used to report this *de se* attitude, e.g. "John said that he* is a hero." However, if John's reported thought is of the form "He is a hero", a logophor is disallowed, even if John was unwittingly referring to himself (say, failing to recognize himself on TV). Thus, another term for logophors is *de se* pronouns.

A true indexical (shifting or not), however, should in principle be perfectly fine in a *de re* situation (that is, when John refers to himself unwittingly by failing to recognize himself in the TV). In such a situation (165a), English *I* could be used by John to report what happened (165b), and Amharic *I* could be used by a third party (165c).

(165) True indexicals
a. **Scenario:** John is watching TV, and sees a short clip in which a guy saves a little girl from a burning house. The guy is actually John himself, but John fails to recognize himself, and says "That guy is a real hero!"
b. I said that I was a hero
c. *ǧon ǧägna nä-ňň yəl-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')

In the rest of the chapter, I will present the different aspects in the behavior of impersonal pronouns *on*, *man*, and *si*. I compare the behavior of various impersonals to both true shifting indexicals and logophors, and propose a semantic analysis that derives the full range of data.

5.2 Speaker-inclusive readings of *on*, *man*, and *si*

As we saw in Chapter 2, *on*, *man*, and *si* behave like indefinite variables with respect to QVE (repeated in (166)).

(166) QVE for *on*, *man*, *si* available: 'Most smart people are proud'
French
a. *Si on est intelligent, on est en général/rarement fier*
If ON is intelligent, ON is in general /rarely proud
'If a person is smart, he/she is usually/rarely 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'

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'

On and *si*, and in some German dialects *man*, also receive an indexical semantics, referring to a group that includes the speaker of the sentence, much like *you* would refer to the hearer (167). To distinguish *man* which may have the inclusive interpretation in addition to the exclusive one, I will call it man_A, while *man* in those dialects that don't permit inclusive readings will be man_B.

(167) French
a. *On a passé ce Noël entièrement à la maison*
ON has passed this Christmas entirely at the house
'We spent this Christmas entirely at home'

German (Kratzer 1997: 5)
b. *Es war völlig klar, dass man sich nie mehr wiedersehen würde*
It was completely clear that MAN_A self never again see.again would
'It was completely clear that we would never see each other again'

Italian (D'Alessandro 2004: 39)
c. *Ieri si è arrivati tardi*
Yesterday SI is arrived late
'Yesterday, we arrived late'

While some sentences are ambiguous between the inclusive (i.e., speaker-inclusive) and exclusive (i.e., impersonal) readings for *on*, man_A, and *si*, others are not. As Roberta D'Alessandro 2004 argues in her dissertation, temporal boundedness plays a role in ruling out the exclusive readings for *si*. Verner Egerland 2003, 2006 presents empirical evidence that ergative and passive verbs force the inclusive interpretation of *si* and *on* (168a,b,169a,b allow exclusive interpretation, while 168c,d,169c,d dissallow it).

(168) Italian (from Egerland 2006: ex. 27)
a. *Ieri alle cinque, si è arrestato il colpevole* **Transitive** (Excl/Incl)
yesterday at five SI is arrested the culprit
'Yesterday at five someone/we arrested the culprit'

b. *Si è lavorato per due mesi per risolvere il problema* **Unergative** (Excl/Incl)
SI is worked for two months to solve the problem
'People/We have worked for two months to solve the problem'

c. *Ieri pomeriggio si è arrivati in orario* **Ergative** (*Excl/Incl)
yesterday afternoon SI is arrived on time
'Yesterday afternoon we arrived on time'

d. *Ieri sera si è stati licenziati* **Passive** (*Excl/Incl)
yesterday evening SI is become fired
'Yesterday night we were fired'

(169) French (from Egerland 2006: ex. 28)

a. *Hier soir à cinq heures on a attrapé le coupable* **Transitive** (Excl/Incl)
yesternight at five hours ON has caught the culprit
'Yesterday night at five someone/we have caught the culprit'

b. *On a travaillé pour deux mois pour résoudre le problème* **Unergative** (Excl/ Incl)
ON has worked for two months to solve the problem
'People/We have worked for two months to solve the problem'

c. *Hier soir on est arrivé à l'heure* **Ergative** (*Excl/Incl)
yesternight on is arrived on the.time
'Yesterday night we arrived on time'

d. *Hier soir on a été congédié* **Passive** (*Excl/Incl)
yesternight ON is become fired
'Yesterday night we were fired'

For man_A, Kratzer 1997 shows that the inclusive interpretation is forced with predicative NPs (170a), and with possessive pronoun (170b).

(170) German (from Kratzer 1997: 3, ex.4, 5)

a. *Als ich klein war, wurde man nur am Freitag gebadet* (*Excl/Incl)
when I little was got MAN_A only on Friday bathed
'When I was little, we only had a bath on Fridays'

b. *Es war völlig klar, dass man sich nie mehr wiedersehen würde* (*Excl/Incl)
it was entirely clear that MAN_A REFL never again see.again would
'It was completely clear that we would never see each other again'

The deictic nature of such inclusive reference provides a seeming contradiction with the indefinite behavior of *on*, *man* and *si* in QVE contexts, as happens with *you*. So far, all the Type 2 arbs look similar: they can have impersonal/indefinite as well as indexical uses.

At the same time, there are some important differences between *on/man/si* and *you*. First, unlike *you*, impersonal pronoun *on*, man_A, man_B, and *si* behave like indefinites in episodic contexts as well (171a-c, compare 171d):

(171) Existential readings

French (Egerland 2003: 20)

a. *On a travaillé pendant deux mois pour résoudre le problème*
ON has worked for two months to solve the problem
'Some people worked for two months to solve the problem'

German

b. *Gestern, hat man ein Haus abgebrannt*
Yesterday has MAN a house burned
'Yesterday, someone burned a house'

Italian (Cinque 1995: 43a)

c. *Oggi a Beirut si è ucciso un innocente*
Today in Beirut SI is killed an innocent
'Today in Beirut, someone killed an innocent person'

d. Yesterday, you burned a house
(Impersonal interpretation for *you* totally unavailable)

Second, another difference between *you* on the one hand, and *on*, *man*, and *si* on the other is that, even on its impersonal use, *you*, but not *on, man* or *si*, always requires that the addressee empathise with the agent denoted by *you*[43] (as discussed in detail in Chapter 4, example repeated in (172)).

(172) Empathy-tracking with *you*

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
c. In those days in England, you had to be given some respect

Third, *on*, man_A, man_B and *si*, but not *you*, can denote plural individuals, since they can support reciprocals like *each other* (as repeated in 173a-c, compare 173d).

(173) French

a. *On a un plus grand respect l'un pour l'autre*
ON has a more large respect the.one for the.other
'People/We have deeper respect for each other'

[43] All impersonals (to varying degrees) may at times require that **the speaker** empathize with the individual denoted by the impersonal pronoun; this is not the contrast I'm after.

