DOMAIN WIDENING

by

SCOTT SHANK

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ABSTRACT

This dissertation investigates the phenomenon of domain widening, a process whereby a domain of quantification becomes wider over the span of discourse. The main thesis is that domain widening is not a lexical primitive related to any particular quantifier, but rather that it results from the non-contradictory use of focus on a quantifier with a wide contextual restriction. The asserted proposition does not contradict other alternatives in discourse, but merely cancels a scalar implicature arising from them. In cancelling a scalar implicature, domain widening always satisfies the presuppositions of *even*.

Chapter Two motivates the basic claims of this approach by examining emphatic negative polarity items. Emphatic negative polarity items involve focus on an indefinite determiner. It is argued that focus is used to evoke alternative values for the implicit contextual variable in the determiner. The alternative contextual domains are ordered on a monotonic scale. Since domain widening produces a more informative proposition, it results in the cancellation of a scalar implicature. Supporting evidence for the presence of this scalar implicature is found in Cantonese, where it is shown that the implicature has been conventionalized and is not cancellable with certain polarity items.

Chapter Three concentrates on non-generic free choice indefinites in subtrigging and modal contexts. These present a challenge since they appear in non-downward entailing environments, and hence widening is predicted to produce a weaker proposition. A solution is developed by analyzing these as widened specific indefinites. Adopting the view that specific indefinites may be modelled as having singleton domains, it is shown that widening destroys this specificity and furthermore cancels a scalar implicature on a non-monotonic scale of alternatives.

Chapter Four investigates domain widening in the case of emphatic universal and distributive operators. The chapter opens by showing that domain widening occurs with universal quantifiers, and goes on to explain why domain widening does not occur with quantifiers not used to make universal generalizations. A new analysis of *all* is then presented as the domain-widened distributivity operator. This finding is used to explain why the distributivity operator in Cantonese has the same phonological form as a particle meaning *even*.

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ABBREVIATIONS

Abbreviations of Grammatical Category Labels

cl	classifier
dat	dative case
erg	ergative case
exp	experiential aspect
impf	imperfective aspect
lp	linking particle
neg	negation
pfv	perfective aspect
pres	present tense
prog	progressive aspect
prt	particle
Q	question marker
v-prt	verbal particle

Other Abbreviations

DistP	Distributive Phrase
DP	Determiner Phrase
FCI	Free Choice Item
FIP	Focus Interpretation Principle
LF	Logical Form
NP	Noun Phrase
NPI	Negative Polarity Item
VP	Verb Phrase

CHAPTER ONE: INTRODUCTION

1 An introduction to domain widening

This dissertation investigates the phenomenon of domain widening. Domain widening refers to a process whereby the domain of quantification of a quantifier becomes wider over the span of some discourse. It was first discussed by Kadmon and Landman (1993) in relation to the following sort of modified example.

(1) a. A: Could I borrow some socks?
b. B: I don't have any socks.
c. A: I don't mind if they're slightly damp.
d. B: I don't have ANY socks.

Here, A is asking B for socks. Over the exchange, a negotiation is also taking place about which socks are under discussion. Normally when one lends out socks, courtesy would dictate that only dry socks are appropriate. So although B denies she has socks in (1)b, Speaker A is able to continue requesting a pair in (1)c because he is indicating that damp socks would be okay. In effect, A assumes that B's denial of having any socks was restricted to dry socks, the sort one would normally lend out. In (1)d Speaker B makes it clear that in fact she has no socks at all, neither dry nor wet. She does this by emphasizing the determiner *ANY*. According to Kadmon and Landman, Speaker A has widened the domain of the indefinite, so that in (1)d the domain now includes dry and wet socks.

Domain widening can be viewed as a process whereby the domain of a quantifier becomes wider to indicate a "reduced tolerance to exceptions". In this example, the result is that the domain of the indefinite has been widened to now include any kind of sock, even wet ones that had previously been excluded from the domain.

Kadmon and Landman claim that domain widening is not a general process, but rather is restricted to *any*. They propose that the ability to produce the domain widening effect is a lexical property of this determiner. They attempt to use this effect to explain the restricted distribution of this quantifier to polarity environments. They argue that domain widening is only licensed when this process leads to a stronger proposition, a condition they called strengthening. According to their analysis, the strengthening condition is only satisfied in downward entailing contexts.

My objective in this dissertation is to argue that domain widening can be viewed as a much more general process that falls out from independent pragmatic and semantic principles of discourse, rather than being a lexical property of certain quantifiers. Consequently, I demonstrate that the phenomenon of domain widening should be investigated independently of the question of polarity licensing.

In this study I argue that domain widening has a pragmatic root. Domain widening is only useful when a speaker feels a need to rectify a misunderstanding in how big the domain of quantification is. I argue that such a misunderstanding might arise when one of the interlocutors assumes an inappropriately small contextual domain. This inappropriate

assumption gives rise to certain inaccurate inferences about the quantificational generalization being made. These problematic inferences are resolved when one of the interlocutors widens the domain of a quantifier, and thereby corrects the generalization.

Three tightly knit questions must therefore be addressed. First, how does the need for domain widening arise. Second, what is the nature of the inappropriate inferences that domain widening is meant to put right. And third, how does domain widening correct these inappropriate inferences.

I begin with the first question. The question of how the need for domain widening arises can be reformulated as a question of how the quantificational domain could have been too small in the first place. This is a question of domain restriction.

When a quantificational determiner appears with a nominal restriction the noun phrase serves to restrict the domain of quantification. In the sentence in (2), the noun *child* serves as the first argument of the determiner *every*. The quantification is consequently over a set of children.

(2) Every child has eaten.

But which children are included in this quantificational generalization? A sentence like (2) is almost surely not meant to include every child in existence. Rather, this sentence is meant to include whatever children are currently under discussion or are salient in the discourse context. In other words, aside from the nominal restriction, the domain of quantification is furthermore contextually restricted in some way. I will argue that the need for domain widening arises due to the inherent ambiguity of contextual restriction. Sometimes context restricts the domain too much.

The second question is what sort of inferences do such overly narrow domains generate. The actual mechanism involved in generating them may be easy to overlook. The inference generated is that individuals not in the contextually restricted domain are not included in the quantificational generalization being made. This is a subtle point. I am not claiming that no inferences arise, but rather that an inference arises that other individuals are not to be included in the generalization. So, in (2), it is not the case that no inferences are made concerning children who are not contextually salient. Rather, there is an inference, namely that they are not included in the quantificational generalization.

I will argue that this inference can be treated as a scalar implicature. Quantificational domains of varying sizes can be placed on a monotonic scale. When a certain domain is chosen from this scale, an inference may be generated with respect to domains higher on the scale. Scalar implicatures are derived from the first submaxim of Grice's (1975) Maxim of Quantity.

(3) Maxim of Quantity
   (i) Make your contribution as informative as required (for the current purposes of the exchange.)
   (ii) Do not make your contribution more informative than is required.

A scalar implicature serves to negate all stronger unasserted propositions on a scale of alternative propositions. Assuming that a speaker is adhering to the Maxim of Quantity, she should have made her assertion as informative as necessary to suit the needs of discourse.

Since more informative propositions could have been asserted instead, and yet they were not, an inference may be generated that the speaker chose not to assert these stronger alternatives because they are false. See also Horn (1972, 1989) and Gazdar (1979) for further discussion and perspective on scalar implicatures.

The third question is how domain widening corrects these inappropriate inferences, which I have identified as scalar implicatures. Scalar implicatures are cancellable, and I will therefore argue that an important component of the process of domain widening involves the cancellation of a scalar implicature. To cancel a scalar implicature all that is required is that a stronger proposition, which had previously been excluded by the implicature, be asserted.

In order for the conversationalists to appreciate the significance of an act of implicature cancellation for the discourse, it is important that they simultaneously attend to both the strong proposition being asserted which cancels the implicature, as well as the other weaker proposition that gave rise to the implicature in the first place. As a result, an assertion used to effect domain widening typically involves focus. Within the alternative semantics theory of Rooth (1985, 1992), focus is a phenomenon related to the evocation of alternative propositions. Because asserting a stronger alternative in which the quantifier has a wider domain is simply meant to cancel an implicature, but not to contradict a previous assertion, this is a non-contradictory use of focus.

To sum up the preceding paragraphs, the phenomenon of domain widening needs to make reference to the contextual restriction of quantifier domains, scalar implicatures and scalar implicature cancellation with focus. Each of these aspects of the analysis have been independently motivated within the linguistics literature for diverse characteristics of language and its use in discourse. Consequently, my analysis of domain widening is one that falls out from the interaction of more general principles operating in language. The very term *domain widening* is thus taken simply as a convenient label for a certain use of focus, rather than as referring to a distinct and independent construction in grammar.

1.1 Outline of the Thesis

The bulk of this dissertation is spread through the following three chapters. Each chapter is devoted to domain widening as it occurs with a certain type of quantifier.

Chapter Two is devoted to the investigation of domain widening in negative polarity environments. Rather than addressing the question of how polarity items are licensed, it investigates the nature of domain widening in such environments. Much of the chapter is spent introducing and motivating various aspects of my general theory of domain widening.

I propose that emphatic negative polarity items (NPIs) undergo genuine domain widening and that focus and the semantics of the additive particle *even* are integral components of this process. Starting with the observation that in English emphatic NPIs occur with focus on the determiner *ANY*, I argue that the focal alternatives are determiners with different resource domain variable indices (von Fintel 1994). The resource domain variable provides the covert restriction within determiners whose value is supplied by context. In the case of domain widening, the asserted proposition contains the focussed determiner *any* indexed to the widest resource domain, while the alternative propositions contain *any* indexed to narrower subset resource domains.

(4) I didn't see ANY_{C8} - body.
alternatives = {I didn't see any_{C8}-body, I didn't see any_{C7}-body,
I didn't see any_{C6}-body}
where: $[[C_8]] \supset [[C_7]] \supset [[C_6]]$

In downward entailing environments this widening always satisfies the presuppositions of *even*, since widening the domain ensures that the asserted alternative is the least likely, or most informative (Kay 1990), of the alternative propositions under consideration. Furthermore, since the asserted value does not contradict its alternatives, the existential presupposition of *even* is satisfied because there are true, though less informative, propositions in the set of alternatives. This analysis therefore accommodates Kadmon and Landman's insight that actual domain widening takes place, but follows Lahiri (1998) in arguing that the strengthening requirement need not have the status of a formal constraint independent of the presuppositions of *even*.

I also propose that domain widening should be considered an act of scalar implicature cancellation. The scalar implicature cancelled is not the traditional sort which cannot arise in downward entailing environments, but rather what Chierchia (2001) calls an indirect scalar implicature. In downward entailing contexts the strength of scales is reversed and therefore lower values are informationally stronger. Consequently, a scalar implicature which negates a lower member on a negated scale results in a double negative, thereby giving rise to a positive inference.

(5) a. Bill doesn't have three kids.
b. $\approx\!>_{\textit{indirect implicature}}$ It's not the case that Bill doesn't have two kids.
= Bill has two kids.

I propose such a scalar implicature can arise with non-widened indefinites in downward entailing environments, and that the effect of domain widening with an emphatic NPI is to cancel this implicature. Support for the existence of this implicature that domain widening putatively cancels is provided by the contrast between emphatic and non-emphatic NPIs in Cantonese. I argue that the predicted conversational implicature arising from this weaker type of NPI, that widening is meant to cancel, has been conventionalized in Cantonese, so that a non-emphatic NPI always gives rise to an uncancellable positive inference.

Chapter Three is concerned with domain widening in the analysis of free choice items (FCIs). While it begins by investigating a certain type of FCI also included in Kadmon and Landman's study, namely generic free choice items, the bulk of the chapter deals with a type of FCI which has never been studied from a domain widening perspective, namely subtrigged FCIs. Subtrigging refers to the licensing of a FCI by the presence of a "subtrigging" relative clause (LeGrand 1975).

(6) a. * John talked to any woman.
b. John talked to any woman who came up to him.

Dayal (1998) shows that these cases are problematic for a domain widening account because such subtrigged FCIs freely occur in non-generic and non-downward entailing environments, where widening the domain does not seem to lead to a stronger proposition.

My analysis of subtrigging extends my domain widening analysis of NPIs and also offers a new perspective on the relation of free choice to specificity. Horn (2000) observes that sometimes a FCI is used to create a contrast with a specific indefinite. Among the correlates of specificity, Fodor and Sag (1982) cite the presence of a restrictive relative clause as strongly favouring a specific, or referential, reading. With this background in hand, I propose that subtrigging relative clauses help license FCIs because these clauses coerce the narrower alternative of the FCI to be a specific indefinite. Without the subtrigging clause, the narrower alternative would not necessarily be a specific indefinite and there would be no contrast in specificity between the widened and non-widened alternatives.

I argue the contrast in specificity leads to a type of scalar implicature cancellation arising from widening the domain. Following Schwarzschild (2002), I assume specific indefinites can be analyzed as extremely contextually restricted, such that their domain has only one member. These singleton indefinites exhibit quasi-referential properties because they are in some ways interchangeable with the lone individual in their domain. A singleton indefinite is as much "about" an individual as it is "about" a set, unlike other indefinites. Since utterances containing specific indefinites can be conceived of as being "about" individuals, I propose that they will license inferences about individuals. Namely, a scalar implicature that the proposition would have been false for other individuals (Rooth 1992). The actual identity of the lone individual in the singleton set need not be known for this implicature to arise. Rather, all that is important is that there is only one individual in the domain. If such a singleton indefinite is the narrower alternative of a subtrigged FCI, then widening the domain with *any* suspends this implicature, which was derived by interpreting the indefinite as quasi-referential. This is because the widened non-singleton indefinite is not interchangeable with a single individual, and thus is incompatible with such individual oriented inferences. Scalar implicature cancellation comes about when stronger propositions are asserted. Therefore, if a scalar implicature is cancelled by using a FCI, the presuppositions of *even* must be satisfied.

The chapter ends with a comparison of my theory of subtrigged free choice with recent proposals by Giannakidou, and also some speculation about the difference between emphatic negative polarity items and free choice items. In particular, I explore the *not just any* construction, which can only have a free choice reading.

Chapter Four examines domain widening of universal and distributive quantifiers. The empirical coverage of this chapter is fully outside of the intended coverage of Kadmon and Landman's original work. I open the chapter by showing, contra Kadmon and Landman, that domain widening is possible with universal quantifiers like *every*, as in (7).

(7) EVERYbody had a good time.

I then go on to discuss why domain widening is not a totally general process available to every quantifier. Rather, only universal-type quantifiers such as *every, no, any* may undergo domain widening, but not non-universals such as *most*. After dispelling a promising but inadequate analysis that derives this constraint from the property of anti-persistence, or left downward monotonicity, of the determiners in question, I proceed to offer my own original account. My account is very similar to that of von Fintel (1993), who investigated why *but*-exceptives, as in *every child but John*, are restricted to occurring with universal-type quantifiers. In this section I also discuss why domain narrowing is not possible.

The next part of this chapter examines domain widening with verbal distributivity operators, and recasts the work of Brisson (1998, 2003) from a domain widening perspective. Covert distributivity operators have been proposed to account for how plural definites seemingly get understood with an interpretation very much like universal quantification. This analysis has seemed generally sufficient, although it has also been remarked that sometimes plural definites allow exceptions in a way that normal universal quantification does not. Brisson (1998, 2003) gives an account of this non-maximality phenomenon by arguing that it is due to the choice of contextual variable found on the distributivity operator. Furthermore, she proposes that the item *all* is a special linguistic device whose sole function is to ensure that such non-maximality does not arise. In my domain widening account of non-maximality, I adopt Brisson's account of non-maximality as arising from the choice of contextual variable, but offer a very different analysis of *all*. Under the analysis I propose, *all* is a D-operator which has been focussed in order to effect domain widening, similar to stressed quantificational determiners.

Building on my analysis of *all*, I close the chapter by presenting a novel analysis of the D-operator *dōu* in Cantonese. This particle has the same phonological form as an additive particle. I show that this homophony is not accidental, and that within Cantonese quantificational sentences, the particle *dōu* is generally used when my theory would predict domain widening to occur. I conclude that the D-operator *dōu* is a D-operator which incorporates the semantics of *even*.

CHAPTER TWO: DOMAIN WIDENING OF EMPHATIC NEGATIVE POLARITY ITEMS

2 Introduction

In this chapter I discuss the process of domain widening in the case of emphatic negative polarity indefinites. I argue that focus induces widening by evoking alternative resource domain indexings which are salient in the context. Furthermore, I claim that the widening effect is the result of the cancellation of a conversational scalar implicature that possibly always arises in (contextually) restricted quantification.