German (Kratzer 1997)

b. *Man redete miteinander*
MAN talked with.each.other
'People talked with each other'

Italian (Cinque 1988, example 39)

c. *Si era parlato l'uno con l'altro*
SI was talked the.one with the.other
'People talked with each other.'

d. In those days, you could talk to each other in public
(Impersonal reading very degraded or unavailable)

5.3 The proposal, part one

In her 1997 presentation, Kratzer suggests that *man$_A$* syntactically is a combination of two elements: one encoding indexicality (similar to a 1st-person pronoun), and the other a silent **definite** determiner specifying whether the combination will include or exclude this first element (174).

(174) Kratzer's 1997 denotation for *man$_A$*

a. man$_A$=[Det MAN]
b. [[Det$_{IN}$]]^{c,w} = λx. the group of x in w
c. [[Det$_{EX}$]]^{c,w} = λx. the anti-group of x in w
d. [[MAN]]^{c,w} ≈ the speaker of context c

"The group" in Kratzer's analysis is intended to be something like a team denotation, which can vary under quantification (175)

(175) When the Berlin Philharmonic comes here, they are usually polite.

This analysis naturally accounts for the unacceptability of *man$_A$* in existential *there*-sentences.

Note, however, that the nature of the variability in (175) is quite different from that (166): the membership of Berlin Philharmonic may change with every visit but not during a visit, so that "usually" really counts visits, and not members of the Philharmonic. In contrast, in (166) or (176), for instance, the membership of "man" changes with every situation, so that "usually" counts persons, and not "teams of the speaker" or "teams that exclude the speaker."

(176) German
Wenn man mit der Mafia verhandelt, wird man normalerweise ermordet
If MAN_A with the Mafia deals will MAN_A usually get.killed
'If one deals with the Mafia, one will usually get killed'

My analysis of *on*, man_A, and *si* follows Kratzer with the following changes: the silent determiner has a dual function of introducing a plural **indefinite** (an existentially quantified variable), and of specifying whether this variable includes or excludes as its subpart the referent of its sister node (the item similar to 1st-person pronoun) (177).

(177) Denotation for *on/man_A/si* (first pass)
a. *on/man_A/si*=[Det CORE]
b. $[\![\text{Det}_{\text{EX}}]\!]^{c,w} = \lambda x.\lambda P.\exists y.\ x \not\trianglelefteq y \ \&\ P(y,w)$
c. $[\![\text{Det}_{\text{IN}}]\!]^{c,w} = \lambda x.\lambda P.\exists y.\ x \trianglelefteq y \ \&\ P(y,w)$
d. $[\![\text{CORE}]\!]^{c,w} \approx$ the speaker of context c

This has the desired result. First, *on/man_A/si* provides the variable/indefinite that can result in existential reading, deriving (171a-c) (exclusive reading shown in 178a). Alternatively, the variable can undergo QVE, deriving (166) or simple QVE sentences in Chapter 2 (exclusive reading shown in 178b). The QVE is derived either by using existential disclosure and subsequent binding (Chierchia 1995), or via situation semantics (von Fintel 1994) – I will further address these derivations in ***section 5.5*** below. If Det_{IN} replaces Det_{EX}, inclusive readings result.

For the sake of readability, I do not use situation semantics in the formulas here.

(178) Sentences with *on/man_A/si*
a. Det_{EX} CORE burned a house ➔ $\lambda w.\exists y \exists z \text{house}(z,w) \& \text{speaker}(c) \not\trianglelefteq y \& \text{burned}(y,z,w)$
b. Det_{EX} CORE usually lived to be 60 ➔ $\lambda w.\text{Most } y.\ \text{speaker}(c) \not\trianglelefteq y \rightarrow \text{live.to.60}(y,w)$

Kratzer 1997 argues that the definite-pronoun analysis for man_A is supported by the fact that it is unacceptable in existential *there*-sentence. As we have seen in Chapter 2, however, this effect is due to the special discourse function of *man*, which clashes with that of the existential *there*-construction. In addition, in those dialects where the impersonal pronoun is never inclusive, man_B doesn't have the indexical uses that could suggest that it is definite pronoun; however, this item also is unacceptable in existential *there*-sentences.

5.3.1 The other *man*

In many German dialects, *man* never has the inclusive reading – that is, there are no sentences in which the interpretation of *man* **must** include the speaker. Then, this

impersonal man_B behaves like the exclusive man_A in those dialects that have both the exclusive and the inclusive readings.

Here is the summary of the behavior of man_B. First, it yields QVE readings in sentences with Q-adverbs (166), and is interpreted as an existential in episodic sentences (171). The item supports reciprocals like *each other* (173), and so is semantically plural.

In those cases that, according to Kratzer 1997, force an inclusive interpretation of man_A (like predicative NPs modifying the subject (176)), man_B is judged degraded by some speakers, and by others perfectly fine but not necessarily including the speaker.

(179) German (from Kratzer 1998)
Als Hüter des Gesetzes war man verpflichtet, die Einhaltung aller
As guardian(s) of.the law was man obliged the observance of.all
Bestimmungen zu überwachen
regulations to watch.over
'As guardians of law, we were obliged to watch over the observance of all rules'

Since the behavior of man_B is otherwise identical to the exclusive man_A, we should treat them as semantically identical, for the sake of generality of the theory. Assigning the denotation in (180a), however, makes wrong predictions about the semantics of this item in QVE sentences (180b), as paraphrased in (180c):

(180) Denotation for man_B (first pass)

a. $[\![man_B]\!]^{c,w} = [\![\text{Det}_{EX} \text{ CORE}]\!]^{c,w} = \lambda P.\exists y.\ \text{speaker}(c) \not\in y \ \&\ P(y,w)$
b. man_B usually lived to be 60 ➔ $\lambda w.\text{Most } y.\ \text{speaker}(c) \not\in y \rightarrow \text{live.to.60}(y,w)$
c. Most groups that exclude the speaker live to be 60

The sentence does not mean that 'most groups that exclude the speaker' live to 60 – it means that most people (possibly including the speaker) live to 60. Thus, a truly indefinite-like interpretation, making no mention of the speaker, is more appropriate here (181):

(181) Denotation for man_B (second and final pass)

a. $[\![man_B]\!]^{c,w} = [\![\text{Det}_{EX} \text{ CORE}]\!]^{c,w} = \lambda P.\exists y.\ y \in \text{HUMANS} \ \&\ P(y,w)$
b. man_B usually lived to be 60 ➔ $\lambda w.\text{Most } y.\ \text{human}(y) \rightarrow \text{live.to.60}(y,w)$
c. Most people live to be 60

Unifying the semantics for man_B and man_A (and *on* and *si*), we can modify (174) to better fit theoretical desiderata (following the denotation in (178)), as well as the empirical facts (the interpretation of QVE sentences with *on*/man_A/*si*) (179):

(182) Denotation for *on*/man_A/*si* (second pass)

a. *on*/man_A/*si*=[Det CORE]
b. $[\![\text{Det}_{EX}]\!]^{c,w} = \lambda x.\lambda P.\exists y.\ y \in \text{HUMANS} \ \&\ P(y,w)$

c. $[\![\text{Det}_{\text{IN}}]\!]^{c,w} = \lambda x.\lambda P.\exists y.\ y \in \text{HUMANS} \cup \{x\}\ \&\ P(y,w)$
d. $[\![\text{CORE}]\!]^{c,w} \approx$ the speaker of context c

This gives the desired interpretation for the QVE sentences (181b, c), while making the inclusive and the exclusive uses of these pronouns truth-conditionally equivalent. This may be problematic for inclusive uses of *on/man$_A$/si* (183). After all, we would like (183a) to mean "We arrived late", rather than "Some people from a set of humans that includes me arrived late."

(183) Inclusive *on/man$_A$/si*

a. *si* arrived late ➔ $\lambda w.\ \exists y\ \ y \in \text{HUMANS} \cup \{\text{speaker}(c)\}\ \&\ \text{arrived-late}(y,w)$
b. Some people from the set of humans including the speaker arrived late

A possible solution here to force the denotation of the impersonal by explicitly including the speaker in the denotation (184).[44]

(184) Denotation for *on/man$_A$/si* (third pass)

a. $[\![\text{Det}_{\text{IN}}]\!]^{c,w} = \lambda x.\lambda P.\exists y.\ y \in \text{HUMANS}\ \&\ P(x+y,w)$
b. $[\![\text{Det}_{\text{IN}}]\!]^{c,w} = \lambda x.\lambda P.\exists y.\ y \in \text{HUMANS}\ \&\ x \trianglelefteq y\ \&\ P(y,w)$

The nature of speaker inclusion may be non-literal, both for the inclusive uses of Type 2 arbs, and for regular plural indexical pronouns like *we* in (185), when the speaker is a fan (but not a member) of the sports team:

(185) We won yesterday!

In the denotation of the inclusive impersonals, the indexical element (CORE in my notation) has been so far approximately translated as the speaker – a first-person pronoun. So: the question remains, what is the nature of the indexical-like element in the denotation of *on/man$_A$/si*: is it a "strict" indexical like English *I*, a shifting indexical like Amharic *I*, or yet another type of item?

[44] Since speakers are (assumed to be) human, (184a) and (184b) are notational variants.

5.4 Attitude reports and semantics of impersonals

5.4.1 Attitude reports

The data below shows that logophoric contexts bring out differences in the interpretation of inclusive *on*, man_A, and *si*. In particular, man_A, and and one dialectal variant of *si* (I will call it si_1) can shift in attitude reports to refer to the holder of the attitude (186).

(186) German (Kratzer 1998: 13, ex.4)
a. *Jedes Paar glaubte, man verstünde sich gut*
Each couple believed MAN_A understood self well
'Each couple believed that they understood each other well'

Italian
b. *I professori hanno detto che ieri si é arrivati tardi*
The professors have said that yesterday SI_1 is arrived late
The professors said that yesterday they have arrived late'

This is similar to Amharic *I*, but different from English *I* (187).

(187) Amharic
a. *profäsəru bät'am bəzu səra ə-sär-allähu alä*
professor very much work 1S-work.IMP-AUX.1S say.PRF.3SM
'The professor said that he works very hard'

English
b. John said that as the only math teacher here, I worked very hard

However, another dialectal variant of *si* (I will term it si_2) and the French impersonal pronoun *on* show no such shifting, like *I* or *we* in English (188).

(188) French
a. *Les professeurs se sont dit qu'on a passé ce Noël entièrement à la maison*
The professors REFL have said that.ON has passed this Christmas entirely at the house
'The professors said to themselves that we/people spent this Christmas entirely at home'

Italian
b. *I professori hanno detto che ieri si é arrivati tardi*
The professors have said that yesterday SI_2 is arrived late
The professors said that yesterday we/people have arrived late'

Should we then conclude that inclusive *on* and si_2 are 'strict' indexicals like English I, while man_A and si_1 are shifting indexicals like Amharic *I?* Previous literature on impersonals suggests that two distinct proposals are possible. D'Alessandro 2004 briefly suggests that si_1, like Amharic *I,* depends on a variable over context, which is quantified by the attitude verb: the pronoun is interpreted as either the speaker of the top speech context or the context of reported speech. Kratzer 1997, in contrast, claims for man_A that the indexical-like element in this pronoun is interpreted as a *de se* pronoun. Her proposal predicts that *man* cannot be interpreted *de re* (189).

(189) Predictions for *de se* analysis

a. *Hans sagte, daß man als Assistent für den Kurs sehr viel arbeiten muß*
   Hans said that MAN_A as assistant for the course very much work must
   => Hans self-ascribed the property λx. as grader of the class, x worked very hard

b. *I professori hanno detto che si é arrivati tardi*
   The professors have said that SI_1 is arrived late
   => Professors self-ascribed the property λx. yesterday, x arrived late

What is the behavior of true shifting indexicals with respect to *de re/de se* distinction? The literature on shifting indexicals (most prominently, Schlenker 2003) suggests that these items should not exclude *de re* readings, however, no relevant data is cited. To check whether shifting indexicals and *de se* pronoun can be differentiated, I have tested if sentences in (186, 187a) can be used in *de se* (190) and *de re* (191) scenarios:

(190) *De se* scenarios:

a. For (186a): A certain class has no teaching assistant, so that Hans must do both the lecturer's and the assistant's work. After midterms, Hans complains, "My workload as a lecturer is really nothing compared to all the grading I have to do – as the assistant for the course, I must work very hard!"
b. For (186b): Two professors arrive to a conference together, and realize they are late to the sessions they were supposed to chair. The next day, they say "Yesterday, we arrived late."

(191) *De re* scenarios:

a. For (186a): A certain class has no T.A., so Hans must do both the lecturer's and the assistant's work, like grading homeworks. Hans goes to a happy hour one evening, where all the professors and T.A.s are gathering. He gets drunk, forgets that he himself is the grader, and asks someone, who is the grader for my course? His interlocutor, being tongue-in-cheek, points to Hans's reflection in the bar mirror, and says, that guy. Hans is very drunk, and he doesn't realize that his interlocutor pointed to a reflection. He says "The comments on all of the homeworks are very good and detailed this term – this guy, my course assistant, works very hard!"

b. For (186b): Two professors arrive to a conference together, and come to a session they were interested in. They don't realize that they were actually supposed to chair that session. The next day, at a happy hour, they ask someone – who was supposed to be the session chair yesterday? Their interlocutor, being tongue-in-cheek, points to the professors' reflection in the bar mirror, and says, those guys. The professors are very drunk, and they don't realize that their interlocutor pointed to a reflection. They say "Yesterday, those guys, the session chairs, arrived late – in fact, they missed the session!"