My view of domain widening differs from that of Kadmon and Landman (1993) in two important ways. First of all, as argued by Krifka (1995), I assume that actual domain widening is only possible when the determiner is focussed. Kadmon and Landman, on the other hand, claimed that widening always occurs when *any* is used. Secondly, unlike Kadmon and Landman my goal is not to provide a general theory of polarity licensing. My concern is restricted solely to focussed negative polarity items in this chapter, and so I will not provide any new insights into the nature of negative polarity. Moreover, as will be seen in later chapters of this dissertation, I do not believe that the phenomenon of domain widening is restricted to negative polarity, or even to negative polarity and free choice. Rather, the view I will motivate below is that widening is predicted to be possible whenever one finds restricted quantification.[1]

I begin the discussion in 2.1, where I investigate the crosslinguistic tendency for emphatic negative polarity items (NPIs) to incorporate an additive focus particle. Following Haspelmath (1997), I interpret this morphological fact as evidence that the semantics of focus and scales is relevant in the analysis of emphatic NPIs. In Section 2.2 I delve into the analysis of these items. I present my view that domain widening is dependent on the use of focus on a determiner in order to evoke alternative indexings on the covert contextual resource domain variable. I show that domain widening is not a special lexical feature of *any*, but is similar to how focus is used on determiners to evoke focal alternatives varying for the value of the determiner chosen or the value of the DP which the determiner heads. I also show that this use of focus is used to cancel a scalar implicature, and relate this to the crosslinguistic tendency of emphatic NPIs to incorporate an additive particle. In Section 2.3 I compare my proposal to similar ones proposed by Kadmon and Landman (1993), Krifka (1995) and Lahiri (1998). The chapter ends with 2.4 in which I discuss emphatic negative polarity in Cantonese, a language in which an overt additive particle *dōu* "even" is crucial in the make-up of emphatic NPIs.

[1] I will qualify this assertion in Chapter Four, where I show that quantifiers used to make non-universal generalizations do not permit domain widening.

2.1 The properties of focus and scalarity in negative polarity items

Two concepts which are key features of the analysis of negative polarity items are focus and scalarity. Focus has been a feature of analyses such as Krifka (1995) and Lahiri (1998), while scalarity has been discussed by Fauconnier (1975a), Hoeksema and Rullmann (2001), among others.

My interest is focussed negative polarity items. I take these to always be interpreted in relation to some scale. Whether non-focussed polarity items should be regarded as scalar is an issue which I will not deal with in any detail. The work of Haspelmath (1997) supports the conclusion that the basic difference between focussed and non-focussed polarity boils down to an issue of scalarity.

Haspelmath (1997) surveys the distribution and origins of indefinite pronouns from a typological perspective. Of the many findings he presents, the most significant for current purposes lies in his discussion of the emphatic/non-emphatic distinction in indefinite pronouns and how it relates to scalarity. His study is not limited to negative polarity items, and so I briefly mention free choice items which he also examines.

Crosslinguistically, Haspelmath finds that free choice items are consistently distinguished from specific indefinites in that they are obligatorily stressed.[2] Haspelmath calls stressed indefinites *emphatic*. Data below is provided from English, Russian and German. In these examples, capitalized words are stressed.

(1) a. Ram may buy a BOOK..
b. ANYONE may buy a book (?* Anyone may buy a BOOK.)
c. Someone may buy a BOOK. Haspelmath 1997: 124 (272)

(2) a. You may invite SANGITA.
b. You may invite ANYONE.
c. You may INVITE someone. (?* You may invite SOMEONE.)
Haspelmath 1997: 124 (273)

Russian

(3) a. **KTO UGODNO** možet kupit' knigu.
(?* **Kto ugodno** možet kupit' KNIGU)
'Anyone may buy a book.'

b. **Kto-nibud'** možet kupit' KNIGU.
(?* **KTO-NIBUD'** možet kupit' knigu)
'Someone may buy a book.' Haspelmath 1997: 124 (274)

(4) a. Ty možeš' priglasit' **KOGO UGODNO**.
(?*Ty možeš' PRIGLASIT' **kogo ugodno**.)
'You may invite anyone.'

b. Ty možeš' PRIGLASIT' **kogo-nibud'**.
(?*Ty možeš' priglasit' **KOGO-NIBUD'**.)
'You may invite someone.' Haspelmath 1997: 124 (275)

[2] Haspelmath notes that indefinite pronouns occurring in comparatives are also obligatorily stressed.

German

(5) a. **IRGEND JEMAND** kann ein Buch kaufen.
'Anyone can buy a book.'
(≠**Irgend jemand** kann ein BUCH kaufen.
'Someone can buy a book.')

b. **Jemand** kann ein BUCH kaufen.
(?* **JEMAND** kann ein Buch kaufen.)
'Someone may buy a book.' Haspelmath 1997: 124 (276)

(6) a. Du darfst **IRGEND JEMANDEN** einladen.
'You may invite anyone.'
(≠ Du darfst **irgend jemanden** EINLADEN.
'You may invite someone.')

b. Du darfst **jemanden** EINLADEN.
(?* Du darfst **JEMANDEN** einladen.)
'You may invite someone.' Haspelmath 1997: 124 (277)

The situation is slightly different for negative polarity items. Indefinite pronouns occurring in the scope of negation, in questions and in conditionals do not obligatorily take stress, but may for an emphatic interpretation. Haspelmath provides the following examples from English.

English direct negation

(7) a. I didn't SEE anything.
b. I didn't see ANYTHING. Haspelmath 1997: 125(fn 19)

English conditional

(8) a. If you HEAR anything, wake me up.
b. If you hear ANYTHING, wake me up. Haspelmath 1997: 125 (278)

English question

(9) a. Can you SEE anything?
b. Can you see ANYTHING? Haspelmath 1997: 125 (279)

Haspelmath claims that the emphatic form involves a scale of alternatives on which the indefinite occupies the endpoint, whereas the non-emphatic evoke no scale of alternatives.[3]

Haspelmath reasons that the scalar nature of emphatic indefinite pronouns is the source of the crosslinguistic tendency for (scalar) additive particles to be morphologically

[3] Haspelmath expresses some doubt that the emphatic example involving direct negation in (7) involves a scale, although he does acknowledge that it is "stronger." In my analysis below, I will concentrate on this sort of example and show that it does involve scalarity.

incorporated within indefinite pronouns. A small list of examples adapted from Haspelmath (1997: 157 (343)) is given here.[4]

(10)	a.	Serbian/Croatian	*i-ko*	'anyone'	*i* 'and, also, even'
	b.	Indonesian	*siapa-pun*	'anyone'	*-pun* 'also, even'
	c.	Tagalog	*kahit na sino*	'anyone'	*kahit (na)* 'even'
	d.	Kannada	*yaar-nu*	'anyone'	*-uu* 'and, also'
	e.	Ancash Quechua	*ima-pis*	'anything'	*-pis* 'also, even'
	f.	Japanese	*nani-mo*	'nothing'	*-mo* 'also'
			nan-demo	'anything'	*-demo* 'even'
	g.	Hindi/Urdu	*koii bhii*	'anybody'	*bhii* 'also, even'
	h.	Korean	*amwu-to*	'anybody'	*-to* 'also'
			nwukwu-to	'anybody'	
	i.	Cantonese	*bīngo dōu*	'anybody'	*dōu* 'even

Haspelmath comes to the plausible conclusion that the use of additive particles is related to the scalar nature of emphatic indefinites. This is supported by his finding that almost all languages in his survey which use additive particles in indefinite pronouns use them for free choice and negative polarity functions, but not for specific indefinites.[5] Hindi provides a rather clear example of a language that uses an additive particle *bhii* "even" in scalar emphatic environments.[6]

Hindi specific indefinites: ***bhii* disallowed**

(11) **Kisii-ne** **(*bhii)** fon kiy-aa thaa,
someone-erg even phone do-pfv was
par ma i tumhe nahi bataau gii, kis-ne.
but I you neg I:will:tell who-erg
'Someone has phoned, but I won't tell you who.' Haspelmath 1997: 284 (A167)

Hindi free choice: ***bhii* obligatory**

(12) Ghar me **koii** ***(bhii)**[7] aa sak-taa hai.
house in someone even come can-impf is.
'Anyone can come into the house.' Haspelmath 1997: 284 (A173)

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[4] Chung-hye Han (p.c.) has noted that there are some languages which incorporate additive particles into the make-up of even non-emphatic negative polarity items. In such cases, I strongly suspect these additive particles have been re-analyzed as scope markers that merely mark the indefinite as a polarity item. This shift from additive particle to scope marker is discussed in Chapter 5, and derives from discussion in 2.4.1.1.

[5] Haspelmath notes a few exceptions to this robust pattern, namely Evenki and Latvian which use indefinite pronouns with additive particles for specific indefinites as well. He assumes in these exceptional cases a process of semantic change must have occurred.

[6] I have altered Haspelmath's interlinear gloss of *bhii* from "indef" to "even". This is for expository purposes, and is consistent with Haspelmath's discussion.

[7] I have altered Haspelmath's orthographic presentation here by using the technical convention of placing *bhii* within brackets preceded by an asterisk to show that *bhii* is obligatory here, again to ease my exposition and to highlight my point. This is consistent with his finding that the "free choice and comparative functions are only expressed with the bhii-series." (Haspelmath 1997: 285).

Hindi negation: ***bhii* optional**[8]

(13) Ghar mē **koii** **(bhii)** nahi hai.
house in someone even neg is
'No one (at all) is at home.' Haspelmath 1997: 285 (A169)

Hindi conditional: ***bhii* optional**

(14) Agar **koii** **(bhii)** fon kare, mujhe bataanaa.
if someone even phone calls, I:dat tell
'If anybody (at all) calls, tell me.' Haspelmath 1997: 285 (A171:b)

Hindi question: ***bhii* optional**

(15) Kyaa aap-ne **kisii-ko/** **kisii-ko** **bhii** dekh-na?
Q you-erg someone-dat/ someone-dat even see-pfv
'Did you see somebody/anybody?' Haspelmath 1997: 285 (A171:a)

I will adopt Haspelmath's notion of emphatic NPIs as focussed and scalar in the remainder of this chapter.

2.2 Restriction and scalar implicature: a study of English negative polarity

In the previous section I introduced some typological motivation for the claim that focus and scalarity must be incorporated into the analysis of emphatic NPIs. In this section I develop and present my analysis of these items.

I begin with a discussion of how quantifiers are contextually restricted, which is an important component of my theory of domain widening.[9]

2.2.1 The context dependency of quantification

Quantification is contextually restricted. Von Fintel (1994) discusses the following example.

(16) Everybody had a great time.

---

[8] In fact, Haspelmath notes that directly within the scope of negation there is a preference to use *bhii*.

[9] The scope of this thesis is domain widening in the case of nominal quantification. Whether something like domain widening is possible in the case of, for instance, adjectival and verbal expressions is not addressed.

One piece of evidence that there is a similar phenomenon in these cases comes from the distribution of *at all*. This modifier is common in domain widening contexts involving focus on a determiner (i), as well as accompanying adjectival (ii) and verbal predicates (iii).

(i) I didn't see ANYbody at all.
(ii) I'm not at all tired.
(iii) John still hasn't apologized at all.

However, even if there is a similarity in these examples, I do not see how the examples in (ii) and (iii) could involve domain widening, in the sense that a domain of individuals is being enlarged. See Krifka (1995) for an interesting analysis of *at all*.

A speaker might utter something like this when discussing the previous evening when a group of people went out for pizza. Given this state of affairs, the quantifier in this sentence is understood to be contextually restricted to "everybody who went out for pizza", rather than to "everybody in the world". There is of course no overt restriction in (16) on the quantifier, aside from *–body*, which raises the question of how such sentences get restricted by context.

Following Westerståhl (1984), von Fintel argues that such context dependency is located in the quantifier itself. A determiner like *every* is interpreted relative to a contextually supplied set which is intersected with the common noun which the determiner takes as its first argument. This contextual set is the resource domain. This is captured by positing a new indexed variable on the quantifier which ranges over resource domains. This variable is of the same type as the first argument of the quantifier with which it intersects.

(17) Quantifier Indexing Rule[10] von Fintel 1994: 30
Freely index quantifiers with indices of the form v_i of type <e,t>.

A generalized quantifier can thus be given the following analysis, where C represents the resource domain variable.

(18) $[[every_C]]^g(A, B)$ iff $[[every]] (g(C) \cap A, B)$

The resource domain variable does not interact or interfere with the regular index of the DP. So (16) can be given the following LF.

(19) $[[every_C\ body]_y\ [y\ had\ a\ great\ time]]$

As a general theory of context dependency, von Fintel's theory should arguably extend to all instances of quantification. Consequently, one would expect indefinites, insomuch as they are quantificational, to also be contextually restricted. My concern here are indefinites which function as negative polarity items. It is relatively easy to see that polarity items like *anybody* can be contextually restricted.[11,12] To take a concrete example, imagine the following exchange between two police detectives.

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[10] This simple rule will suffice for the current discussion. Von Fintel also discusses the possibility of more complicated indexings that I will not touch upon here.

[11] Kadmon and Landman (1993) also assume something like contextual restriction in negative polarity indefinites, although they do not formalize it. I compare my overall treatment of NPIs to theirs in section 2.3.4.

[12] I assume that even non-negated indefinites are contextually restricted. Bach (1994) has argued that indefinites such as (i) are not contextually restricted.

(i) A book is on the table.

Stanley and Szabó (2000: 242) argue that in fact the indefinite in (i) can be contextually restricted. They provide the following discourse context and discussion:

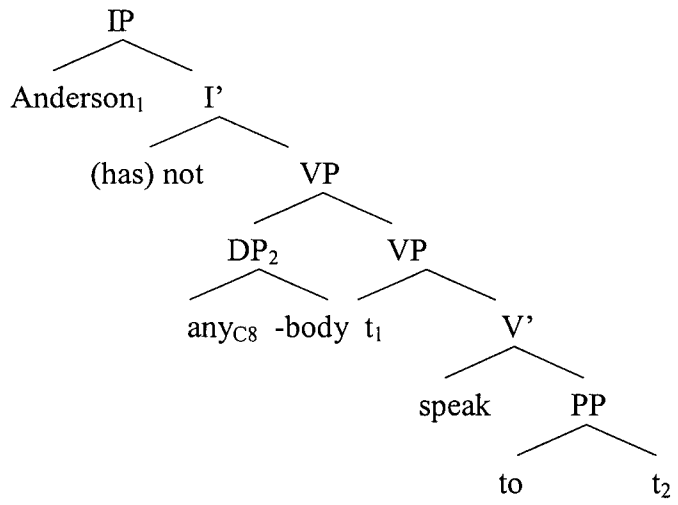
> John and Bill are printing copies of *Naming and Necessity* in their printing shop. There are thousands of copies of this book lying around. Lunch break is approaching and John complains to Bill that he wants to read a book, since he needs to get his mind off *Naming and Necessity*. Bill believes that there are several detective novels lying on the table beyond him, and, on this basis, utters [(i)]. If, however, all there are on the table behind Bill are more

(20) A: I heard Anderson has a new case. How is it going?
B: There's not much to say. Anderson hasn't spoken to anybody yet.

Here, Detective B uses the indefinite *anybody* to mean something like "any victims, suspects, witnesses, etc." – that is, any relevant person who a detective should talk to to get a new investigation underway. Detective B can truthfully utter this even if he knows that a few minutes earlier Detective Anderson was making office small talk about the weather.

I will give a straightforward analysis to this example with its non-emphatic polarity item *anybody* as an existential generalized quantifier. I will assume without argument that *anybody* is an indefinite which can be decomposed into *any* and *–body* meaning "person", and which must be interpreted within the scope of a downward entailing operator such as negation (see Ladusaw 1979, Carlson 1981, among others). However, I will not address the issue of why *anybody* is a polarity item. I also ignore inflection and the adverbial *yet* here in the following analysis.

(21) a. Anderson hasn't spoken to anybody.
LF: $[[\text{Anderson}]_1$ [(has) not [$[\text{any}_{C8}\text{-body}]_2$ [t_1 spoken to t_2]]]]



b. $\neg[[C_8 \cap \{x \mid x \text{ is a person}\}] \cap \{y \mid \text{Anderson spoke to } y\} \neq \emptyset]$[13]
$= [C_8 \cap \{x \mid x \text{ is a person}\}] \cap \{y \mid \text{Anderson spoke to } y\} = \emptyset$

This is relatively straightforward. The notable aspect of this analysis is of course that the indefinite determiner *any* contains a hidden resource domain variable. This variable, C_8, maps to a set of relevant individuals – namely those relevant to a police detective that one might interview to begin a police investigation.

---

stacks of *Naming and Necessity*, then this occurrence of [(i)] seems false. Intuitively, that is because [(i)], relative to this context quantifies over (copies of) books other than *Naming and Necessity*.

[13] Throughout this work I will generally treat one-place predicates as sets.

(22) $[[C_8]] = \{x \mid x \text{ is a victim, a witness, a suspect}\}$

2.2.2 Emphatic NPIs in English

As discussed by Haspelmath (1997), there is an interpretive difference between non-emphatic *anybody* and emphatic *ANYBODY*. This difference corresponds to a difference in focal stress.

I will adopt Rooth's (1985, 1992) alternative semantics theory of focus in order to give an account of the difference. Within alternative semantics, an expression α has two values: an ordinary semantic value, written $[[\alpha]]^o$ and a focus value, written $[[\alpha]]^f$. The focus value is a set of alternatives of the same semantic type as α derived from the ordinary semantic value by substituting alternative values for the focussed constituent. Here is an example.

(23) Anderson has spoken to $[\text{the baker}]_F$

i. $[[\text{Anderson has spoken to } [\text{the baker}]_F]]^o = \text{spoke.to(anderson, the.baker)}$

ii. $[[\text{Anderson has spoken to } [\text{the baker}]_F]]^f = \{\text{spoke.to(anderson, x)} \mid x \in D_e\}$
= the set of possible alternatives "Anderson has spoken to x"
where D_e stands for the domain of individuals

In any given utterance situation, it is likely that of all possible alternatives only a fraction are ever going to be relevant. Rooth proposes that within the representation of the sentence, there is a contextually restricted variable C^{FOC} which denotes precisely this smaller set of relevant propositions.[14] This variable is free, and its value is ultimately supplied by context, but its interpretation is crucially constrained by the focus value of the sentence. Rooth proposes the *Focus Interpretation Principle* (FIP) in order to capture this. In his proposal, focus always introduces a focus operator ~ whose presuppositions regulate the interpretation of the contextual variable C^{FOC}.

(24) Focus Interpretation Principle

(i) $[[C^{FOC}]]^o \subseteq [[S]]^f$

(ii) $[[S]]^o \in [[C^{FOC}]]^o$

(iii) $\exists\xi(\xi \in [[C^{FOC}]]^o \;\&\; \xi \neq [[S]]^o)$ Rooth (1992)

Essentially, in the configuration S ~ C^{FOC}, the operator ~ adds nothing to the assertion, but rather carries the presupposition that the value of C^{FOC} is a subset of $[[S]]^f$, and furthermore that C^{FOC} contains $[[S]]^o$ and at least one other proposition.

To take the example in (23), the sentence containing a focussed constituent is adjoined by the focus operator and a contextual variable ~ C^{FOC}.

[14] The superscripted *FOC* is my notation. Throughout this dissertation I will notate focus variables introduced by the ~ operator as an italicized C^{FOC}. This is done to distinguish these focus variables, which serve as sets of alternative propositions, from the resource domain variables found in determiners. Resource domain variables are notated with a non-superscripted and non-italicized C.

(25)

Imagine a context where Detective Anderson has spoken to three individuals who directly witnessed the crime he is investigating. These individuals are the baker, the carpenter and the optometrist. In this context, the value of the variable C^{FOC} is the salient set of alternative propositions given here.

(26) $[[C^{FOC}]]$ = {Anderson has spoken to the baker,
Anderson has spoken to the carpenter,
Anderson has spoken to the optometrist }

This set satisfies the presuppositions of the ~ operator. First, C^{FOC} is a subset of the focus value of the sentence, {spoke.to(anderson, x)| x ∈ D_e}. Second, the ordinary semantic value of the sentence is a member of C^{FOC}. Third, there is at least one other alternative that does not equal the ordinary semantic value that is also a member of C^{FOC}.

Returning to the discussion of NPIs, in the case of the emphatic polarity item *ANYbody* in English, it is clear that the primary prosodic emphasis is actually on the determiner portion of the word. This is supported by the observation that *ANY* can be stressed when not appearing in an indefinite pronoun but when it is acting as a normal determiner to a common noun argument as in (27)b.

(27) a. Anderson hasn't spoken to ANYbody.
b. Anderson hasn't spoken to ANY man.

This is significant, and I will take it as evidence that in these forms the set of focal alternatives involve substitution instances varying for the value of the determiner.

In the following sections I will discuss three subtypes of emphatic *ANY* – the case in which the alternatives vary for the lexical value of the determiner, the case where the alternatives vary by the index on the resource domain variable on *ANY*, and the case in which the alternatives vary for the entire DP. Of these three cases, only the second and third type produce domain widening, but throughout this dissertation I will use the term more narrowly to refer strictly to cases in which the covert restrictor plays a role.

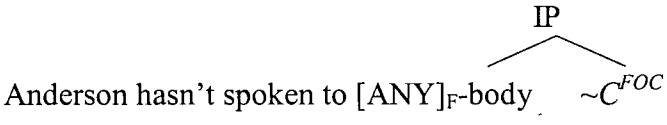
2.2.2.1 Substitution for the lexical value of the determiner

The first type of example involves substitution of other lexical determiners. The following dialogue serves as an example.

(28) A: Anderson's other duties are threatening to interfere with his new case. I hear Anderson still hasn't spoken to many people.
B: He's in more trouble than that. Anderson hasn't spoken to ANYbody.

The only difference between the example with *ANY* in (28) as opposed to the example I illustrated in (20) with unstressed *any* is that in (28) the focus semantic value of the sentence is nontrivial. That is, the value of the focus value in (20) is a singleton set of alternatives,[15] whereas in (28) the focus semantic value is not a singleton. However, the ordinary semantic value of the sentence is the same.

(29)



The ordinary semantic value of the sentence is as in (30)i, and the focus semantic value as in (30)ii.[16]

(30) Anderson hasn't spoken to ANY_Fbody

i. [[Anderson hasn't spoken to $[ANY]_F$-body]]°
$= \neg[(\text{any}\ (\{x \mid x \text{ is a person}\})(\{x \mid \text{a spoke to } x\})]$

ii. [[Anderson hasn't spoken to ANY_Fbody]]^f
$= \{\neg[(\boldsymbol{X}\ (\{x \mid x \text{ is a person}\})(\{x \mid \text{a spoke to } x\})] \mid \boldsymbol{X} \in D_{<<e,t>,<<e,t>,t>>}\}$
= {Anderson hasn't spoken to every person,
Anderson hasn't spoken to many people…}

The focus anaphor C^{FOC} is a salient set of alternatives to the asserted sentence. It is constrained by the presuppositions of the ~ operator as spelled out in the FIP of Rooth (1992). In this case, the value of C^{FOC} is as given in (31). This set is selected because in the example under discussion, Detective B focuses *ANY* explicitly to draw a contrast with the determiner used by Detective A, *many*.

(31) $[[C^{FOC}]]$ = {Anderson hasn't spoken to anybody (i.e., any person),
Anderson hasn't spoken to many people}

This set satisfies the FIP. C^{FOC} is a subset of the focus value of the sentence, $\{\neg[(\boldsymbol{X}\ (\{x \mid x \text{ is a person}\})(\{x \mid \text{a spoke to } x\})] \mid \boldsymbol{X} \in D_{<<e,t>,<<e,t>,t>>}\}$. Moreover, the ordinary semantic value of the sentence is a member of C^{FOC} and there is another alternative that does not equal the ordinary semantic value that is a member of this set as well.

2.2.2.2 Substitution for the value of the resource domain index

Although I think the focal alternatives of emphatic *ANY* involve substitution for the value of the determiner in discourses such as (28), I do not think that this is necessarily the most typical or the most interesting type of example. The second sort of example of emphatic *ANY*

[15] Since the focus semantic value is a singleton in (20), clause (iii) of the FIP is not satisfied. This is not a problem since presumably there is no focus ~ operator in such sentences.

[16] There are other interesting alternatives that do not play a role in this example. These are discussed in relation to example (35).

differs from the first in that there is no obvious alternative lexical determiner in the immediate context. The following dialogue demonstrates such a context. These are examples which exhibit widening.

(32) a. A: I heard Anderson has a new case. How is it going?
b. B: There's not much to say. Anderson hasn't spoken to anybody yet.
c. A: Well, does he have any leads based on what the victim had to tell him?
d. B: Anderson hasn't spoken to ANYbody. Rogers was initially given the case but it was reassigned to Anderson only this morning.

In the last sentence of this example, Detective B is using an emphatic form of *ANYbody*. As above, we expect that the evoked alternatives will be other determiners. But in this context, what other determiner is there? Obviously, there is the non-emphatic *anybody* which he himself used a few moments earlier, which contains the determiner *any*. The FIP requires that the salient set of alternatives must contain the asserted proposition $[[S]]^o$ as well as at least one other alternative that does not equal $[[S]]^o$. But if it is the case that *ANY* in (32)d is somehow being contrasted with *any* in (32)b, then the only other alternative does equal $[[S]]^o$.

Intuitively, it seems clear that what is happening here is that B is objecting to A's suggestion that Anderson might have spoken to the victim. So in some sense, the element which prompts B to use the emphatic *ANYbody* is the DP *the victim*. But, then how does this tie into an analysis using focus, if the alternatives must be other determiners? Again, I think the intuition is pretty clear. In some sense Detective A misunderstood what B meant by *anybody* in the first place.

This sort of misunderstanding is possible if Detective A originally interpreted *anybody* with a different resource domain index on the determiner *any*. Although both Detective A and B know they are restricting their discussion to relevant individuals, the exact set of individuals who come to mind in each case may differ. In this case, Detective A probably thought that the victim had already been interviewed by Anderson, since speaking to the victim is probably easier than tracking down witnesses or figuring out who likely suspects are. If Detective A has the wrong impression that Anderson has been working on this case for the past week, then he might rightly assume that Anderson has already gone through the standard procedure of talking to the victim. Detective B, on the other hand, knows that Anderson was just handed this case, and hasn't had the opportunity to talk to anybody except other police officers. That means that the victim is also in the set of individuals who Anderson will have to talk to, but hasn't.

To be concrete, let's say that Detective A has resource domain C_7 in mind and that Detective B has resource domain C_8 in mind.

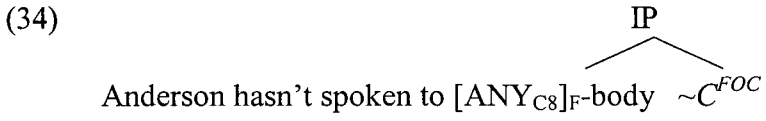
(33) Detective A is thinking of C_7: $[[C_7]] = \{x \mid x \text{ is a witness, a suspect}\}$
Detective B is thinking of C_8: $[[C_8]] = \{x \mid x \text{ is a victim, a witness, a suspect}\}$
note that $[[C_7]] \subseteq [[C_8]]$

Coming back to the question of what sort of alternatives are evoked by focus, we can now say that instead of other lexical determiners, the alternatives are *any* with various indexings.

That is, the set of things of type <<e,t>,<<e,t>,t>> that will be substituted for *ANY* are drawn from the following set: {any$_{C7}$, any$_{C8}$}.

The only difference between this example and the one discussed immediately previously is what the value of the focus anaphor is. Like the earlier example in (29), the LF of this sentence is as in (34).

(34)



The ordinary semantic value and the focus value are the same as before as well. This means that the ordinary semantic value of both of Detective B's sentences using *any/ANY* in the two examples is exactly the same, since in both cases he has the same resource domain index in mind.

(35) Anderson hasn't spoken to ANY$_F$body

i. [[Anderson hasn't spoken to [ANY$_{C8}$]$_F$-body]]°
$= \neg[(\text{any}_{C8}(\{x \mid x \text{ is a person}\})(\{x \mid \text{a spoke to } x\})]$

ii. [[Anderson hasn't spoken to ANY$_F$body]]^f
$= \{\neg[(\boldsymbol{X}(\{x \mid x \text{ is a person}\})(\{x \mid \text{a spoke to } x\})] \mid \boldsymbol{X} \in D_{<<e,t>,<<e,t>,t>>}\}$
$= \{$Anderson hasn't spoken to every$_{C8}$ person,
Anderson hasn't spoken to many$_{C8}$ people,
Anderson hasn't spoken to any$_{C8}$ people
Anderson hasn't spoken to any$_{C7}$ people …$\}$

The focus semantic value contains alternative propositions in which an alternative determiner has been substituted for *any*$_{C8}$. This includes other lexical determiners, with whatever resource domain indexing, and also other *any*'s with alternative resource domain indexings. So far, this example is exactly like the case in (30).[17]

The real point of interest is what the value of the focus anaphor C^{FOC} is. Since Detective B wants to draw a contrast between the resource domain index which he has in mind, C_8, and the one he can tell Detective A has in mind, C_7, the value of C^{FOC} must be the following.

(36) $[[C^{FOC}]] = \{\neg[(\text{any}_{C8}(\{x \mid x \text{ is a person}\})(\{x \mid \text{a spoke to } x\})],$
$\neg[(\text{any}_{C7}(\{x \mid x \text{ is a person}\})(\{x \mid \text{a spoke to } x\})]\}$

An interesting feature is that in this analysis of widening two types of contextual variables are being used. These are the resource domain variable on the determiner and the focus anaphor introduced by the focus operator. The two types of variables are playing very

[17] One may alternatively want to say that focus is not on the determiner but on the indexed resource domain variable itself. At this time, I do not see any reason to adopt this analysis since the focus anaphor C^{FOC} already has the role of capturing the salient alternatives – namely those determiners which differ minimally in having different resource domain indices. Alternatives involving different lexical determiners are not salient here and will not be in the set denoted by C^{FOC}. See the discussion of (36) below.

different roles. The resource domain variable is ranging over contextually supplied sets that intersect with the overt restriction on the quantifier. The focus anaphor is ranging over the salient set of propositions which contains the alternatives under discussion. In this case, the alternatives vary for how context is restricting the quantifier. This is the only way in which focus contributes to the quantification here.[18,19]

2.2.2.3 Substitution for the value of the DP

A third type of example involves substitution of the whole DP. This type of example also falls under Kadmon and Landman's descriptive generalization of widening, but is perhaps a less interesting type than the kind discussed in the previous section. In the example in (37), stressed *ANY* is used, but it is clear that the salient alternative differs also in the value of the common noun phrase following the determiner. That is, the whole DP is in focus.

(37) A: I hear Anderson's investigation of the bakery incident is a little bogged down. Apparently, Anderson hasn't spoken to many customers who saw the incident take place.
B: Anderson hasn't spoken to ANY witnesses – not even the counter staff or the bakers.

The ordinary semantic value of B's utterance with *ANY* is given in (38)i. The focus semantic value in (38)ii is made up of the set of alternative propositions got by substituting the value of the DP.

(38) Anderson hasn't spoken to ANY_F witnesses.
i. $[[\text{Anderson hasn't spoken to } [ANY \text{ witnesses}]_F]]^\circ$
$= \neg[(\text{any } (\{x \mid x \text{ is a witness}\})(\{x \mid \text{a spoke to } x\})]$
ii. $[[\text{Anderson hasn't spoken to } [ANY \text{ witnesses}]_F]]^f$
$= \{\neg[(X\ (\{x \mid \text{a spoke to } x\})] \mid X \in D_{<<e,t>,t>}\}$
$= \{$Anderson hasn't spoken to $[_{DP}$ any witnesses], Anderson hasn't spoken to $[_{DP}$ many customers who saw the incident$]\ldots\}$

In principle, any substitution of the DP is possible as long as the alternatives are of the same type as the constituent in focus – a generalized quantifier of type <<e,t>,t>. The one salient

[18] Other ways in which focus has been discussed in contributing to domain restriction, as in the mapping material to the restriction versus nuclear scope of adverbial quantifiers, are not relevant.

[19] Incidentally, the descriptive generalization that domain widening is effected by focussing the determiner and not the nominal restriction constitutes additional evidence that the locus of contextual restriction in nominal expressions is the determiner, as on Westerståhl's (1984) and von Fintel's (1994) accounts, and contra Stanley (2002) who argues the domain variable is situated in the noun.

I am not certain this analysis extends to all language. For instance, in languages without determiners one might expect that contextual restriction is located in the nominal. Giannakidou (2004) suggests that cross-linguistically both the determiner and the nominal may be locus of contextual restriction. See also Footnote 6 in Chapter Four for an (uncertain) example of domain widening via focal stress on the nominal.

alternative in this discourse comes from A's utterance and contains the generalized quantifier *many customers who saw the incident*. The set of salient alternatives in C^{FOC} is given in (39).

(39) $[[C^{FOC}]] = \{\neg[(\text{many}_C(\{x \mid x \text{ is a cust. who saw the incident}\})(\{x \mid \text{a spoke to } x\})],$
$\neg[(\text{any}_C(\{x \mid x \text{ is a witness}\})(\{x \mid \text{a spoke to } x\})\}$

Obviously, the restrictor of the generalized quantifier is different in these alternative propositions, and that of the asserted value is wider than its narrower alternative. In this sense, a sort of widening has occurred here. A somewhat different sort of example of widening discussed by Kadmon and Landman (1993: 356 (20)) is given by the following example.

(40) A: Do you have dry socks?
B: I don't have ANY socks.

In this example, too, it is clear that the alternatives are DPs. Although the presence of the adjective is what makes the DPs differ, emphatic stress is on the determiner indicating that the whole DP is in focus. As in the example discussed just above, it is not clear that alternative resource domains are under consideration here, since the NPs with which the resource domains intersect are different. Although the domain of the asserted value in (40)B is demonstrably wider than its narrower alternative, and hence widening in the broad sense has occurred, domain widening in the narrower sense that I have adopted, in that alternative covert restrictions are under consideration, has not occurred.[20]

2.2.3 Scales and focus: cancellation of scalar implicatures

In the previous section I outlined one way to capture what emphatic NPIs are and how focus is used with them. In this section I will discuss their scalar nature.

The key insight of Haspelmath was that emphatic NPIs are scalar, but so far I have not addressed this in my analysis. Scalarity enters the picture in that the focussed determiner *ANY* can be ranked on a scale with respect to its salient alternatives. In the case of (28) where the alternatives to *any* are other lexical determiners, the scale is determined by the Horn scale of determiners. Horn (1972) defines quantitative scales by entailment. On a given scale, P_j outranks and is stronger than P_i if a statement containing an instance with P_j unilaterally entails a statement with P_i. In a positive sentence, the scale <many, some> can be constructed.[21]

(41) Anderson has spoken to many people.
$\Rightarrow$ Anderson has spoken to some people.

[20] Rose-Marie Déchaine (p.c.) has pointed out that in languages which rely heavily on structural focus, it may be difficult to isolate just the determiner in order to achieve widening. In such languages, I would suspect one would still be able to focus on the entire DP in order to evoke focal alternatives that vary solely for the value of the contextual variable.

[21] Throughout this dissertation, I will adopt the convention of placing the strongest members of the scale to the left and the weakest to the right. For instance, a scale of numerals would look like <3, 2, 1> since higher numerals are stronger in positive environments.