For the shifting impersonals, the results of the test are summarized in the table below.

TABLE 5: *de se* vs. *de re*

	De se (190)	*De re* (191)
man_A/si_1 (186)	✓	??✖
Amharic *I* (187a)	✓	✓

While the judgements required for this test are extremely subtle, those German and Italian informants who ventured any judgement here almost universally rejected the *de re* uses for the arbs. Amharic informants showed no hesitation in accepting the *de re* uses of *I*. Thus, I conclude that, in fact, the sentences in (186) cannot be used in the *de re* scenarios, unlike Amharic *I* (187a). It follows that the "indexical" element in si_1 and man_A is actually a *de se* pronoun (a.k.a. logophoric pronoun, as in Kratzer 1997) and not a shifting indexical (as suggested in D'Alessandro 2004), while Schlenker's shifting indexical account works for Amharic.

On the other hand, inclusive *on* and si_2 (188) have the full range of interpretation available for English first-person indexicals, never shifting, but being able to refer both *de se* and *de re*.

5.4.2 Formal implementation

I use an implementation proposed in Anand and Nevins 2004, adopting their analysis of shifting indexicals and of embedded *de se* pronouns, and pointing out that it also works for matrix *de se* pronouns. The framework allows an explicit articulation of the final versions of the denotations for the various impersonals.

5.4.2.1 Anand and Nevins 2004

Anand and Nevins implement the insight that every sentence is evaluated with respect to two parameters: a context, and an index. The context is a tuple, as in Schlenker 2003:

(192) c = < author(c), addressee(c), time(c), world(c) >

The index (usually thought of as just a time-world pair) is what each clause is evaluated against. Index is affected by modal operators, so that clauses embedded under modal operators are evaluated with respect to a different index than the matrix clauses (193):

(193) From Anand and Nevins 2004: 7, ex.23
a. $[\![\alpha]\!]^{context,index}$
b. $[\![\text{say } \alpha]\!]^{c,i} = \lambda x_e$. ∀j compatible with what x says in i, $[\![\alpha]\!]^{c,j}$

Indexicals are items that depend solely on the context. Thus, the indexical "core" in the inclusive *on* and man_{A2} is, like the English *I*, the author coordinate of the context, while *now* picks out the time coordinate of the context (194):

(194) 'Strict' indexicals
a. $[\![I]\!]^{k,j} = \text{AUTH}(k)$
b. $[\![\text{now}]\!]^{k,j} = \text{TIME}(k)$

Context shifts occur when context-shifting operators combine with verbs. A context-shifting operator in Amharic could be something like $Op_{\forall}$, defined in (195):

(195) $[\![OP_{\forall} \alpha]\!]^{k,j} = [\![\alpha]\!]^{j,j}$

This operator basically erases information about speech context, replacing it with the index tuple. As Anand and Nevins point out, "Such a move is possible only if the context and index parameter are elements of the same type, which is not the case in the standard theory. Thus, we enrich the index parameter so that it, like the context, keeps track of the reported utterance – its author, addressee, and location."

The semantics for the Amharic "John says that I(=John) am a hero" is given below:

(196) Shifting indexicals
a. $[\![\text{say } OP_{\forall} \alpha]\!]^{c,i} = \lambda x_e$.∀j compatible with what x says in i, ($[\![OP_{\forall} [\alpha]\,]\!]^{c,j}$)
b. $[\![OP_{\forall} [\text{I am a hero}]\,]\!]^{c,j} = [\![[\text{I am a hero}]\,]\!]^{j,j}$=1 iff AUTH(j) is a hero in j
c. $[\![\text{John says } OP_{\forall} \text{ I am a hero}]\!]^{c,i}$ = 1 iff
∀j compatible with what John says in i, AUTH(j)=John is a hero in j

This set-up allows for an easy account of *de se* pronouns.

An index is the parameter against which the utterance is evaluated. The author coordinate of this parameter is thus the person whose beliefs are represented in the clause under evaluation. Thus, as Anand and Nevins put it, "the modal accessibility relation picks out indices where the AUTH coordinate is the individual that the speaker identifies as his counterpart. Thus, AUTH(i) is a *de se* referent."

For example, a subject-controlled PRO refers to this *de se* referent (197a), so a subject-control sentence would be derived as in (197b-e):

(197) *De se* reference
a. $[\![PRO_{subj}]\!]^{c,i}$ = AUTH(i)
b. John hopes to win
c. $[\![hope\ PRO\ to\ win]\!]^{d,e}$ =
$= \lambda x.\forall f$ compatible with what x hopes in e, $[\![PRO_{subj}\ wins]\!]^{d,f}$
d. $[\![PRO_{subj}\ wins]\!]^{d,f}$ = 1 iff AUTH(f) wins in f
e. $[\![John\ hopes\ PRO\ to\ win]\!]^{d,e}$ = 1 iff
$\forall f$ compatible with what John hopes in e, AUTH(f)=John wins in f

Thus, logophoric pronouns simply denote coordinates of the index parameter:

(198) Logophoric pronouns
a. $[\![LOG\text{-}auth]\!]^{c,i}$ = AUTH(i)
b. $[\![LOG\text{-}addr]\!]^{c,i}$ = ADDR(i)

This forces all logophors to read *de se*.

5.4.2.2 Denotation for on*,* man_A*, and* si

First, we can now present the final denotation for the non-shifting impersonals *on* and si_2, with (199) as the meaning of the inclusive determiner (184):

(199) Denotation for on/si_2 (final)
a. on/si_2=[Det I]
b. $[\![\ Det_{EX}\ ]\!]^{c,w} = \lambda x.\lambda P.\exists y.\ y \in$ HUMANS & P(y,w)
c. $[\![\ Det_{IN}\ ]\!]^{c,w} = \lambda x.\lambda P.\exists y.\ y \in$ HUMANS & $x \trianglelefteq y$ & P(y,w)
d. $[\![I]\!]^{c,w}$ = the speaker of context c

This denotation derives the correct interpretation for both the inclusive and exclusive uses of these pronouns.

Anand and Nevins then go on to try and restrict the distribution of logophoric pronouns to clauses embedded in attitude reports. Since this restriction does not follow from the framework presented so far, they have to rely on additional assumptions.

I agree that, for those cases when a logophor occurs only in attitude report contexts such a restriction will need to be made separately; however, its extraneousness to this framework is a positive feature, rather than a drawback of the theory.

The lack of such general restriction allows us to account for *de se* pronouns in matrix clauses. In general, a *de se* pronoun refers to the author of the index. Since every

sentence in discourse is a belief of the speaker, in matrix clauses the author of the index is the speaker.

So, the denotation for the shifting impersonals man_A and si_1 can be fully specified as below:

(200) Denotations for man_A and si_1 (final)

a. man_A/si_1 = [Det SE]

b. $[\![\text{Det}_{EX}]\!]^{c,w} = \lambda x.\lambda P.\exists y.\ y \in$ HUMANS & P(y,w)

c. $[\![\text{Det}_{IN}]\!]^{c,w} = \lambda x.\lambda P.\exists y.\ y \in$ HUMANS & $x \trianglelefteq y$ & P(y,w)

d. $[\![\text{SE}]\!]^{c,i} =$ AUTH(i)

5.5 Type 2 arbs in donkey sentences: consequent clauses

5.5.1 A problem

Behavior of Type 2 arbs in donkey sentences presents a challenge for our account, or in fact, for any attempt to treat them as definites or as indefinites. As we saw in Chapter 2, *you*, *man*, *on*, and *si* in the *if*-clauses of donkey sentences behave like indefinites, show quantificational variability with Q-adverbs. In the same sentences, *you*, *man*, *on*, and *si* in the consequent clauses behave like definite pronouns, as illustrated in (201) below (pronouns in consequent clauses in **bold**).

(201) English

a. If a guy is smart, **he** is rarely/usually proud

b. If you're smart, **you**'re rarely/usually proud

German

c. *Wenn man klug ist, ist* ***man*** *gewöhnlich stolz*
If MAN smart is, is **MAN** usually proud
'If a person is smart, **he/she** is usually proud'

French

d. *Si on est intelligent,* ***on*** *est en général/rarement fier*
If ON is intelligent, **ON** is in general /rarely proud
'If a person is smart, **he/she** is usually/rarely proud'

Italian

e. *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'

Thus, a Type 2 arb in a consequent clause is anaphoric to the previous occurrence of the same arb, and cannot be analyzed as an indefinite. Since these examples involve variables co-varying under quantification, the two occurrences of the arbs cannot be analysed as mediated by extra-linguistic reasoning (as is argued in Koenig and Mauner 1999 for the French *on*).

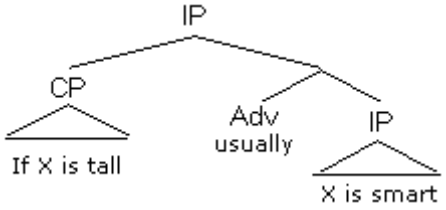
5.5.2 A solution: Chierchia 2000

A solution to this challenge has been proposed in Chierchia 2000, who uses the operation of existential disclosure, similar to λ-abstraction in a framework of Dynamic Semantics. In his framework, indefinites are existentially quantified variables, while the Q-adverbs, including the silent generic operator, come equipped with a couple of disclosure/lambda operators: one for the restrictor, and one for the scope of the adverb.

The LF and interpretation of a donkey-sentence is then as illustrated in (202) below. In (202b), the first disclosure/lambda operator erases the existential quantifier binding the variable introduced by the indefinite, while the second simply binds the pronoun. Independent stipulation is needed to prevent cases like (202c), where the index on the Q-adverb matches that of a pronoun in the restrictor; otherwise, the system will derive a reading for (202c) that is identical to (202b). This stipulation is, simply, that the index on the adverb, if it matches any other index in the sentence, must match the index of an indefinite. Finally, Chierchia rules out derivations like (202d) by appealing to Principle C of the Binding Theory, whereby R-expressions cannot be bound. The definition of syntactic binding is suitably changed so that the pair of the indefinite in the restrictor and the adverb binds the indefinite R-expression in the scope.

(202) Donkeys and Dynamic Binding

a.



b. ⟦If a guy is tall usually he is smart ⟧= Most $\lambda x_i[\exists x_i$ man(x_i)&tall$(x_i)]$ λx_i[smart(x_i)]
= Most x [man(x)&tall(x)] [smart(x)]

c. ⟦If he is tall usually he is smart ⟧= Most λx_i[man(x_i)&tall$(x_i)]$ λx_i[smart(x_i)]
= Most x [man(x)&tall(x)] [smart(x)]

d. ⟦If a guy is tall usually a guy is smart ⟧=
= Most $\lambda x_i[\exists x_i$ man(x_i)&tall$(x_i)]$ $\lambda x_i[\exists x_i$ smart$(x_i)]$
= Most x [man(x)&tall(x)] [smart(x)]

Here, Type 2 arbs are classified as indefinite pronouns. This means that, as indefinites, they can be coindexed with a Q-adverb, and at the same time, as pronouns,

they can be bound. Thus, using Dynamic Binding Chierchia derives exactly the donkey-sentences with the Type 2 arbs in the restrictor as well as the scope of Q-adverbs (203).

(203) ⟦If ON/SI/MAN is tall usually ON/SI/MAN is smart ⟧=
= Most $\lambda x_i[\exists x_i$ person(x_i)&tall$(x_i)]$ $\lambda x_i[\exists x_i$ smart$(x_i)]$
= Most x [person(x)&tall(x)] [smart(x)]

Because the arbs are pronominal, they are allowed to occur in the consequent clauses of these sentences, where other indefinites are ruled out by Binding Theory; in other respects, these items behave like indefinites.

A problem with this approach arises immediately in connection with using Principle C to rule out indefinites (but not indefinite pronouns) in the scope of the Q-adverbs. Definite R-expressions are also subject to Principle C (204a), yet, they are allowed in the consequent clauses of donkey sentences (204b).

(204) Definite R-expressions and Binding Theory
a. *A village$_i$ resembles the village$_i$
b. If a painter lives in a village$_i$, the village$_i$ is usually pretty

Chierchia argues that in these apparent violations of Principle C, it is not the definite R-expression itself that gets bound, but a pronoun-like element implicit in it. So, (204b) is actually analyzed as (205a)[45]. It is not clear, however, that this pronoun-like variable can be appealed to in all donkey-sentences with definite descriptions. For example, there doesn't seem to be any such extra variable present in sentences like (205b,c).

(205) Definite R-expressions and BT (continued)
a. If a painter$_i$ lives in a village, the village [where he$_i$ lives] is usually pretty
b. If a guy$_i$ is tall, that guy$_i$ is usually smart
c. If a village$_i$ is in the Swiss Alps, the village$_i$ is usually pretty

5.5.3 An alternative solution and some challenges

An alternative approach is to say that impersonals in consequent clauses of donkey-sentences only seem to be the same semantic animals as those in the if-clauses. While they have the same shape as their antecedents, these problematic Type 2 arbs are really

[45] Principle C crucially refers to c-command relationship between the antecedent and the violating R-expression. There is no such relationship in (204b, 205a), since *a village* in the if-clause does not c-command *the village* in the consequent clause. Thus, Chierchia does not really need to explain this example by appealing to a variable inside *the village*, since (204b) does not violate Principle C. The really problematic examples are (205b,c).

minimal pronouns – bound variables that carry only the index feature, as in (206) following Kratzer's 2006 framework described in Chapter 1.