In polarity environments, the rank ordering of scales is reversed (Fauconnier 1978).[22] For present purposes treating *any* as a variant of *some* occurring in polarity environments, the scale in the negative case is DE <any, many>.

(42) Anderson hasn't spoken to any people.
⇒ Anderson hasn't spoken to many people.

In (32) the alternatives are not other lexical determiners but *any* with alternate resource domain indexings. The alternative resource domains here stand in a subset relation to each other, $[[C_7] \subseteq [[C_8]]$. Consequently, any identical propositions that differ solely in the index on the quantifier can be placed on a monotonic scale. In a positive environment, the scale of indefinite determiners with these indexings would be $<some_{C7}, some_{C8}>$.

(43) Anderson has spoken to $some_{C7}$ people (witness, suspect).
⇒ Anderson has spoken to $some_{C8}$ people (victim, witness, suspect).

In a negative sentence, the ranking of the scale is reversed to $<any_{C8}, any_{C7}>$, and so too are the entailment patterns.

(44) Anderson hasn't spoken to any_{C8} people (victim, witness, suspect).[23]
⇒ Anderson hasn't spoken to any_{C7} people (witness, suspect).

In (37) the alternatives substituted for the focussed constituent are not determiners but entire DPs. Since the customers under discussion are restricted to those who witnessed the bakery incident, these DPs can be ranked on a scale of generalized quantifiers as follows in a positive sentence: <many customers who saw the incident, some witnesses>.

(45) Anderson has spoken to many customers who saw the incident.
⇒ Anderson has spoken to some witnesses.

In a negative sentence the entailment relation is reversed, and so too is the scale: <any witnesses, many customers who saw the incident>.

(46) Anderson hasn't spoken to any witnesses.
⇒ Anderson hasn't spoken to many customers who saw the incident.

Having discussed the type of scales involved in emphatic NPIs, now I turn to the bigger question of how focus and scalarity interact.

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[22] Similarly, Horn (1989: 235), noting the reversal of inference patterns in negative environments, argues that negative scales must be recognized as distinct from positive scales.

[23] Kadmon and Landman (1993) discuss the significance of this entailment pattern with widened NPIs in the guise of their proposed licensing conditioning *strengthening*.

2.2.3.1 Scalar implicature cancellation

Apart from what an emphatic NPI is, there is also a question of why they exist. Or to take a functional stance, we can ask what the purpose of an emphatic NPI is. Intuitively, focus is being used to draw a contrast between the asserted sentence and the salient focal alternatives, and furthermore it seems to have corrective and counter-to-expectation force. One way to explore this issue is to consider how the information packaged in the ordinary semantic value relates to the information it is contrasted with. Another way to ask this is what semantic or pragmatic relationship the alternative propositions bear to each other.

Focal contrast can be used to make a contradiction. Take the following dialogue, inspired by (Rooth 1992).

(47) A: $[\text{Mats}]_F$ passed the test.
B: $[\text{Paul}]_F$ passed the test.

Imagine the scenario where A and B are discussing who of their mutual friends passed some quiz. Their mutual friends include Mats, Steve and Paul. A and B's statements seem like contradictions because each of their statements appears to exclude the other. Rooth (1992) argues that scalar implicature is responsible for this exclusive interpretation found with free unassociated focus.[24] The implication of A's statement is that the alternatives to Mats, namely Steve and Paul, did not pass. The implication of B's statement on the other hand is that the alternatives to Paul, namely Mats and Steve, did not pass.

One can account for this as a scalar implicature if groups are included in the domain of individuals. Under this assumption, the set of salient alternatives in each of the cases in (47) will be as in (48).

(48) $\left\{ \begin{array}{l} \mathbf{pass}(s), \mathbf{pass}(m), \mathbf{pass}(p) \\ \mathbf{pass}(s \oplus p), \mathbf{pass}(s \oplus m), \mathbf{pass}(m \oplus p) \\ \mathbf{pass}(s \oplus p \oplus m). \end{array} \right\}$

A second assumption needed is that the property **pass** is true of a group g if all atomic parts of g pass. Rooth (1992: 83) gives the following account:

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[24] Recall that a scalar implicature is a pragmatic inference arising from Grice's (1975) Maxim of Quantity (i).

(i) Maxim of Quantity
1. Make your contribution as informative as required (for the current purposes of the exchange.)
2. Do not make your contribution more informative than is required.

According to the first submaxim, speakers should make their contribution as informative as possible. Therefore, if there are stronger propositions higher on a scale of alternative propositions that could have been expressed truthfully, then one of these should have been asserted. If none of these is asserted, then an inference can arise that these stronger propositions were not asserted because they are false.

Throughout this thesis I do not adopt an explicit formal mechanism of implicature generation. Since I do not deal with very complex cases, I do not believe this affects the soundness of my claims. I leave formalizing this aspect of my theory to future work.

> Asserting **pass**(m) will implicate, for instance, the negation of **pass**($m \oplus p$). **pass**($m \oplus p$) is false exactly if **pass**(m) is false or **pass**(p) is false. Thus if **pass**(m) is true and **pass**($m \oplus p$) is false, **pass**(p) must be false. So, asserting that Mats passed implicates that Paul did not pass. We could reason in the same way about Steve.

Rooth's treatment of the default exclusive reading of free focus is pragmatic, relying on a scalar implicature. Consequently, one predicts that this implicature should be defeasible in the right context.

This brings us to a second way in which focal contrast can be used correctively – to cancel a scalar implicature. This comes about when a speaker does not aim to contradict another speaker by asserting an alternative proposition, but merely wants to add more information lest the alternative asserted by their fellow be taken as the whole truth and consequently give rise to a quantity implicature. Typically, using focus to cancel a scalar implicature requires the addition of an additive particle such as *also* or *too* (see also Horn 1989).[25]

(49) A: $[\text{Mats}]_F$ passed the test.
B: $[\text{Paul}]_F$ also passed the test.

Here B's assertion undermines the quantity implicature generated by A's statement, but it does not contradict the content of what A asserted. The existential presupposition of *also* is satisfied if there is a true salient alternative. In this case, this true presupposed alternative is the proposition expressed by A.[26]

With emphatic NPIs, the corrective force is not contradictory. In the cases discussed in (28) and (32), the emphatic *ANY* is used when there is another weaker alternative in the discourse. Since the alternatives are ranked on a scale it is reasonable to conclude that emphatic NPIs are used to cancel scalar implicatures. I believe this implicature cancellation is the root of the counter-to-expectation effect which is an important part of "emphasis". This is also proposed by Kay (1990: 93). This is the claim I would like to make, but first I must address a potential problem for this proposal – namely, whether there is even a scalar implicature to be cancelled.

2.2.3.2 Conversational implicatures in downward entailing environments

The problem is that polarity environments and environments supporting scalar implicatures are generally acknowledged to be in complementary distribution (Chierchia 2001). If scalar implicatures do not arise in downward entailing environments, how could a scalar implicature be cancelled? To illustrate this problem, I will discuss examples using numerals. Numerals such as *two, three, four* are placed on a scale and are informationally ranked with

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[25] Another way to cancel the quantity implicature is to assert a proposition containing a conjunction. In this case, focus on *and* is natural.

(i) Mats AND Paul passed the quiz.

[26] Incidentally, there is still the implicature in this example that Steve didn't pass the quiz. So, cancelling one scalar implicature doesn't mean that no scalar implicature at all is generated.

respect to each other. Normally, when a sentence like (50)a is uttered, a quantity implicature arises that negates stronger propositions. Consequently, (50)a conversationally implicates (50)b.

(50) a. John has two kids.
b. It is not the case that John has three kids.

Scalar implicatures negate more informative yet unasserted alternative propositions on a scale. In the case of (50), the relevant portion of the scale in question is given below. The asserted value is underlined and the more informative unasserted alternative has been crossed out to illustrate scalar implicature at work.

(51) <~~John has three kids~~, John has two kids>

The proposition "John has three kids" asymmetrically entails the lower ranked less informative proposition "John has two kids". In this example, a higher ranked member of the scale is more informative.

Now, if scalar implicatures as normally understood did arise in downward entailing environments, then it is predicted that (52)a below would conversationally implicate (52)b, which is truth conditionally equivalent to (52)c.

(52) a. It is not the case that John has two kids.
b. It is not the case that it is not the case that John has three kids.
c. John has three kids.

Of course, such an implicature does not arise, and the absence of the implicature is predicted by the standard theory as follows.

In the case of a negated scale, the direction of informational strength is inverted. Consequently, on a negative scale *lower* ranked elements are informationally stronger because they asymmetrically entail higher members.[27] The reason why (52)a does not implicate (52)b is because this would be an example of a scalar implicature ruling out a weaker unasserted alternative value. This is schematized below.

(53) !!<John does not have two kids, ~~John does not have three kids~~>

This results in a contradiction. It is impossible for John to simultaneously not have two kids but still have three kids.[28] This result is happily not predicted. The Maxim of Quantity is concerned with informational strength. Scalar implicatures negate informationally stronger alternatives.

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[27] That is, what was low on a scale in a positive environment becomes high on the scale when it is reversed in a negative environment.

[28] One might protest that (52)a is compatible with John having three kids. I assume that this would only be possible if the negation in (52)a were not taken as truth conditional descriptive negation, but as metalinguistic negation (Horn 1989). In this case, it would not be any part of the truth conditions of (52)a which were being negated, but rather the scalar implicature itself arising from the numeral *two*. This sort of example is irrelevant for the present discussion.

Interestingly, there is a different strain of scalar implicature that arises in downward entailing environments. Chierchia (2001) discusses this second kind of weaker, yet detectable scalar implicature and calls them *indirect scalar implicatures,* to distinguish them from *direct scalar implicatures* which have so far been under discussion.[29] Consider the sentence in (54)a, which implicates (54)b.

(54) a. John can't eat three hotdogs at once.
b. John can eat two hotdogs at once.

Here, the negative sentence containing a numeral *three* (54)a gives rise to a *positive* implicature involving the immediately lower numeral *two* (54)b. This too is a species of scalar implicature. As mentioned just above, in downward entailing environments the strength of scales is reversed and therefore what were lower values on non-reversed scales are informationally stronger. Since the Maxim of Quantity is only concerned with informational strength, all propositions stronger than the asserted proposition are negated. This is schematized in (55).

(55) <~~John can't eat two hotdogs~~, John can't eat three hotdogs, John can't eat four hotdogs>

A scalar implicature which negates a stronger value will negate what was a *lower* value when the scale was non-reversed. Negating an element on a negative scale results in double negation. Hence, the positive implicature ("It is not the case that John can't eat two hotdogs" = "John can eat two hotdogs").

Although Chierchia does not discuss it, additional support that this inference should be treated as a type of scalar implicature comes from the use of *even* to cancel or suspend the implicature. As discussed by Horn (1972, 1989), the use of *even* is a very typical strategy employed in scalar implicature cancellation.[30] For instance, A's assertion in (56) very likely licenses a direct scalar implicature that "John cannot eat more than six hotdogs at once".[31]

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[29] There is in fact nothing indirect about these scalar implicatures. This is merely a useful label to distinguish the sort of scalar implicature that arises on a reversed scale. As should be clear, these are fundamentally run-of-the-mill conversational scalar implicatures which are completely expected according to the Maxim of Quantity.

[30] The role to *even* will become very prominent in my analysis as of Section 2.2.3.4. For now, it is enough to know that it is used to cancel or suspend implicatures.

Horn (1972, 1989) distinguishes expressions (syntactic frames) which *suspend* implicatures versus those which *cancel/block* implicatures. An implicature is suspended "if the speaker is explicitly leaving open the possibility that a higher value on the relevant scale obtains, with the suggestion that his or her knowledge of the actual state of affairs is incomplete" (Horn 1989: 235). Cancelling/blocking on the other hand takes place when the speaker indicates that they in fact have firm knowledge that a higher value on a scale obtains. In Horn's discussion, *even* appears in the frame "X {or/and possibly} even Y" and is counted as an implicature suspender. If {or/and possibly} were not present, I am not sure if he would treat *even* as a suspender or canceller, especially given that it can equally appear with *in fact* which he treats as a cancellation frame (as in "in fact even Y"). For the sake of this dissertation, I will assume that *even* is in fact an implicature canceller.

[31] If A had asked a question "Can John eat six hotdogs at once?" and B responded positively a scalar implicature would not be obligatorily generated in this example. In this case the yes/no question narrows down the true propositions to the alternatives in the set {He can eat six, He can not eat six}. This set of alternatives may eclipse the set of alternatives involving alternative numerals, and hence the scalar implicature may not arise. See van Kuppevelt (1996) for more discussion of how the nature of the question under discussion may limit whether a scalar implicature is generated, a phenomenon he calls *topic weakening.*

Speaker B immediately puts down any such direct scalar implicature by adding that "John can even eat seven hotdogs". In this environment, the additive particle *even* is used to cancel a scalar implicature similar to *also* in (49).

(56) A: John can eat six hotdogs at once.
($\approx>_{direct\ implicature}$ "John cannot eat more than six hotdogs at once.")
B: He can even eat seven.

Interestingly, *even* can similarly be used to cancel an indirect scalar implicature. This is demonstrated in (57) below.

(57) A: John can't eat three hotdogs at once.
($\approx>_{indirect\ implicature}$ "John can eat two hotdogs at once.")
B: In fact, John can't even eat two.

A's assertion in (57) "John can't eat three hotdogs" gives rise to the indirect implicature that "John can eat two hotdogs". So, when B asserts "John can't even eat two" in (57), he is actually cancelling an implicature. In this case, the additive particle *even* is very appropriate. Since this example is totally parallel to (56) where a regular direct scalar implicature is being cancelled by *even*, it constitutes supporting evidence for Chierchia's claim that an indirect scalar implicature is actually being generated here too.

2.2.3.3 Widening as scalar implicature cancellation

Returning to the discussion of emphatic *ANY*, it is straightforward to see that a scalar implicature is being cancelled in the example where the alternatives involve other lexical determiners. This example is repeated here in (58).

(58) A: Anderson's other duties are threatening to interfere with his new case. I hear Anderson still hasn't spoken to many people.
$\approx>_{indirect\ implicature}$ "Anderson has spoken to somebody."
B: He's in more trouble than that. Anderson hasn't spoken to ANYbody.

Detective A uses a quantifier *many* in a negative environment. This quantifier can be placed on a negative scale. Since there is a stronger alternative on the scale that is not asserted, one involving a negated existential quantifier *any*, a scalar implicature may arise that negates this stronger alternative. This results in a double negation and the inference "Anderson has spoken to somebody" arises.

(59) <~~Anderson hasn't spoken to anybody~~, Anderson hasn't spoken to many people>

By asserting the stronger value *Anderson hasn't spoken to ANYbody* in (58), Detective B is not contradicting Detective A, but is merely cancelling the indirect implicature that results from Detective A not using the strongest quantifier on a negative scale. This is schematized in (60).

(60) <Anderson hasn't spoken to anybody, Anderson hasn't spoken to many people>

More novelly, I am claiming that the same thing happens when the alternatives involve different resource domain indexings and that this cancellation of an indirect scalar implicature accounts for the widening phenomenon. The earlier example from (32) is repeated here in (61).

(61) a. A: I heard Anderson has a new case. How is it going?
b. B: There's not much to say. Anderson hasn't spoken to any_{C8}-body yet.
c. A: Well, does he have any leads based on what the victim had to tell him?
d. B: Anderson hasn't spoken to *ANY_{C8}-body*. Rogers was initially given the case but it was reassigned to Anderson only this morning.

This is a trickier example than the previous one since the scale of alternative resource domains is not given a priori like the logical scale of lexical determiners. Rather, context supplies alternative ways in which the quantifier is restricted, but which alternatives are salient only becomes apparent as the discourse progresses.[32]

Intuitively, what is happening is that Detective A misinterprets which resource domain indexing is on the determiner *any*. Although Detective B intended to use C_8, clearly from Detective A's follow up question this was not understood – because otherwise his question in (61)c would be nonsensical, or at the very least extremely uncooperative. We can say that Detective A has almost the same resource domain in mind, except that it does not include the victim. These resource domains are repeated here in (62).

(62) Detective A is thinking of C_7: $[[C_7]] = \{x \mid x \text{ is a witness, a suspect}\}$
Detective B is thinking of C_8: $[[C_8]] = \{x \mid x \text{ is a victim, a witness, a suspect}\}$
note that $[[C_7]] \subseteq [[C_8]]$

The scale does not play much of a meaningful role in this particular discourse until Detective B's response to A's question in (61)d. As discussed when this example was originally introduced in (32), it is Detective A's asking about the victim that prompts Detective B's use of emphatic *ANY* in (61)d. Since focus is on the determiner, the salient alternative propositions that are in the set denoted by the focus anaphor C^{FOC} must vary for substitutions of the determiner. Consequently, we know that the value of C^{FOC} is as in (63), repeated from (36).

(63) $[[C^{FOC}]] = \{\neg[(any_{C8}(\{x \mid x \text{ is a person}\})(\{x \mid a \text{ spoke to } x\})],$
$\neg[(any_{C7}(\{x \mid x \text{ is a person}\})(\{x \mid a \text{ spoke to } x\})]\}$

These alternatives are informationally ordered with respect to each other. In (61)d, Detective B is asserting the stronger of the two on the following scale.

[32] As will be seen later, the use of additive particles in this sort of discourse makes these implicatures much sharper since in some sense the implicatures themselves become under discussion as the interlocutors try to agree on the domain of quantification. However, since this is in some sense the most bare bones type of example, I start with it.