(206) A minimal pronoun:
$[\![8]\!]^{g,c} = g(8)$ (type e, the type of individuals)

In this way, impersonal pronouns in the consequent clauses of donkey-sentences should be no different from regular pronouns in the same position (207a), which would also start out as minimal pronouns. In both cases, the final pronounceable shape of the pronoun should be acquired via agreement with the antecedent, which could be an indefinite NP in the case of (207a), or an indefinite impersonal pronoun in (207b). When the minimal pronoun adds the features it received from the antecedent to its own index feature, the result is spelled out as a duplicate of the antecedent.

(207) Minimal pronouns and donkey sentences
a. If a guy is tall he is usually smart
b. If ON/SI/MAN is tall usually ON/SI/MAN is smart

The chief problem with this approach is that the relationship between the antecedent and the minimal pronoun in a donkey sentence is non-local and doesn't seem to be mediated by a chain of local agreement. This violates the constraints on minimal pronouns proposed in Kratzer 2006. To derive regular pronouns in consequent clauses of donkey-sentences, Kratzer treats them as hidden definite descriptions (D-type pronouns, following Neale 1990, Elbourne 2002, 2005) – a strategy we cannot adopt for indefinite impersonals.

Further research is needed to generate a way of establishing agreement chains that, on the one hand, will derive the correct shapes for minimal pronouns in donkey-sentences, while on the other hand preserving the insights of Kratzer 2006.

The data in (208, 209) provides the residual puzzle in deciding between the two accounts. In Italian dialects where *si* does not have logophoric uses (that is, in dialects that have the non-shifting si_2), the two instances of the arb in sentences like (208) cannot be co-referential. This is easily explained under the Dynamic Binding approach to donkey sentences: the silent generic operator discloses and binds the second and third occurrences of *si*, making it impossible for them to be co-referential with the first *si*. At the same time, there is a local agreement chain between the first and second occurrence of *si*, so the two should be able to co-refer on the Minimal Pronoun approach[46].

(208) Type 2 arbs and donkeys: a final puzzle
a. *A NY si pensa che se si é in ritardo, si deve telefonare a casa*
In NY SI_2 thinks that if SI_2 is in lateness SI_2 should telephone to home
'In NY it's thought that if you're late, you should call home'

[46] The chain proceeds via the relative pronoun *che* which may be able to transmit phi-features; for details see Kratzer (2006).

b. *A NY si pensa che se si é belli, si é raramente anche intelligenti*
In NY SI_2 thinks that if SI_2 is beautiful SI_2 is rarely also smart
'In NY it's thought that if one is beautiful, one is rarely smart'

At the same time, the first two tokens of *si* in (209) are co-referential (in fact, all three occurrences of *si* in this sentence are co-referential). This is easily explained in the Minimal Pronoun framework, since a local chain of agreement can connect the first two instances of *si* in this sentence.

(209) *Se si pensa che si é in ritardo, si deve telefonare a casa*
If SI_2 thinks that SI_2 is in lateness SI_2 should telephone to home
'If you think that you're late, you should call home'

However, it is not immediately clear how the adverb, equipped with only two disclosure operators in the Dynamic Binding framework, can bind three arbs at once. Why should the number of disclosure operators associated with the Q-adverbs be two (one for the restrictor, and one for the scope) (207)? Otherwise, the framework incorrectly may predict that the two indefinites in sentences like (207a) may be co-referential, giving rise to readings like (207b).

(210) usually$_i$ [A] [B] = Most λx_i [A] λx_i [B]
a. If a man thinks that a man is running late, he should call ahead
b. If a man thinks that he's running late, he should call ahead

One way to derive the data in (209, 210) is by exploiting the restrictions on indexing we have already introduced. First, the Q-adverb will be permitted to have any number of disclosure operators. However, their index is restricted to that of an indefinite. Then, in (210b), the adverb will disclose the indefinite *a man* and also bind both instances of *he* which bear the same index as the indefinite. Similarly, in (209), the adverb binds all three instances of *si* since all three bear the same index.

Then, the only way for the adverb to bind both instances of *a man* in (210a) is if both instances have the same index – something ruled out by Principle C, since the first indefinite c-commands the second.

It thus seems that, while both the Dynamic Binding and the Minimal Pronoun approaches have their drawbacks, the final puzzle may nudge us closer to the former framework for deriving the interpretation of donkey-sentences with Type 2 arbs.

5.6 Conclusions

There are two general consequences of this analysis for the general theory of pronouns. First, since the exclusive interpretation for *on/man/si* is a **lack of requirement** that speaker be included, rather than a result of a separate constraint, we can treat this on a par with other 3rd-person pronouns (3rd person resulting from a lack of requirement that speaker and hearer be included (Kratzer 2006).

Second, we can view the three dialectal variants of *man* as reflects of three different stages in the ***person drift*** observed for most Type 2 arbs. First, the never-inclusive man_B is a plain impersonal – an indefinite (variable) with a special discourse function of 'taking out' the subject denotation from the salience computation. This was originally the case of the French *on* (Laberge and Sankoff 1979), which has then acquired the inclusive interpretation. We might view man_A as the next stage of the historical development of this pronoun – while the feature structure of the pronoun is not affected (it still never requires the inclusion of the author of the context AUTH(c), which would make it 1st-person), it can be *de se*, and thus can be used inclusively, shifting in logophoric contexts.

We would then expect the development of a first-person inclusive *man*, something like man_{A2} which can be viewed either as the third stage of development, or as an alternative second step, following directly man_B. On the first scenario, the inclusive use becomes grammaticalized, or rather, shifted from semantics into the feature structure of the pronoun, becoming 1st-person in its inclusive variant. Alternatively, the move from a plain indefinite interpretation may be directly to a 1st-person use.

All of the Type 2 impersonals – 2nd-person arbs, *on*, *man*, and *si* – were shown to derive the arbitrariness of their interpretation from an indefinite (variable) in their denotation. None of the items that exhibit both a shifting and an indexical uses require the intervention of monster-operators to shift the context: all QVE-related shifting results from interaction of the indefinite (variable) and Q-adverbs, while logophoric shifting is the product of the *de se* core of the man_A and si_1.

5a A descriptive interlude: what does *one* do?

In this descriptive mini-chapter, I will summarise the behaviour of the impersonal pronoun *one* in American English[47]. The pronoun seems to be going out of use in colloquial Standard American English; thus, judgements of acceptability and interpretation vary considerably both within and between speakers. Certain patterns emerge, however.

Throughout, I am referring to the English impersonal pronoun *one* (211a), which is quite different from *one* that substitutes for N', employed in sentences in (211c, d) below. Safir 2004 discusses some of the many semantic, syntactic, and historical differences between these items. He also points out that *one* modified with a relative clause (211d) is akin to the N' *one*, also differing from the unmodified *one* both in its distribution and interpretation.

(211) Different *ones*
- a. One should take care of one's parents
  The other *one*
- b. [Why do you say butterflies are gone?] I saw one in the garden
- c. [I dropped your fork on the floor.] Take the other one
- d. There is one who loves me waiting in the garden

One triggers 3rd-person singular agreement when it is used in the subject position (212a). This position is, in fact, the preferred one for the pronoun. Sentences in which the first mention of *one* is in other positions are degraded to varying degrees, depending on the speaker (212b), except when *one* is the possessor in a possessive NP (212c):

(212) Syntactic preferences for *one*:
- a. One can see best only with the heart
- b. ??A powerful wizard can see one from miles away
- c. One's mother always knows best

The most easily noticed and robust fact about the distribution of *one* is that it is completely ruled out in episodic sentences (213a), like the arbitrary use of *you* (213b):

(213) Episodic sentences
- a. *Just yesterday, one burned a house
- b. Just yesterday, you burned a house (deictic only; impersonal reading ruled out)

[47] For British English *one*, see Moltmann 2003, who presents extensive data on its distribution and interpretation, and analyses it in a way extremely similar to my treatment of *you*. On her analysis, British English *one* is essentially a combination of an indefinite variable over individuals (*persona* providers for the second component of *one*) and a *de se* pronoun ('the agent's *self*', as she puts it, where the agent is usually the speaker/attitude holder, but could be the addressee/attitude recipient).

Verner Egerland 2003 puts forth a hypothesis that all impersonal pronouns follow a trajectory of historical development which includes this generic-only stage as its second step:

(214) The diachronic development of "HOMO" impersonals (Egerland 2003: 93)
Lexical DP > Impersonal generic pronoun > Impersonal arbitrary pronoun

The third 'arbitrary' stage encompasses both the existential-like and the inclusive uses of impersonal pronouns in Egerland's account.

Impersonals that have followed this trajectory include *man* in Old and Middle English (van Gelderen 1997), French *on*, Old Italian *uomo* (Egerland 2003, 2006) (which only reached the second stage), and Icelandic *maður* (also only reaching second stage). Impersonal pronoun *man* in Scandinavian and German is, like French *on*, in the third stage of this trajectory. Clearly, American English *one* is in the second stage now.

Importantly, this property cannot be accounted for by making *one* somehow allergic to existential quantification over events/situations: this arb is perfectly fine in QVE sentences like (215a,b). In fact, *one* yields QVE with Q-adverbs, in simple as well as in donkey-sentences (215c-f).

(215) QVE with existential Q-adverbs
a. In those days, one sometimes lived to be 90
b. If one deals with the Mafia, one sometimes gets killed
QVE with other Q-adverbs
c. In those days, one always/usually/rarely lived to be 90
d. In this town, one is always/usually/rarely a Cal fan[48]
e. If one is smart, one is always/usually/rarely proud
f. If one deals with the Mafia, one always/usually/rarely gets killed

This data classifies *one* with Type 2 arbs, whose arbitrariness has an indefinite as its source.

Safir 2004 argues that *one* should be analysed as a definite, citing examples of existential *there*-sentences in which it is unacceptable (216a), in contrast to the indefinite *someone* (216b).

(216) Existential *there* (Safir 2004: ex.21d, 21c)
a. *She always knew there would be one's mother waiting in the wings
b. She always knew there would be someone's mother waiting in the wings

An additional reason for the ungrammaticality of (216a) is the inability of *one* to occur in episodic sentences (213), together with the inaccessibility of genitive possessors

[48]I'm grateful to Robert Gillham for explaining to me what Cal is (Berkley, for football purposes).

to quantifiers scoping above the existential *there*. That is, as shown in below, genitive possessors are unlike, e.g., prepositional phrase modifiers (217a, b). Unlike indefinites in other types of modifiers, an indefinite NP serving as the genitive possessor for the pivot phrase for the existential *there* fails to be bound by Q-adverbs like *always* (217c, d). Thus *one*, which requires such quantification, is ungrammatical in this position (216a).

(217) Existential *there* (continued)
- a. There is always/usually some evidence against a cheating student
  (QVE available: *For all/most cheating students = QVE on students*)
- b. There is always/usually some solution to a hard problem
  (QVE available: *All/most hard problems = QVE on problems*)
- c. 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*
- d. 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 sentences in (218) are more appropriate as a potential counterexample to the indefiniteness of *one*.

(218) Existential *there* (continued)
- a. *She always knew there would be one waiting in the wings
- b. She always knew there would be someone waiting in the wings

There are counter-arguments against Safir's claim that *one*'s definiteness makes it unacceptable in sentences like (218a). Note that other Type 2 arbs are also unacceptable in existential *there*-sentences, because their discourse function clashes with the function of this construction. Since *one* only occurs in the scope of quantification, it is impossible to ascertain its Centering status, and to discern if its discourse function is to remove the subject denotation from salience computation. However, given that this is the case with the impersonal pronouns *man* and *on*, this is a plausible hypothesis. Note that *one*, like other Type 2 arbs, is unstressable, confirming the hypothesis that the discourse function, rather than definiteness, of *one* is responsible for the data in (218):

(219) At these concerts, SOMEONE /#ONE, I'm telling you, is always waiting in the wings.

It is possible that *one*, like *you*, is a composite, containing both an indefinite part susceptible to adverbial quantification (215), and a definite part making it unacceptable in existential *there*-sentences (218). This is, essentially, Moltmann's 2003 proposal for the British *one* (where the definite component is a kind of *de se* pronoun). However, it is not

clear whether American *one* contains a definite component of this kind, encoding a relationship of this arb's denotation with conversational participants.

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). Thus, to take Safir's example, a Martian addressing an audience of humans cannot felicitously say (220a), nor can a member of his audience felicitously answer with (220b).

(220) *One* and conversational participants[49]:
a. Fortunately, nowadays one is not susceptible to human disease
b. On the contrary, one is always susceptible to human disease!

Frederike Moltmann 2003 argues that *one* includes a reference to the speaker, akin to *we*. This claim applies to the uses of this pronoun in British English. However, in American English, the relation of *one* and the speaker is too vague to be the result of a 1st-person feature that would demand the speaker's inclusion (221). Since the speaker must have some grounds for uttering generalizations, the generalizations with *one* are often taken to be made on the basis of the speaker's own experience. However, this is a pragmatically-driven tendency, rather than a grammatical requirement, as the absence of contradiction in (221) indicates.

(221) *One* and conversational participants (continued):
One is always defeated in the end – I am the only happy exception to this rule

Safir 2004 claims that the sentence in (222a) entails the one in (222b).

(222) *One* and conversational participants (continued):
a. One adores cashew nuts
b. Someone in context c adores cashew nuts

[49] This requirement is not quite literal – a mother can make the complaint in [i] addressing only her daughter, who will not be included in the generalization. Most speakers consulted about such examples say that they all have the flavor of the speaker talking to herself, with the daughter only an intended witness rather than an actual addressee.