(64) <Anderson hasn't spoken to any$_{C8}$-body, Anderson hasn't spoken to any$_{C7}$-body >

This is the same configuration as the implicature cancellation in (60).[33]

Upon hearing Detective B essentially repeating himself, but using emphatic focus on the determiner rather than directly answering his question, Detective A is going to try and figure out what Detective B is getting at. His assumption will be that Detective B is being informative, and not simply repeating himself. Following the discussion of (49), Detective A knows that focus is used to cancel scalar implicatures, and when he looks for a salient alternative in context he will understand that the alternative has something to do with his question about the victim. He knows that by asking his question in (61)c he was acting as if the domain C_7 were under discussion. Now it will be clear to Detective A that the victim is included in the resource domain Detective B has in mind, so Detective B must be talking about C_8.

The troublesome scalar implicature which is cancelled by (64) is the one in (65).

(65) <~~Anderson hasn't spoken to any$_{C8}$-body~~, Anderson hasn't spoken to any$_{C7}$-body >

This implicature is that Anderson did speak to somebody in C_8, but this was not anybody in C_7. In other words, Anderson spoke to victims.

There are a number of reasons why one would want to adopt this position. The first is that this allows full symmetry with examples involving lexical determiners as alternatives, where I think it is much less controversial that a scalar implicature has been generated. A second piece of evidence supporting this approach is that overt restrictions on quantifiers give rise to such scalar implicatures, so we should expect exactly the same implicatures with covert restrictions. An example of a scalar implicature arising from an overt restriction is given below.

(66) Anderson hasn't spoken to any suspects yet.
$\approx>_{\textit{indirect implicature}}$ "Anderson has spoken to some witnesses."

In a normal police investigation, I presume that suspects are normally interviewed only after the investigator has developed a list of suspects based on statements compiled from the witnesses and victims. If somebody answers (66) to an inquiry about Anderson's progress on his case, I think it is fair to say that it will be understood that Anderson has done some work that would get him to the point of speaking to suspects. This work crucially involves speaking to witnesses. Consequently, the following scalar implicature will be generated.

(67) <~~Anderson hasn't spoken to any witnesses~~, Anderson hasn't spoken to any suspects>

The final argument I will present in favour of a scalar implicature is that the same linguistic devices that can be used to cancel scalar implicatures can also be used with NPIs. The one of particular interest here is the use of the additive particle *even*. As mentioned in relation to (57), *even* is used in a frame where a scalar implicature is being cancelled. A few

[33] The implicature is that Anderson spoke to somebody in C_8 who is not in C_7, namely victims. See (65) below.

more examples involving direct and indirect implicatures are given here. The b′ examples demonstrate that *even* cannot be used when no implicature is cancelled, which we will see in 2.2.3.4 is a consequence of *even*'s presuppositions.

(68) a. John can eat six hotdogs at once.
≈>*direct implicature* "John can't eat seven hotdogs at once."
b. Jane told me that she once saw him even eat seven!
b′. # Jane told me that she once saw him even eat five!

(69) a. Jane can't eat three hotdogs at once.
≈>*indirect implicature* "Jane can eat two hotdogs at once."
b. In fact, I have never seen her even eat two.
b′. # In fact, I have never seen her even eat four.

Going back to the example that began this discussion, Detective B could have avoided all the confusion if he had added a tag with *even* embedded in it.

(70) A: I heard Anderson has a new case. How is it going?
B: There's not much to say. Anderson hasn't spoken to any$_{C8}$-body yet.
Not even the victim.

Here, Detective B adds *not even the victim* because he knows that Detective A will likely think that Anderson has at least done that much since the case is already a week old. By saying *not even the victim*, Detective B is essentially explicitly stating the extent of the generalization he is making.[34] I think it is reasonable to also claim that he is signalling the possibility that the domain of the quantifier *any* may well not have included *the victim*. That is, he acknowledges the possibility that context might have determined a default resource domain C_7, in which victims are not included, and he is explicitly precluding this more limited construal.

2.2.3.4 Additive particles and domain negotiation

One of the goals of this study is to come to an understanding of why additive particles are so often used with emphatic negative polarity items crosslinguistically. The answer that I am

[34] Barker (1991: 10-11) has a very useful insight into the use of *even* to help fix the extent of quantificational generalizations. He gives the following discussion:

> Quantifier phrases in English are inevitably used in a restricted sense where the extent of the restriction is vague and context dependent and, consequently, sometimes not clear. Now, extreme instances suggest the extent of generalizations... So by using a word that signals the extremeness of a proposed instance, namely *even*, we indicate, or can inquire about, the particular restriction on the quantifier concerned. Someone asserts *Everyone from school was at the party*. But are we to take this to mean everyone went or just the usual party goers or those from our circle of friends. The inquiry *What even Alceste?* may arise to establish which of these alternatives is intended. Or, *Even Alceste* may be tagged on to the original statement to confirm that we mean literally everyone.

proposing is that emphatic NPIs are used to cancel indirect scalar implicatures, and that this is also one of the natural uses of additive particles. Furthermore, additive particles are used to negotiate the extent of generalizations and can be regarded as tools for probing the limits of the domain of quantification. Consequently they are ideal in discourses in which widening of the domain of quantification is under consideration.

To begin, I will clarify the two different ways in which the focus associated with an additive particle may relate to the scalar implicature that is being cancelled. In the first type of example the relevant scalar implicature is generated from a scale populated by elements of the same type as the focus associated with *even*. This is the best known type of scalar implicature cancellation. In (71), the focus is the numeral *one*.

(71) Anderson hasn't even spoken to *one* witness.

The relevant scale of alternatives in this example is a scale of numerals.

(72) <Anderson hasn't spoken to one witness, Anderson hasn't spoken to two witnesses >

In the second type of example, the scalar implicature which is being cancelled is generated on a scale of a different type from the focus associated with *even*. This is the sort of example I discussed in (70), excerpted here in (73). In this example, *even* is associated with a focus which is a full DP of type e which refers to an individual, namely *the victim*. However, the scale which generates the implicature in the first place varies in terms of determiners of type <<e,t>,<<e,t>,t>>, with different resource domain indexings.

(73) Anderson hasn't spoken to any$_{C8}$-body, not even the victim.

(74) <Anderson hasn't spoken to any$_{C8}$-body, Anderson hasn't spoken to any$_{C7}$-body >

In this example, the focussed item *the victim* is not of type <<e,t>,<<e,t>,t>>. However, *the victim* is the very individual in C_8 which is not in C_7, and in some sense this expression of type e can stand in for or express indirectly the domain of which it is a member. Although focal alternatives are propositions,[35] the set of salient alternative propositions in C^{FOC} differ in which individual from C_8 is substituted in place of the focussed phrase. Therefore the membership of the set C_8 can be inferred from the set of salient focal alternatives by collecting these alternative individuals. The set of unasserted focal alternatives together can be used to derive C_7 in a parallel way.[36]

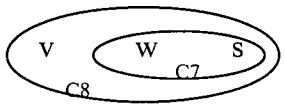
(75) <Anderson hasn't spoken to the victim(s),
Anderson hasn't spoken to the witness(es), } infer C_7 } infer C_8
Anderson hasn't spoken to the suspect(s)> }

[35] The second clause in (73) is elliptical, therefore we can discuss it as if it were a proposition with alternatives which are also propositions.

[36] I am not suggesting that somehow focus determines the resource domain here in any direct way, but merely that one can infer the resource domain from the set of salient focal alternatives in the focus anaphor C^{FOC}.

The uncontroversial generalization encoded in the first clause of (73) is that Anderson hasn't spoken to anybody in C_7, which includes witnesses and suspects.[37] This means that all the unasserted salient focal alternatives in (75) (of the second clause "not even the victim") are true. C_7 is a subset of C_8, which minimally differs from C_7 in that it also includes the victim. By saying "not even the victim" the speaker instantiates C_8. The following diagram is meant to highlight how simple it would be to instantiate C_8 with *the victim*, since all the members of C_7 are presupposed and $[[C_8]] - [[C_7]] = \{\text{the victim}\}$.

(76)



The particle *even* is used to mark the boundary of a generalization by staking out the extreme individual within a domain of quantification.

Although most of the examples involving NPIs involve the scalar additive particle *even*, non-scalar additive particles like *also* and *too* are also used to cancel scalar implicatures. This was demonstrated in (49) repeated in (77).

(77) A: $[\text{Mats}]_F$ passed the test.
B: $[\text{Paul}]_F$ also passed the test.

What all additive particles have in common is that they do not affect the truth conditions of a sentence, but merely indicate an existential presupposition that there is another alternative in the set of salient alternatives that is true. In the case of (77)B, this sentence asserts (78)a and presupposes (78)b. The salient alternatives in C^{FOC} are given in (79).

(78) a. As: $[[\text{Paul passed the test}]]^o = \text{pass(p)}$
b. Ps: $\exists q[q \in C^{FOC} \wedge q \neq \text{pass(p)} \wedge q = 1]$

(79) $[[C^{FOC}]] = \{\text{pass(m)}, \text{pass(p)}, \text{pass(s)}\}$

The existential presupposition of the additive particle ensures that Speaker B's assertion is not construed as a contradiction.

Scalar additive particles like *even* are normally taken to have a second scalar presupposition that the asserted proposition is the least likely of all the alternatives in C^{FOC} (Karttunen and Peters 1979). Kay (1990) recasts this scalar presupposition in terms of informativity. For Kay, the proposition in which *even* occurs is more informative than some presupposed proposition in context.[38] To take one of his examples, he argues that in (80)B *even* can be used felicitously in a context in which nothing is inferred regarding the likelihood either George or Bill likes Mary's work. Rather, that the president of the company likes her work is more informative in that it indicates a higher level of Mary's success within the company than if she merely is admired by the second vice president.

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[37] Although the speaker actually uses indexing C_8 on *any*, he knows that this is controversial and it is very likely or possible that the sentence may be construed as if *any* has the less controversial C_7 indexing.

[38] Kay uses somewhat different terminology. He calls the asserted proposition the *text proposition*, the presupposed proposition the *context proposition*.

(80) A: It looks as if Mary is doing well at Consolidated Widget. George [the second vice president] likes her work.
B: That's nothing. Even Bill [the president] likes her work.

Kay relates this notion of informativity directly to the Gricean notion of informativity that is relevant for the Maxim of Quantity. Sentences with *even* are "stronger" and asymmetrically pragmatically entail some other proposition provided by context. Kay also makes the observation that any expectation violation found in sentences with *even* is due to the cancellation of a quantity implicature arising from the presupposed proposition.

Kay's treatment of *even* is insightful and foreshadows many of the conclusions that I am arguing for here. The use of *even* in cancelling scalar implicatures is not merely a by-product of its meaning. I think on some very broad communicative level the function of cancelling scalar implicatures is a core part of its "meaning".[39] Consequently I agree with Kay that the scalar presupposition of *even* must be phrased in a way that matches up with the Gricean notion of informativity.[40]

The presuppositions I am assuming for *even* as used in (81) are given in (82).[41]

(81) Even Bill likes her work.

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[39] Similarly, I believe a core part of the "meaning" of exclusive particles like *only* and *just* is to bolster scalar implicatures by replicating them as entailments. For instance, the example in (i) has the truth conditions in (ii).

(i) Bill ate just one hot dog.
(ii) $\neg\exists q[q \in C^{FOC} \wedge q = 1 \wedge [\,|[\{x \mid x \text{ is a hotdog}\} \cap \{x \mid b \text{ ate } x\}]| \geq 1] <_{\text{informative}} q]$

Assuming the alternatives involve substitutions for the value of the numeral, these truth conditions simulate the content of the scalar implicature in (iii), which would have arisen were *just* not present.

(iii) <~~Bill ate two hot dogs~~, Bill ate one hot dog>

See Section 3.5 for related discussion.

[40] Informativity cannot be reduced simply to entailment, since in many cases the alternative propositions do not stand in an entailment relation to each other. Therefore, *even* is also sensitive to pragmatic informativity. Establishing pragmatic strength is dependent on establishing scales on which pragmatic information determines the ordering relation. An example of such a pragmatically ordered scale is the one salient in example (80). Independently of whether a presupposition is being satisfied, the scale of alternative propositions underlying the use of *even* here is given in (i).

(i) <Bill likes Mary's work, George likes Mary's work, Barbara likes Mary's work>

The strongest proposition is "Bill likes Mary's work". This is the most informative/strongest, because the more powerful the individual that likes Mary's work, the more successful Mary is likely to be in a certain organization. Bill is the president of the company and hence he is a powerful individual. But note that, although "Bill likes Mary's work" is the most informative, it does not entail that "Barbara likes Mary's work", where Barbara is a less-powerful individual like the office manager. Therefore strength does not reduce to logical entailment in this case. See Fauconnier (1975b) for further discussion of pragmatic strength.

[41] I continue to phrase the scalar presupposition such that *all* alternatives are less informative. This scalar endpoint treatment of *even* was shown to be insufficient by Kay (1990), who showed that it is not always the case that absolutely all of the alternatives be less informative. It is more standard in the literature to treat *even* as scalar endpoint and adopting Kay's innovative insight does not add to my analysis.

(82) a. As: $[[\text{Bill likes her work}]]^{o} = \text{like(b,work)}$

b. Ps: $\exists q[q \in C^{FOC} \wedge q \neq \text{like(b,work)} \wedge q = 1]$

c. Ps: $\forall q[[q \in C^{FOC} \wedge q \neq \text{like(b,work)} \rightarrow q <_{\text{informative}} \text{like(b,work)}]$

That the ability to cancel scalar implicatures is an important characteristic of additive particles is supported by the observation that, when focus is used to cancel a scalar implicature, the presence of such a particle is almost obligatory. That is, the additive particle is obligatory lest the sentence be understood as contradicting some other proposition in discourse.[42] This is especially the case where the scale in question is not conventional, as in the partially ordered scale of propositions expressing which individuals passed the quiz in (77). In the case of conventional scales, an additive particle seems to be more optional.[43] For instance, in (83) B's utterance is logically not contradictory to A's statement, so there is less of a need to explicitly indicate that this is merely an act of scalar implicature cancellation by using the particle *even*.

(83) A: John can eat six hotdogs.
B: He can (even) eat *SEVEN*.

This raises the question of why additive particles cannot felicitously be used with emphatic *ANY*. If emphatic *ANY* really is used to cancel an indirect scalar implicature, then the prediction is that additive particles should be able to associate with it. This is not the case.

(84) Anderson hasn't spoken to *even/*also *ANY*body /*too

I think this is really an English specific issue resulting from categorial restrictions on what syntactic category additive particles may associate with. As seen earlier in this chapter in the data in (12)-(15), the Hindi additive particle *bhii* may associate with indefinite pronouns in this language in a way not possible in English. I discuss a similar pattern in Cantonese in Section 2.4.

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[42] Additive particles are almost obligatory in many instances of ellipsis, as in (i) below.

(i) John ate hotdogs, and Mary did *(too).

A possible explanation is that without the additive particle it sounds like the speaker is contradicting himself by first asserting John ate hotdogs and then asserting Mary did. With no existential presupposition signalled by the additive particle, it sounds like Mary ate hotdogs instead of John and so this sounds very uncooperative. Thanks to Irene Heim for pointing out this type of example.

[43] Note that when the scale is conventional, like the logical scale of numerals, it is more normal to use *even* rather than *also/too*. For instance, *even* sounds natural in (i) whereas *also* is quite marginal (ii).

(i) John can eat six hotdogs. In fact, he can even eat seven!
(ii) #John can eat six hotdogs. In fact, he can also eat seven!

This particular difference between *even* and *also/too* probably reflects the fact that *even* is more normally used with fully ordered scales and *also/too* with partially ordered ones, as in (49). I believe this different affinity for fully ordered versus partially ordered scales corresponds to the additional scalar presupposition found with *even* but not *also/too*.

2.2.3.5 Heim (1984) and Rullmann (1996) on *even* and *any*

In this section I discuss previous work by Heim (1984) and Rullmann (1996), who both argue that English *any* cannot be treated as an indefinite determiner incorporating the semantics of *even*, as proposed by Lee and Horn (1994). As will be shown below, their arguments really only apply to non-emphatic *any*, which I also do not believe incorporates the semantics of *even*, but do not apply to emphatic *ANY*. Consequently, these works do not furnish any arguments against the analysis I have developed in this chapter.

According to Rullmann, Lee and Horn analyze NPI *any* as an indefinite occupying an extreme value on a quantity scale. This is illustrated by the paraphrase in (85) (Rullmann 1996: 336 (3)).[44]

(85) John doesn't know any lawyers = John doesn't know even a single lawyer.

Rullmann argues this is undesirable because *any* is neither focus sensitive, in that it does not associate with a focus somewhere else in the sentence, nor is it scalar. That it is not focus sensitive can be shown in the following pair of examples.

(86) No one has read any COMIC books.

(87) No one has read even a COMIC book.

In (87) there is a scalar presupposition that "No one read a comic book" is less likely than some other proposition like "No one read a novel".[45] In (86) there is no such scalar presupposition, but focus on *COMIC* is merely contrastive. Rullmann argues that this is evidence that *any* is not focus sensitive and scalar like *even*.

Rullmann contrasts the English case with two types of emphatic NPIs in Dutch, which he calls *even*-NPIs and *wh*-NPIs. *Even*-NPIs incorporate a particle complex *ook maar* which means "even$_{NPI}$" and *wh*-NPIs are built up out of *wh*-words[46] and do not incorporate *even*. Rullmann identifies a number of empirical differences which he argues derive from the scalar and focus-sensitive semantics of *even* found in *even*-NPIs but lacking in *wh*-NPIs. This potentially poses a problem for the assumptions and arguments I have made concerning emphatic *ANY* in English if in fact it is neither scalar nor focus-sensitive. As seen below, emphatic *ANY* can be adequately translated with either the *even*-NPI in (b) or the *wh*-NPI in (c).[47]

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[44] I have not seen the unpublished Lee and Horn manuscript which is discussed here, so I am relying on how it is reported by Rullmann (1996) and Lahiri (1998).

[45] I am simply following Rullmann's exposition, and he adopts the likelihood theory of the presupposition of *even*. It is important to bear in mind that Rullmann does recognize that emphatic *ANY* and *any* do have very different properties, but since he is concerned with challenging the particular theory of Lee and Horn, most of his discussion is aimed at showing how non-emphatic *any* cannot simply be treated as an indefinite determiner incorporating *even*. My goal is not to dispute Rullmann's challenge of Lee and Horn, but simply to clarify that his critique does not erode my own analysis of emphatic *ANY*.

[46] *Wh*-NPIs typically include a particle complex *dan ook* "then also" which Rullmann argues is a diachronic residue left over from the process of grammaticalization of these forms originally from subordinate clauses.

[47] Non-emphatic *any* can be captured in Dutch by using a polarity neutral indefinite pronoun *iets* that can also be used to translate *something*.

(88)	a.	English:	Did he drink ANYTHING?				
	b.	Dutch:	Heeft	hij	ook maar	iets	gedronken?
			has	he	$even_{NPI}$	any/something	drank
	c.	Dutch:	Heeft	hij	wat dan ook	gedronken?	
			has	he	what prt prt	drank	Rullmann 1996:349

I think that there is enough space in Haspelmath's characterization of emphatic NPIs as focussed and scalar, which I have adopted, to accommodate these subtypes from Dutch. To show this, I will now introduce some of the empirical differences that Rullmann cites between *even*-NPIs and *wh*-NPIs and then discuss how to account for them. First, Rullmann notes that the interpretation of *even*-NPIs is dependent on the placement of prosodic focus which he takes as evidence that they are focus sensitive. Note that the particle complex corresponding to "$even_{NPI}$" is *ook maar*.

(89)	a.	Niemand	heeft	ook maar	EEN	stripboek	gelezen.
		no one	has	$even_{NPI}$	ONE	comic book	read
		'No one has read even ONE comic book.'					
	b.	Niemand	heeft	ook maar	een	STRIPBOEK	gelezen.
		no one	has	$even_{NPI}$	one	COMIC BOOK	read
		'No one has read even a COMIC BOOK.'				Rullmann 1996:340 (22-23)	

In (89)a the numeral *een* "one" is focussed. The sentence conveys that "No one has read one comic book" and that this is less likely than alternative propositions of the form "No one has read X comic book". For example, these alternatives might be in the set{No one has read two comic books, No one has read three comic books}. In (89)b, the common noun *stripboek* "comic book" is focussed, and the sentence conveys "No one has read a comic book" and that this is less likely than alternative propositions of the form "No one has read a X". For example, alternatives from the set {No one has read an article, No one has read a novel}. In short, these sentences mean exactly what we expect if *even*-NPIs are focus sensitive and scalar.

Wh-NPIs are not clearly either focus sensitive or scalar. In sentences with *wh*-NPIs, Rullmann reports that focal stress anywhere other than the wh-word is marginal. Insomuch as it is possible, it conveys contrast but not that there is a scalar presupposition as one witnessed with *even*-NPIs in (89)(a-b), where there were clear association with focus effects. An example is given in (90) below.

(i)	English: Did he DRINK anything?					
(ii)	English: Did he DRINK something?					
(iii)	Dutch:	Heeft	hij	iets	gedronken?	
		has	he	any/something	drunk	Rullmann 1996:349

Note that I supplied the interlinear gloss for the Dutch in (88) and in (iii) above based on Rullmann's discussion.

(90) Niemand heeft welk stripboek dan ook gelezen.
no one has which comic book prt prt read
'No one has read any comic book.' Rullmann 1996:341 (25)

A second empirical difference he observes has to do with the use of these NPIs in the antecedent of conditionals with numerals greater than *one*. An example containing an *even*-NPI is given in (91), and a parallel example containing a *wh*-NPI in (92).

(91) Als ook maar TWEE studenten dit probleem uitkiezen,
if even$_{NPI}$ TWO students this problem choose
ben ik tevreden.
am I satisfied.
'If even (only) TWO students choose this problem, I'm satisfied.'
Rullmann 1996:341 (27)

(92) Als welke twee studenten dan ook dit probleem uitkiezen,
if which two students prt prt this problem choose
ben ik tevreden.
am I satisfied.
'If any (group of) two students choose this problem, I'm satisfied.'
Rullmann 1996:341 (28)

In (91), the *even*-NPI is used with focus on the numeral *twee* "two". This sentence conveys that the speaker is less likely to be satisfied "if two students solve this problem" than "if *n* students solve this problem" for other numerals *n* greater than two. In (92), by contrast, there is no inference about higher numerals than two. Instead it is a statement about arbitrary pairs of students and the *wh*-NPI serves to signal it is immaterial which two are chosen.[48]

As I said, I think it is still possible to treat both types as emphatic NPIs, as would be suggested by their ability to translate as emphatic *ANY* as in (88). Starting with the focus issue, although *wh*-NPIs are not focus sensitive, in that they cannot associate with a focus within the indefinite to which they function as a determiner, they themselves must receive prominent stress and are focussed. So in both the case of *even*-NPIs and *wh*-NPIs, it is the case that within the larger indefinite that is functioning as an NPI, some subconstituent within it is focussed. As for the scalarity issue, I think the contrast between (91) and (92) is derivative from the fact that the *wh*-word must be focussed, and so the contrast within the sentence is not on the scalar numeral itself.[49] However, that does not mean that no scalarity is present in (92). From Rullmann's discussion, it seems that this use of the *wh*-NPI is a type of widening that has more to do with the domain of students than the scale of numerals. If widening the domain of quantification can be considered a scalar operation, as I have argued for throughout this chapter, then this example involves scalarity.

[48] Rullmann provides the following context, suggested to him by Paul Portner, to explicate this reading: "It could be used for instance by a professor who assigns a set of homework from which each student has to choose one, but who hopes that one particular problem is chosen by two students (it doesn't matter which ones), so that they can compare answers." (Rullmann 1996: 341-342)

[49] The third empirical difference that Rullmann cites, that *even*-NPIs can be used with minimizers but *wh*-NPIs cannot, is also due to the fact that in a *wh*-NPI focus must be on the *wh*-item itself.

Returning to the discussion of English, I agree with Rullmann's judgements in (86) that *any* is not focus sensitive, but as should be clear, this does not undermine my position. I agree that non-emphatic *any* does not involve focus. But the important point to bear in mind with emphatic *ANY*, like in (93), is that the focus is on the determiner itself. Although *ANY* is not focus *sensitive* in the sense that it can associate with other foci, it is itself focussed. Therefore, emphatic *ANY* behaves more like a *wh*-NPI in Dutch.

(93) No one has read ANY comic books.

As for scalarity, again I think this depends on if we are talking about non-emphatic or emphatic *ANY* and also which scale we are considering. If one is thinking about a scale of numerals, it might seem as if *even* is clearly scalar in a way that *ANY* cannot be, as (94) carries scalar presuppositions involving the scale of numerals not present in (95).

(94) No one has read even ONE comic book.

(95) No one has read ANY one comic book.

This is because *ANY* is not focus sensitive. Since it cannot associate with *one*, the scale of numerals will not be highlighted by focus. But as pointed out, *ANY* is scalar if the widening effect is analyzed as involving a scale of resource domains. Once again, *ANY* functions more like a *wh*-NPI than an *even*-NPI in Dutch, although I would argue in both cases the semantics of *even* is crucial.

Heim also provides evidence against treating all instances of *any* as incorporating an inherent *even*. She argues that there is a difference between *any* and NPIs incorporating an inherent *even* like minimizers such as *(even) a single* in that *any* can be used to express accidental generalizations, but *even* incorporating minimizers cannot. In (96)a, the NPI *any* is used in the restriction of a universal quantifier. This sentence expresses a non-accidental generalization. There is a causal relation between the restriction and the nuclear scope of the quantifier here – individuals got sick because they ate anything. In (96)b, *any* is once again used in the restriction of *every*, but in this case the sentence expresses an accidental generalization since there is no causal relationship between the fact that people ate anything and the fact they were wearing blue jeans.

(96) a. Everyone who ate anything got sick.
b. Everyone who ate anything was actually wearing blue jeans.

The parallel sentences with an *even*-incorporating minimizer display a different pattern of grammaticality. Although a minimizer may be used in the restriction of a universal quantifier when the sentence expresses a non-accidental generalization, as in (97)a, it may not be used if the sentence expresses a purely accidental generalization as in (97)b.

(97) a. Everyone who ate (even) a single bite got sick.
b. # Everyone who ate (even) a single bite was actually wearing blue jeans.

Heim finds this contrast is due to the scalar presuppositions of *even*, which she argues is implicitly built into the semantics of minimizers. In the real world, people can get ill from eating. The more one eats, the potentially worse the sickness. Consequently, a scale of alternatives of the form "Everyone who ate x got sick" can be constructed, where greater amounts of food are substituted for x, and where the greater the amount of food the less noteworthy/more likely that one gets sick. However, it is very difficult to reconstruct such a scale of alternatives in the case of (97)b since in the real world there is no correlation between the amount one eats and whether one wears blue jeans. Consequently, interpreting this sentence against a scale containing alternative propositions "Everyone who ate x was wearing blue jeans", where x stands for amounts of food, is strange.

The contrast between the data in (96) and (97) holds because non-emphatic *any* does not incorporate the semantics of *even*. On my analysis, such a contrast should appear with emphatic *ANY* since it is used to cancel an indirect scalar implicature just as *even* is. Rullmann (1996: 348) reports that indeed a sentence expressing an accidental generalization becomes strange when *ANY* is stressed.[50, 51]

(98) a. Everyone who ate ANYthing got sick.
b. # Everyone who ate ANYthing was actually wearing blue jeans.

In the end, when considering the question of whether something incorporates an inherent *even*, it is important to bear in mind that *even* cannot change the meaning of a sentence in any way. It merely signals that certain presuppositions must be satisfied independently by context. That is, if one follows Karttunen's (1974) view, that presuppositions are satisfied in a context only if they are entailed by that context, then a presuppositional item really only highlights something about the context which is already

[50] Lahiri (1998: 117) reports that speakers find this type of sentence acceptable in English. For out-of-the-blue examples, I think I agree with Rullmann. I do not really know how to account for Lahiri's consultants who find sentences like (98)b acceptable. It is possible to construct contexts in which the relevant scale of alternatives is more easily constructed. Consider the following dialogue between two individuals who observed last night's party very closely.

(i) A: I noticed something really weird. Everybody who ate dessert was actually wearing blue jeans.
(ii) B: I know exactly what you're talking about! But it's much weirder than that, friend. Everybody who ate ANYthing was wearing blue jeans.

In (ii), the use of emphatic *ANY* is acceptable. But then again, given the enriched context it might not be accurate to say that this sentence expresses an accidental generalization. That's why using *actually* in (ii) seems inappropriate. Lisa Matthewson (p.c.) points out that in this enriched context a minimizer is also much better. For instance, (iii) could replace (ii) and not be quite as marginal as (97)b was out-of-the-blue.

(iii) B: I know exactly what you're talking about! But it's much weirder than that, friend. Everybody who ate even a single bite was wearing blue jeans.

Possibly Lahiri's consultants are thinking of some context like this.

[51] Although Rullmann acknowledges that unstressed *any* and stressed *ANY* are different, he does not claim that the difference stems from *ANY* containing an inherent *even*. He merely notes that *ANY* may correspond to either a Dutch *even*-NPI or *wh*-NPI.

known by the conversationalists.[52] So *even*'s greatest contribution can only be one of disambiguation, or forcing a reading that is already permitted by the semantics and context in any case.[53] Although *even* is not used overtly with emphatic *ANY*, in other languages additive particles do appear in the make-up of emphatic NPIs, as seen in earlier in Section 2.1.[54] In Section 2.4 I investigate such a language, namely Cantonese, and show that very little different needs to be said about this language as far as domain widening is concerned.

But before reviewing the details of Cantonese, now is a suitable point at which to compare my analysis of emphatic negative polarity to those of some of my predecessors. Although not all of these earlier works are concerned solely with emphatic negative polarity items, each analysis discussed below bears some kinship to my own.

2.3 Comparison with Kadmon and Landman (1993), Krifka (1995) and Lahiri (1998)

In this section I will compare my analysis of emphatic NPIs to three influential theories of NPIs currently in the literature – those of Kadmon and Landman (1993), Krifka (1995) and Lahiri (1998).

To summarize my account so far, I treat domain widening as a process in which a determiner is focussed to indicate that a wider resource domain variable should be chosen. The newly asserted proposition does not contradict previously given weaker propositions in discourse, but rather cancels a scalar implicature arising from these weaker alternatives. Domain widening therefore always satisfies the presuppositions of *even*. Furthermore, domain widening is not a special lexical property of any particular determiner, but rather is one way focus on a determiner may cancel a scalar implicature. Ultimately, within my approach this phenomenon is treated completely independently from the question of negative polarity licensing.

The difference between my approach and the three treatments I will discuss below is sometimes rather nuanced, which makes it difficult to identify testable differences in predictions. The basic intuition all these analyses are grappling with is that negative polarity

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[52] Therefore, my claim that in domain widening the presuppositions of *even* must be satisfied – even when the particle is not used and presumably not in the structure – is sensible. Inherent to my definition of domain widening is scalar implicature cancellation, and scalar implicature cancellation can only be accomplished if the presuppositions of an additive particle are satisfied. Most of the examples of domain widening I discuss are situated within a fairly rich discourse context to make it clear how these presuppositions are met, even in the absence of an overtly used *even*.

[53] Although this forced reading may be normally ruled out for pragmatic reasons were *even* not present.

Note also that once presupposition accommodation is taken into account, then *even* can play an expanded role by altering the context.

[54] I do not believe this difference between languages, whether an overt additive particle is obligatory, is significant for the analysis of domain widening – although it does raise other interesting questions about such particles. This point of variation should perhaps be compared to the use of other non-truth conditional morphemes, like discourse particles, which are obligatory in many languages but seem to be accomplished by intonation alone in others. The obligatory nature of such particles is intriguing, because they seem to impose a well-formedness condition that has a pragmatic source.

Although I have not investigated this variability, it would be interesting to see if the cross-linguistic use of these particles corresponds to some cross-linguistic variation in what has been considered pragmatic behaviour. For instance, in the future, one might want to investigate whether languages vary in how easily implicatures are generated and cancelled, and whether this corresponds in any way to the obligatory presence of non-truth conditional particles.

items involve a comparison of some kind. Nonetheless, each of the theories stands alone as distinct from the others. As will become clear, my own theory has different things in common with each, but I believe it constitutes an original take on the problem. Rather than comparing my analysis with each previous work one at a time, I postpone a general comparative discussion until 2.3.4 in order to highlight the overall issues and the separate conclusion each analysis reaches.

2.3.1 Kadmon and Landman (1993)

Kadmon and Landman (1993) argue that the determiner *any* (and I believe polarity items more generally) has two properties that distinguish it and restrict its usage as compared to other indefinites. First of all, it is used to widen the domain restriction of the common noun it is used with. This is called *widening*. The distributional restrictions on *any* are due to its unique licensing criterion, such that it can only be used in strong statements. This licensing condition is called *strengthening*. Their theory of negative polarity *any* is summed up in the following three points.[55]

(99) A. *any CN* = the corresponding indefinite *a CN* with additional semantic/ pragmatic characteristics (widening, strengthening) contributed by *any*.
Kadmon and Landman 1993: 357

B. WIDENING
In an NP of the form *any CN*, *any* widens the interpretation of the common noun phrase (CN) along a contextual dimension.
Kadmon and Landman 1993: 361

C. STRENGTHENING
Any is licensed only if the widening that it induces creates a stronger statement, i.e., only if
the statement on the wide interpretation ⇒
the statement on the narrow interpretation.
Kadmon and Landman 1993: 369

It is important to note that Kadmon and Landman maintain that widening is always part of the meaning of *any*, and deny that widening only happens with stressed *ANY*.

A consequence of their theory is that *any* is used to signal a "reduced tolerance to exceptions". The following example illustrates how their theory works. In this example, Speaker B is cooking for a group of 50 people.

(100) a. A: Will there be French fries tonight?
b. B: No, I don't have potatoes.
c. A: Maybe you have just a couple potatoes that I could take and fry in my room?
d. B: Sorry, I don't have ANY potatoes.

[55] I am deferring discussion of their treatment of free choice uses of *any* until Chapter Three.

According to Kadmon and Landman, when B makes utterance (b) only large quantities of potatoes are relevant, only enough for tonight's meal for 50 people. Consequently, A may ask (c) in the hope that there is a small quantity of potatoes available, that had previously not been taken into consideration by B. B's second answer in (d) effectively widens the domain to now include any quantity of potatoes, even small quantities that had previously been excluded from the domain. Clearly, this use of *any* leads to an overall stronger statement, thereby satisfying the strengthening requirement.

Kadmon and Landman discuss the following case of *any* in a negative environment, which is acceptable in (101)a. This sentence can be compared to a normal indefinite in (101)b.