A speaker may sometimes seem to 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') flavor, which makes the statement non-contradictory and the sentence acceptable.

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!

The chief problem with this claim is that for most American English speakers, the use of *one* requires quantification with a modal flavour to it. The sentence (222a), when construed as a statement about the speech situation (rather than possible worlds/situations), becomes unacceptable. When the sentence is interpreted as including a hidden quantification over possible worlds/situations (*Usually, one adores cashews*), speaker-inclusion is not entailed.

Safir claims that *one* has constant reference across a discourse, arguing that it is a constant function of some sort, taking conversational participants as arguments. This, however, is not quite true. As Moltmann observes, the sentence below has two readings, indicated in (223b) and (223c). While (223b) reports *one* thinking a generalisation about people in general, (223c) reports a *de se* thought. It is not clear what function would yield this contrast; however, the two readings can be readily represented using the generic operator and variable notation, as in (223d) and (223e), respectively.

(223) *One* and conversational participants (continued):
a. One often thinks that one should not eat meat
b. People often think, 'People should not eat meat'
c. People often think, 'I should not eat meat'
d. λw. Gen x. often-thinks(x, λw'. Gen x. x should not eat meat in w') in w
e. λw. Gen x. often-thinks(x, λw'. x should not eat meat in w') in w

I conclude that *one* introduces a variable over people, which can be bound by a generic quantifier, or produce the effect of being bound by a (modally-flavored) Q-adverb, but is allergic to direct existential quantification.

Example (223) raises a natural question, can the variable introduced by *one* be ever interpreted *de re*, like the pronoun *his* in Chomsky's (1981) example (224c)? In the *de re* situation (224a), the sentence (224c) is true, while (224b) isn't. Modifying Moltmann's 2003 example (p.20, ex.44), this can be determined by considering the sentences in (225b, c) in the *de re* scenario (225a).

(224) *De se* vs. *de re* reference:
a. Scenario: Churchill sees some politician giving a speech on TV. He remarks that the speech is very good, without realizing that the politician is actually himself (Churchill). The next day, Churchill remembers what a good speech was made by that politician on TV – but other people who were watching didn't pay attention at the time, and so don't remember that anyone gave a speech at all.
b. Only Churchill remembers giving a speech
c. Only Churchill remembers his giving a speech

(225) *One* and reference *de re*:

a. Scenario: A psychologist conducts massive experiments in which people are filmed giving speeches, then given a forgetting pill, and then are shown the films of themselves and others speaking. A year later they are asked to recall the films they were shown. By the time the subjects had to recall the films, it turned out that many people forgot they ever gave a speech. However, everyone had very good recollections of the films, particularly their own performances. The recollections of the films were good even for those people who didn't realize they were recalling their own speech-giving.
b. One always remembers giving a speech
c. One always remembers one's giving a speech

In (225), it is immediately clear that the experiment described in (225a) falsifies the claim in (225b), as expected from the analysis of PRO as a *de se* referent. At the same time, only one of my informants ventured a judgement on (225c), and judged it to be true in the scenario; a more subtle and extensive investigation is necessary to decide whether American English *one* can be interpreted *de re*.

Finally, as Safir 2004 observes, *one* is both formally and semantically singular, with number concord and reciprocal/plural anaphora patterning the same way as the verbal agreement (unlike, e.g. German *man*).

(226) The number of *one* (adopted from Safir 2004: ex.9)

a. Nowadays, one rarely talks/*talk to professors
b. Nowadays, one can be a bad cook/*bad cooks and still be appreciated
c. One should always think well of oneself/*oneselves
d. *One should leave each other in peace

To summarize, in our quest for an analysis of English impersonal pronoun *one*, we should be looking for a semantics that treats *one* as introducing a variable, which can be bound by a generic operator (directly or via reference to an earlier instance of *one*), and has the effect of being bound by (modally-flavored) Q-adverbs. This variable is allergic to direct existential quantification, and gives rise to an indexical inference regarding the inclusion of the addressee(s).

I will leave the completion of this quest to future research, hoping that a clear presentation of empirical facts is the first step towards formulating an analysis of distributional and semantic properties of the impersonal American English *one*.

6 Conclusion

I have proposed a general typology of arbitrary items in this dissertation, drawing on empirical evidence from a number of impersonal pronouns and passives in several European languages: 3rd-person plural arbs in Russian, English, and Italian, short verbal passives in Russian and English, Russian *sja*-passives, 2nd-person (singular) pronouns in Russian and English, French impersonal pronoun *on*, German impersonal pronoun *man*, and Italian impersonal *si*-constriction.

In the course of this investigation, the wide variety of arbitrary interpretations was reduced to two sources of arbitrariness:
Type 1 arbitrariness stems from a definite plural denotation drawn from a wide domain, while Type 2 arbitrariness is derived from an indefinite variable in the denotation of the arbitrary item.

In Chapter 2, I presented evidence for this general typology, derived from the morphosyntax and morphosemantics of the arbs, from their interaction with adverbial quantification, and from their effect on subsequent discourse. The discourse functions of arbs provide the insight into the basic nature of arbitrariness: the *demotion* of the agent/subject in the computation of salience and topic structure. For Type 1 arbs this demotion is accomplished by placing the referents they introduce on the bottom of the ranked list of potential topics; at the same time, the referents of Type 2 arbs are completely removed from this ranked list. The idea of subject demotion has been prominent early in the study of verbal passives (Comrie, 1977, Dowty 1978, Perlmutter and Postal 1983, inter alia); it is made precise here with the use of Centering Theory (Grosz, Joshi, and Weinstein 1995, Walker, Joshi, and Prince 1998) which provides contentful definitions of topichood and salience. The other arbs are thus subspecies of asyntactic passive (Prince 2003, 2006).

I have then explored the consequences for the theory of pronouns and NP interpretation stemming from this general semantic typology. In Chapter 3 I examine Type 1 arbs, showing that their existential-like readings can be derived from the definite plural denotations I propose. In this pursuit I develop a new framework for the interpretation of definite plural NPs, both arbitrary and non-arbitrary. I integrate speaker/hearer goals into the framework, building pragmatic factors into the weak semantics based on Landman 1989, 1996. The theory gains new theoretical and empirical ground, improving on the previous approaches of Schwarzschild 1991 and Brisson 1998.

In Chapter 4 I turn to Type 2 arbs, reconciling the indexical and the impersonal-indefinite variable aspects in the behavior of 2nd-person (singular) pronoun, deriving its denotation without positing existence of context-shifting operators outside the domain of attitudes. At the same time, in Chapter 5 I explore the indexical, *de se*, indefinite variable, and definite-like facets in the denotation of other Type 2 arbs – *on*, *man*, and *si*, touching on the properties of American English impersonal *one* in mini-Chapter 5a.

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