(101) a. I don't have any potatoes.
b. I don't have potatoes.

Suppose in context *potato* is understood to mean "cooking potato", so (101)b can be rephrased "I have no (cooking) potatoes". The determiner *any* widens the denotation of *potato* to include other sorts of potatoes normally excluded, so that (101)a can be understood to mean "I have no (cooking or decorative) potatoes". The question then arises whether using *any* in this context to widen the domain satisfies the strengthening requirement. It does, because the sentence in (101)a, with the widened denotation of *potato*, entails (101)b, with the non-widened denotation of *potato*.

(102) wide: I don't have potatoes (which could be cooking or decorative)
$\Rightarrow$ narrow: I don't have cooking potatoes.

The positive version of (101)a is ungrammatical, as seen below. Note that *potatoes* in (103)b means "cooking potatoes", and the indefinite with *any* in (103)a has been widened and means "cooking or decorative potatoes".

(103) a. * I have any potatoes.
b. I have potatoes.

It is easy to see that in such a positive environment, widening the denotation of potatoes does not lead to strengthening. In (104), the wide statement does not entail the narrow statement.

(104) wide: I have potatoes (which could be cooking or decorative)
$\neq\Rightarrow$ narrow: I have cooking potatoes.

Thus Kadmon and Landman's theory is able to accurately predict the distribution of *any*.

2.3.2 Krifka (1995)

Krifka recognizes two types of polarity items – weak NPIs and strong NPIs. Strong NPIs correspond to those relying on emphatic stress and those augmented with phrases such as *at all*. An important innovation in Krifka's work is that he argues all polarity items involve

focus and that they are always interpreted against a set of alternatives. Working within a structured meanings approach to focus, he offers the following <B,F,A> structure for weak NPIs in (105)a.[56] The set of alternatives to a weak NPI is restricted in that it is subject to an exhaustivity requirement. The exhaustivity requirement is what distinguishes weak NPIs from strong NPIs (Krifka 1995: 219 (23) and 220 (24)) .

(105) Weak NPIs
  a. *anything*: ⟨B, **thing**, {P| P⊂**thing**}⟩
  b. Exhaustivity requirement: ∪{P| P⊂**thing**} = **thing**

As can be seen, the NPI itself has the denotation of the most general property **thing**. The alternatives are a set of more specific, and hence stronger, properties than the NPI which is in focus. For instance, **table** is more specific than **thing** and consequently is a legitimate alternative. The exhaustivity requirement ensures that the denotation of the NPI is no bigger than the generalized union of the set of its alternatives. The significance of this fact will become clear in a moment.

Strong NPIs have the <B,F,A> structure given in (106)a, and have the non-exhaustivity restriction on their set of alternatives given in (106)b (Krifka 1995: 226 (37) and 227 (38)).

(106) Strong NPIs
  a. *ANYthing*: ⟨B, **thing**, {P| P⊂**thing** ∧ ¬min(P)}⟩
  b. Non-exhaustivity requirement: ∪{P| P⊂**thing** ∧ ¬min(P)} ⊂ **thing**

Like weak NPIs, strong NPIs also denote the most general property **thing**. The crucial difference between the two classes has to do with the alternatives they bring to a sentence. The set of alternatives of a strong NPI is comprised of a set of more specific, stronger alternative properties. But not every conceivable more specific and stronger property is in this set. Specifically, minimal "minor entities" are excluded from the set of alternatives. This exclusion is ensured by the second-order min predicate. The denotation of the NPI in focus **thing** does not equal the generalized union of its set of alternatives, because minor entities are subsets of **thing** but are not included in the set of alternatives. For instance, **crumb** might be an alternative of a weak NPI but not of a strong NPI because **crumb** denotes a property applying to minor entities.

This difference between weak and strong NPIs has a direct consequence for how propositions using these items are integrated into the common ground. The basic idea is that different types of NPIs are used when the speaker wants to make different types of statements. Krifka proposes a number of illocutionary operators which regulate how propositions can modify the common ground by imposing felicity conditions. In the unmarked case, the operator used will be **Assert** (Krifka 1995: 222 (28)).

[56] In a <B,F,A> structure, "B stands for the background, F for the foreground (the polarity item or the item in focus), and A for the set of alternatives to F" (Krifka 1995: 219).

(107) **Assert**(⟨B,F,A⟩)(c) = c∩B(F), iff B(F) is assertable w.r.t. c and
  a. For all F′∈A such that c∩B(F′) ≠ c∩B(F):
     the speaker has reasons not to assert B(F′),
     that is, to propose c∩B(F′) as the new common ground.
  b. There are F′∈A such that B(F′) is assertable w.r.t. c, and
     c∩B(F′) ≠ c∩B(F).

This operator modifies the common ground with the new and unobjectionable information encoded in the utterance. Condition (b) states that there are assertable alternatives B(F′) and condition (a) states that the speaker has reasons not to assert such alternatives. The speaker might believe them to be false, or perhaps lack evidence of their truth.

Krifka argues that the configuration that is found in instances of scalar implicature is special enough to merit defining a new operator, **Scal.Assert**. It is triggered when the alternatives can be informationally ordered with respect to each other (108)a. Its effect is to modify the common ground c with the newly asserted B(F), and more interestingly to negate all stronger unasserted alternative propositions (108)b (Krifka 1995: 224 (31)). In other words, the second conjunct of (108)b replicates a scalar implicature, which Krifka notes would have the status of a conversational implicature in a more refined theory.

(108) a. **Assert**(⟨B,F,A⟩)(c) = **Scal.Assert**(⟨B,F,A⟩)(c),
     if for all F′∈A: [c∩B(F′)] ⊆ [c∩B(F)] or [c∩B(F)] ⊆ [c∩B(F′)]

  b. **Scal.Assert**(⟨B,F,A⟩)(c) =
     {i∈c| i∈B(F) ∧ ¬∃F′∈A[[c∩B(F′)] ⊂ [c∩B(F)] ∧ i∈B(F′)]}

Weak NPIs trigger the Scal.Assert operator since the alternatives of the NPI can be informationally ordered with respect to it. Krifka argues that the difference between the "ungrammaticality" of a weak NPI in a non-DE environment can be accounted for as a result of failing the felicity conditions. To take the good case first, the sentence in (109)a asserts the B(F) in (109)b, and has alternative B(F′)'s of the form given in (109)c.

(109) a. Mary didn't see anything.
  b. B(F) = ¬∃y[**thing**$_i$(y) ∧ saw$_i$(mary, y)]
  c. B(F′) = ¬∃y[P$_i$(y) ∧ saw$_i$(mary, y)]

Since the **Scal.Assert** operator is triggered, one must consider whether its felicity conditions are satisfied. Here, since the asserted B(F) "Mary didn't see a thing" is at least as strong as all alternative B(F′)'s, "Mary didn't see a P, P⊂**thing**", **Scal.Assert** is satisfied without an implicature needing to be generated.

In the positive case, Krifka's system predicts that the sentence with a weak NPI is bad.

(110) a. * Mary saw anything.
  b. B(F) = ∃y[**thing**$_i$(y) ∧ saw$_i$(mary, y)]
  c. B(F′) = ∃y[P$_i$(y) ∧ saw$_i$(mary, y)]

Here, the asserted B(F) "Mary saw a thing" in (110)a is at least as weak as all the alternative B(F')'s. All stronger B(F')'s are thus negated by (108)b. In other words, a scalar implicature is generated. But this leads to a sort of contradiction. It cannot simultaneously be the case that "Mary saw a thing" and "Mary saw no P, P⊂**thing**". Every x that is a **thing** will invariably have some other property P as well. Because of this paradoxical implicature, weak NPIs are unacceptable in non-negated environments.

Strong NPIs trigger a completely different illocutionary operator, **Emph.Assert**. This operator is modelled off of the semantics of *even*, which Krifka takes to be an overt version of **Emph.Assert**. Here $<_c$ means something like "less likely in common ground c".

(111) **Emph.Assert**($\langle B,F,A\rangle$)(c) = c∩B(F), iff
  a. For all F′∈A: c∩B(F) $<_c$ c∩B(F′)
  b. c∩B(F) $<_c$ ∩{c∩B(F′)| F′∈A}

Krifka notes that the likelihood relation is directly related to semantic strength. Essentially, less likely statements are also informationally stronger. Consequently, the condition in (111)b may be rephrased.

Krifka uses this operator to account for the distribution of strong NPIs. To take the good case first, the sentence in (112)a asserts the B(F) in (112)b, and has alternative B(F')'s of the form given in (112)c.

(112) a. Mary didn't see ANYthing.
  b. B(F) = ¬∃y[**thing**$_i$(y) ∧ saw$_i$(mary, y)]
  c. B(F′) = ¬∃y[P$_i$(y) ∧ saw$_i$(mary, y)], where ¬min(P)

The asserted B(F) "Mary didn't see a **thing**" is informationally stronger than "Mary didn't see a P, P⊂**thing** and ¬min(P)". Hence, it is less likely in c, and the conditions of **Emph.Assert** are satisfied.

In a positive sentence, a strong NPI will always run afoul of **Emph.Assert**. A positive counterpart of example (112) is given in (113) below.

(113) a. * Mary saw ANYthing.
  b. B(F) = ∃y[**thing**$_i$(y) ∧ saw$_i$(mary, y)]
  c. B(F′) = ∃y[P$_i$(y) ∧ saw$_i$(mary, y)], where ¬min(P)

Here, the asserted B(F) in (113)a "Mary saw a **thing**" is informationally weaker than "Mary saw a P, P⊂**thing** and ¬min(P)". This means that this B(F) is more likely in c for any particular P, P⊂**thing** and ¬min(P) and the conditions of **Emph.Assert** are not met.

2.3.3 Lahiri (1998)

Lahiri (1998) is a study of indefinite + *bhii* phrases in Hindi, which function as negative polarity items. *Bhii* is a focus sensitive emphatic particle that means "also, even". Lahiri's overall claim is that the distribution of these NPIs can be predicted simply from the basic

meaning of the indefinites as denoting very general properties, and from the treatment of *bhii* as a focus sensitive operator with *even*-semantics proposed by Karttunen and Peters (1979).

Lahiri concentrates on two NPIs in particular, *ek bhii* "any, even one" and *koii bhii* "anyone, any". He claims that the indefinites by themselves, *ek* and *koii* are cardinality predicates denoting the very general property "one". As these items are focussed, the sentence is interpreted against a set of contextually restricted alternatives. Since "one" is the most general property, the various alternatives will necessarily be subsets of *ek/koii*. Based on the different behaviour of the two indefinites, which I will not discuss, he claims that the alternatives to *ek* are other cardinality predicates such as **two**, **three**, etc.. In the case of *koii*, the alternatives are a contextually specified set of properties, P_1, P_2, P_3 which independently will be subsets of *koii*.

The strength of Lahiri's analysis is that it accounts for the distribution of these NPIs based solely on conventional assumptions about the different pieces of their make-up. Before showing how his predictions play out, I will first make a couple of remarks. First, Lahiri assumes a scope theory of *bhii* rather than treating it as an NPI in polarity environments. As he says, "I am interested in deriving the distribution of Hindi NPIs from independent properties of *bhii*. Assuming a second *bhii* which itself is an NPI would make the argument circular: the properties of NPI expressions would then be reduced to the properties of (the NPI) *bhii*, whose behaviour would remain mysterious." (Lahiri 1998: 85). This motivates Lahiri to claim that *even/bhii* phrases move at LF in something "like QR" but different, in that it does not move an NP but something more like a determiner.

A second remark is that, following the treatment of *even* by Karttunen and Peters (1979), Lahiri speaks about the existential and scalar implicatures associated with *bhii*. He is of course talking about *conventional* implicatures. Since within my own analysis, *conversational* quantity/scalar implicatures play a different role, there is some space for confusion. To minimize this, I will change Lahiri's terminology from implicature to presupposition. I do not think this change affects the integrity of his analysis.

To start, with non-indefinites the semantics of English *even* are sufficient for *bhii* (Lahiri 1998: 59 (4-5)).

(114) raam bhii aayaa
Ram even[57] came

a. Asserts: Ram came.

b. Ps: $\exists x[x \neq \text{Ram} \wedge x \text{ came}]$

c. Ps: $\forall x[x \text{ came} \rightarrow \text{likelihood(that x came)} > \text{likelihood(that Ram came)}$

There is not much to say about this example. As expected, *bhii* does not affect the assertion (114)a but carries an existential (114)b and scalar (114)c presupposition. Lahiri schematizes these presuppositions in (115) below. Here, the assertion corresponds to *a* and the set of contextually restricted focus alternatives to *C*.[58] He phrases these in Rooth's (1985) alternative semantics (Lahiri 1998: 86 (60)).

[57] In this example Lahiri glosses *bhii* as "emph", but elsewhere in his paper he glosses it as "even". Later in this section I also provide the interlinear glosses to the example in (116).

[58] Note the *C* corresponds to C^{FOC} in my notation.

(115) a. $\exists p[C(p) \wedge \check{}p \wedge p \neq \hat{}a]$
b. $\forall p[[C(p) \wedge p \neq \hat{}a]] \rightarrow \text{likelihood}(p) > \text{likelihood}(\hat{}a)]$

Using these semantics, Lahiri is able to predict the distribution of indefinite + *bhii* phrases. To start with, he is able to predict that (116) is unacceptable (Lahiri 1998: 86(61)).

(116) * koii bhii aayaa
one even come
'Anyone came'

Assuming that the "determiner" *koii bhii* undergoes raising, this sentence has the LF structure in (117)a. Existential closure occurs at the intermediate IP level, IP2, as shown in (117)b. The predicate variable P bound by λP is assigned the value of the focussed indefinite *koii* "one" after lambda conversion (modified from Lahiri 1998: 86 (63-4)).

(117) a. $[_{IP1}\ [_{Det}\ \text{koii bhii}]_i\ [_{IP2}\ [_{NP}\ [_{Det}\ t_i]_F\ \varphi]_j\ [_{IP3}\ t_j\ \text{aayaa}]]]$
b. $[[IP2]] = \lambda P[\ \exists x[P(x) \wedge x \text{ came}]]$

The set of alternatives *C* vary for the value assigned to P. For instance, $C = \{\hat{}\exists x[\textbf{one}(x) \wedge x \text{ came}], \hat{}\exists x[\textbf{sick}(x) \wedge x \text{ came}], \hat{}\exists x[\textbf{happy}(x) \wedge x \text{ came}]\ldots\}$. The sentence in (116) ends up asserting (118)a, with the existential presupposition in (118)b and the scalar presupposition in (118)c (cf. Lahiri 1998: 86 (66-68)).

(118) a. As: $\exists x[\textbf{one}(x) \wedge x \text{ came}]$
b. Ps: For some predicate other than **one**, say Z, $\exists x[Z(x) \wedge x \text{ came}]$
c. Ps: For every predicate other than **one**, say U, if $\exists x[U(x) \wedge x \text{ came}]$, then
$\text{likelihood}(\hat{}\exists x[U(x) \wedge x \text{ came}]) > \text{likelihood}(\hat{}\exists x[\textbf{one}(x) \wedge x \text{ came}])$

It follows from the existential and scalar presuppositions that the alternative which is presupposed to exist is more likely than the assertion (Lahiri 1998: 86 (69)).

(119) $\text{likelihood}(\hat{}\exists x[Z(x) \wedge x \text{ came}]) > \text{likelihood}(\hat{}\exists x[\textbf{one}(x) \wedge x \text{ came}])$,
where Z is the alternative predicate in the existential presupposition.

This is a problem, and accounts for why (116) is unacceptable. Independent of the semantics of *bhii*, due to the fact that *koii* denotes a very general property whose alternatives are subsets, the following fact holds (Lahiri 1998: 87 (70)).

(120) $\exists x[Z(x) \wedge x \text{ came}] \rightarrow \exists x[\textbf{one}(x) \wedge x \text{ came}]$

Obviously if a Z is some property like **sick**, we can infer from "A sick person came" that "One person came", but not vice-versa. This logical fact produces the following likelihood scale (Lahiri 1998: 87 (71)).

(121) $\text{likelihood}(\hat{}\exists x[Z(x) \wedge x \text{ came}]) \leq \text{likelihood}(\hat{}\exists x[\textbf{one}(x) \wedge x \text{ came}])$,

This likelihood scale, which one can infer from the logical properties of the focussed indefinite and its alternatives, contradicts the one which *bhii*'s presuppositions generate in (119). Thus, the sentence in (116) is bad.

Using the exact same arguments, Lahiri shows why (116) would have been good if negated. This example is given in (122) (Lahiri 1998: 87 (72)).

(122) koii bhii nahiiN aayaa
one even didn't come
'No one came'

This sentence has the LF in (123)a. Existential closure must occur below negation at IP2′ (123)b (modified from Lahiri 1998: 87 (73-4)).

(123) a. $[_{IP1}\ [_{Det}$ koii bhii$]_i\ [_{IP2}\ [_{Neg}$ nahiiN$]\ [_{IP2'}\ [_{NP}\ [_{Det}\ t_i]_F\ \varphi]_j\ [_{IP3}\ t_j$ aayaa$]]]]$

b. $[[IP2]] = \lambda P[\ \neg\exists x[P(x) \wedge x \text{ came}]]$

The set of alternatives will contain negated propositions, $C = \{\hat{}\neg\exists x[\textbf{one}(x) \wedge x \text{ came}], \hat{}\neg\exists x[\textbf{sick}(x) \wedge x \text{ came}], \hat{}\neg\exists x[\textbf{happy}(x) \wedge x \text{ came}]\ldots\}$. The sentence in (122) asserts (124)a, and presupposes (124)b and (124)c (cf. Lahiri 1998: 87 (75′ -76)).

(124) a. As: $\neg\exists x[\textbf{one}(x) \wedge x \text{ came}]$

b. Ps: For some predicate other than **one**, say Z, $\neg\exists x[Z(x) \wedge x \text{ came}]$

c. Ps: For every predicate other than **one**, say U, if $\neg\exists x[U(x) \wedge x \text{ came}]$, then likelihood($\hat{}\neg\exists x[U(x) \wedge x \text{ came}]$) > likelihood($\hat{}\neg\exists x[\textbf{one}(x) \wedge x \text{ came}]$)

The presuppositions together imply (125) (Lahiri 1998: 87 (77)).

(125) likelihood($\hat{}\neg\exists x[Z(x) \wedge x \text{ came}]$) > likelihood($\hat{}\neg\exists x[\textbf{one}(x) \wedge x \text{ came}]$),
where Z is the alternative predicate in the existential presupposition.

And it is at this point that the negative example crucially differs from the positive example above. In this case, the logical properties of the indefinite **one** and its alternatives do not conflict with the implication in (125). Lahiri notes that, by the law of contraposition, one obtains (126) from (120) above.

(126) $\neg\exists x[\textbf{one}(x) \wedge x \text{ came}] \rightarrow \neg\exists x[Z(x) \wedge x \text{ came}]$

From this, (127) follows.

(127) likelihood($\hat{}\neg\exists x[\textbf{one}(x) \wedge x \text{ came}]$) ≤ likelihood($\hat{}\neg\exists x[Z(x) \wedge x \text{ came}]$),

This does not conflict with the presuppositions that *bhii* brings to the sentence, and hence the sentence in (122) is acceptable.

2.3.4 Discussion

The consensus that emerges from these approaches is that negative polarity items are used when the size of the domain of the indefinite is under consideration relative to other possible sizes. After this, the different approaches differ and overlap at various points of the analysis. In order to facilitate the discussion, I will break the discussion down into a number of questions.

I. How many types of polarity items are to be distinguished from normal indefinites?

Kadmon and Landman confine themselves to a discussion of *any* in English, although I think their discussion is meant to extend to other negative polarity items. Their theory is meant to distinguish between all NPIs as opposed to regular non-NPI indefinites.

Krifka discusses two types of negative polarity items which are distinct from normal indefinites. He distinguishes between weak and strong.

Lahiri discusses one type of negative polarity item which are distinct from normal indefinites. However, they are not parallel to *any* in English. Rather, he says that the indefinite + *bhii* phrases which he is studying correspond to the strong NPIs that Krifka discusses.

The scope of my own study is like that of Lahiri. I am really only concentrating on what Krifka identifies as strong NPIs, which I am contrasting to weak NPIs and other indefinites. I of course believe weak NPIs should be given a separate treatment from non-NPI indefinites, but this is not the focus of my study.

II. Is focus relevant?

Kadmon and Landman discuss stressed *ANY* and conclude that it has fundamentally the same properties as unstressed *any*. They do appear to acknowledge that emphatic stress may influence widening, even if it does not cause it. They do not rely on the semantic mechanism of focus in their analysis.

Krifka explicitly makes use of the mechanism of focus and evoked alternatives to account for both weak and strong NPIs. Although he uses focus to account for both types, he provides an independent treatment of the emphatic focus found with strong NPIs that is not found with weak NPIs.

Lahiri explicitly makes use of the notion of focus and relies on the nature of evoked alternatives to build his analysis.

I too rely on the mechanism of focus. But again, like Lahiri, I am only concerned with emphatic NPIs.

III. Is the semantics of "even" relevant?

Kadmon and Landman do not discuss the use of *even* with NPIs, and make no reference to its properties in constructing their analysis. Krifka relies on the semantics of *even* as one means of distinguishing weak from strong NPIs. Statements involving strong NPIs are integrated into the common ground by the **Emph.Assert** operator, which essentially has the felicity conditions of *even* (at least the "likeliness" condition). Lahiri concentrates only on those

NPIs which incorporate *bhii* "even". Once again, I follow Lahiri in basically exclusively concentrating on NPIs involving *even*.

IV. How is the domain of the NPI discussed?

Kadmon and Landman argue that the NPI *any* is exactly the same as an indefinite article like *a*, except that the domain of the common noun is wider with the NPI determiner.

For Krifka, since the domain of the NPI denotes the most general property, they are logically wider than that of all the alternatives. A second way in which the size of the domain is used is in drawing a distinction between weak and strong NPIs. Unlike the case of weak NPIs, the domains of strong NPIs are bigger than the generalized union of their set of alternatives (than all their alternatives put together). This is captured by the Exhaustivity requirement of weak NPIs given in (105)b and the Non-exhaustivity requirement of strong NPIs given in (106)b. So strong NPIs themselves are not logically wider than weak NPIs, but rather the set of alternatives they evoke is more impoverished than the set evoked by weak NPIs.

Lahiri relies on the fact that NPIs denote the most general property and are interpreted against a set of narrower alternatives. For him, this fact alone accounts for any sense of "widening", which he denies is a real phenomenon.

In my analysis, I follow something more like Kadmon and Landman in two ways. First of all, there is a sense of process happening. Kadmon and Landman's use of the gerund *widening* indicates to me that there is something procedural about widening. For me likewise, there is an active component to the use of emphatic NPIs. The second way in which I follow Kadmon and Landman is that I do not rely on the idea that, just because the nominal restriction denotes the most general property it is necessarily the case that all alternatives will denote subsets and hence be narrower. If anything, I believe that the alternatives to the NPI usually have the same semantic denotation as the emphatic NPI. That is, the alternatives of an emphatic NPI like *ANYthing* are all indefinites meaning *thing*. The real difference is not in the lexical denotation of the nominal restriction, so much as in how contextually restricted it is.

V. How is the notion of scale utilized?

Kadmon and Landman do not highlight any scalar notions in their analysis. Although they discuss the inference pattern in (44), which is a scalar inference, they do not explicitly frame the question of widened domains in terms of monotonic scales.

Krifka uses the notion of scale in at least two ways. First of all, since all the alternatives to a weak NPI are monotonically related to the NPI itself, they are all more specific. In positive contexts, they are also more informative and this means that weak NPIs give rise to a scalar implicature in these contexts, satisfying Krifka's **Scal.Assert** operator. Since this implicature is paradoxical, Krifka is able to give an essentially pragmatic analysis to why weak NPIs are excluded from non-polarity environments. The second place that scalar semantics become relevant is in the *even* semantics of the **Emph.Assert** operator associated with strong NPIs. The alternatives to a strong NPI must be more likely than the NPI itself.

Lahiri uses the notion of scale in that *bhii* "even" presupposes that all the alternatives to the NPI are placed on a scale of likeliness with the NPI. Furthermore, since the NPI itself is the most general property, the alternatives are less general, and hence monotonically ordered with respect to the NPI.

My approach is similar to Krifka's in that I recognize both conversational scalar implicatures and the scalar semantics of *even*. Since indefinites have contextually salient domains, anything not in the domain or which is not entailed by what is in the domain is ruled out by scalar implicature. Emphatic NPIs widen this domain to include things which would have been ruled out by this scalar implicature – thereby cancelling the exhaustivity inference. So, the scalar semantics of *even* reduce to an act of cancelling a scalar implicature.

VI. What notion of strength is utilized?

Kadmon and Landman stipulate that *any* is subject to the licensing condition of *strengthening*. Strengthening requires that any statement which employs *any CN* must entail the equivalent statement with the plain indefinite, such as *a CN*, but not vice versa.

Krifka captures the difference between strong and weak NPIs by having strong NPIs associate with an **Emph.Assert** operator. This requires that the strong NPI be less likely, and hence informationally stronger, than all alternatives. Informational strength is also relevant for weak NPIs. **Scal.Assert**, which is meant to capture conversational scalar implicatures arising from the Gricean Maxim of Quantity, rules out informationally stronger unasserted alternatives. For both weak and strong NPIs, the NPI is only informationally strong in negative environments, relative to its alternatives. In positive environments, NPIs are informationally very weak. Krifka relies on this fact to account for their infelicity in positive environments.

Lahiri says that the strengthening effect noticed by Kadmon and Landman need not be stipulated separately, but falls out from the *even* semantics of *bhii*. Using an indefinite + *bhii* phrase is only possible when the presuppositions of *bhii* are satisfied. These are satisfied when the statement with an indefinite + *bhii* phrase are less likely than focal alternatives. Lahiri notes that "the likelihood scale essentially corresponds to implication – possibly with respect to some background assumptions – the sense that 'likelihood(A) < likelihood(B) is simply equivalent to 'A $\Rightarrow$ B' but not 'B $\Rightarrow$ A'" (Lahiri 1998: 108).

For me, strength is important in the Gricean sense, in that using an emphatic NPI indicates that an informationally stronger statement is being made than some alternative in context rather than a less likely one. The satisfaction of *even*'s presuppositions furthermore means that a scalar implicature is cancelled. This adds the corrective flavour of implicature cancellation to sentences using emphatic NPIs. This is one way to conceive emphasis.

Having discussed the independent points of each analysis, I will now give a more general comparison to my own treatment. With respect to Kadmon and Landman, I believe that they downplay the role of emphatic stress in widening too much. This emphatic stress seems to correspond to an overt use of *even* in other languages which indicates that focus and scales are relevant. So, I am not in the end convinced that their domain widening treatment should be used for both non-emphatic and emphatic NPIs.

Krifka's proposal is similar in some ways to my own analysis, in that he recognizes roles for conversational scalar implicatures and for *even*. However, he only utilizes scalar implicatures in trying to rule out weak NPIs in positive environments. As noted by Kadmon

and Landman, there is an inherent weakness in identifying the ungrammaticality of certain sentences with the violation of Gricean Maxims. Such violations surely produce effects, but not ungrammaticality. Furthermore, Krifka does not seem to rely on scalar implicature when talking about weak NPIs in negative contexts. For me, this is where scalar implicatures enter the discussion – not as a means to account for why weak NPIs cannot be used in positive environments, but as the defining difference between weak and strong NPIs. This leads me to a second criticism of Krifka. Although he recognizes that strong NPIs have an *even* semantics, he does not characterize this as *the* difference between weak and strong NPIs. For me, the whole fact that indirect scalar implicatures can arise with indefinites in polarity environments and that *even* is used in strong NPIs to cancel these implicatures defines the difference. It is one or the other. Krifka cannot do this because he unpacks the semantics of these NPIs too much. That strong NPIs are wider than their alternatives is ensured by the non-exhaustivity requirement given in (106)b – not by *even*. So Krifka ultimately misses a generalization by separating the non-exhaustivity requirement and the felicity conditions of **Emph.Assert** used with strong NPIs. Also, I am not really convinced that the semantics of focus or scalarity is that relevant for weak NPIs.

Lahiri's analysis is quite similar to mine in that he concentrates on NPIs that incorporate *even*. In general, I support his view that the distribution of these NPIs is essentially the same as the distribution of *even*. However, I do disagree with some aspects of his analysis. I am not really convinced that the fact that an emphatic NPI is low scalar and denotes a very general property is enough to make it stronger than its alternatives. As seen in examples like (32), sometimes the weaker alternative of an emphatic NPI involves the very same nominal restriction, (i.e., *anybody* versus *ANYbody*). As discussed, within my system the alternatives to the emphatic NPI are not more specific properties, but rather the same property (such as *-body*) which are less contextually restricted. Within my system, the real difference is the choice of a contextual domain.

It should be clear that the scope of my proposal is somewhat different than that of Kadmon and Landman, who try develop a theory meant to cover all instances of *any* and that of Krifka, who draws a three-way distinction between non-NPI indefinites, weak NPIs and strong NPIs. One might argue that my theory is less appealing because of my narrower focus. But in fact, I think that both Krifka's and Kadmon and Landman's theories are not fully successful in accounting for the distribution of these elements. I have already mentioned some criticism of Krifka's Gricean account of the failure of weak NPIs to appear in positive environments. As for Kadmon and Landman, I do not think it is a good idea to collapse all types of NPIs when it comes to widening. I believe this is only a property of emphatic NPIs. Secondly, as will be seen in other parts of this dissertation, I believe that the "widening and strengthening" effect they discuss is found with other sorts of quantifiers. Fundamentally, I do not think stressing *ANY* is that different from stressing *EVERY*. Ultimately, I believe "widening and strengthening" cannot account for the essence of negative polarity items because it is not a phenomenon confined to polarity environments.

But before leaving NPIs, I close the chapter with an extensive investigation of emphatic NPIs in Cantonese. This discussion is meant to reinforce the ideas underlying my analysis by expanding the empirical coverage. Cantonese is of interest because, unlike English, emphatic NPIs are always accompanied by an overt additive particle in this language. But as we will see, exactly the same analysis of domain widening offered for English applies to Cantonese. However, we will also find a surprising difference between

non-emphatic NPIs in Cantonese and English in Section 2.4.3 which is neatly accommodated by my analysis.

2.4 Emphatic negative polarity items in Cantonese

Cantonese is of interest because in this language emphatic NPIs always co-occur with a scalar additive particle, unlike in English. Furthermore, in Cantonese an intriguing dichotomy not found in English has developed between emphatic and non-emphatic NPIs. I will argue that this dichotomy derives from the scalar implicature arising from the non-emphatic forms.

Wh-words may function as negative polarity items in Cantonese. As polarity items, they must occur within the scope of an appropriate licensor. Examples of these polarity items in the scope of negation are given in (128)a-(130)a. Examples in which these *wh*-words are not in the scope of negation and are construed as *wh*-questions are given in (128)b-(130)b.

(128) a. Ngóh móuh gin bīngo.
I neg.have see who
'I didn't see anyone.'

b. Léih gin-jó bīngo a?
you see-pfv who prt
'Who did you see?'

(129) a. Ngóh móuh sihk mātyéh.
I neg.have eat what
'I didn't eat anything.'

b. Léih sihk-jó mātyéh a?
you eat-pfv what prt
'What did you eat?'

(130) a. Ngóh móuh heui bīndouh.
I neg.have go where
'I didn't go anywhere.'

b. Léih heui-jó bīndouh a?
you go-pfv where prt
'Where did you go?'

My concern here is what appears to be preverbal NPIs associated with *dōu* "also, even", as seen in (131)-(133).[59] Not surprisingly, these forms are emphatic and are most naturally translated into English with a stressed *ANY* or *NO*.

[59] I will provide no account of why these emphatic NPIs must occur preverbally. It is a characteristic of the additive particle *dōu* that its associate must always be preverbal, and not an NPI-specific issue. See the following discussion.

(131) a. Ngóh bīngo dōu móuh gin.
I who even neg.have see
'I didn't see ANYBODY at all.'

b. Bīngo dōu móuh gin ngóh.
who even neg.have see me
'NOBODY saw me.'

(132) Ngóh mātyéh dōu móuh sihk.
I what even neg.have eat
'I didn't eat ANYTHING at all.'

(133) Ngóh bīndouh dōu móuh heui.
I where even neg.have go.
'I didn't go ANYWHERE at all.'

Before I can move on to showing how these forms pattern with emphatic *ANY* discussed in earlier sections, I must make a rather lengthy digression and discuss a puzzle about the scope of these forms.

These preverbal NPIs are scopally problematic. Although they are naturally translated as negative polarity indefinites, on the surface they are not within the scope of negation. As polarity items, these indefinites are predicted not to be licensed if not c-commanded by their licensor. Negation cannot normally scope over subject NPs, in keeping with Huang's (1982) observation that scopal relations in Chinese are reflected at surface structure. Sentences involving more than one operator are normally unambiguous. For instance, in (134)a a universal quantifier formed by a reduplicated classifier in subject position may only be construed with wide scope over negation. In order for the universal to be interpreted with low scope, the negative *mhaih* must precede the quantifier as in (134)b (Matthews and Yip 1994: 262).

(134) a. Go-go dōu[60] mh jūngyi sihk gāt.
cl-cl all neg like eat tangerine
(i) ∀¬: 'Everyone doesn't like to eat tangerines.'
(ii) ¬∀: * 'Not everyone likes to eat tangerines.'

b. Mhaih go-go dōu jūngyi sihk gāt.
neg.be cl-cl all like eat tangerine
¬∀: 'Not everyone likes to eat tangerines.'

In the next section I will provide a solution to this problem by linking the behaviour of the preverbal emphatic NPIs to that of preverbal indefinites containing *yāt* "one". In negative sentences containing *dōu* "even", *yāt* indefinites only allow a reading in which the NP is interpreted below the scope of negation.

[60] I will discuss the relation of this *dōu* meaning "all" to the additive particle "even" in Chapter Four.

(135) Yāt go yàhn dōu móuh sihk.
one cl person even neg.have eat
(i) ∃¬: * 'Even one person didn't eat.'
(ii) ¬∃: 'Not even one person ate.'

Below I argue that *dōu* forces lowering of the indefinite at LF to satisfy its presuppositions. After arguing this mechanism of lowering is available for low-ranking scalar focussed preverbal items, I then extend consideration to preverbal emphatic NPIs.

2.4.1 Preverbal yāt indefinites

I begin the discussion with the particle *dōu*, whose presuppositions are key to my analysis.[61]

The particle *dōu* functions as an additive focus particle meaning "also" or "even". In this role, the focus with which *dōu* associates always occurs preverbally, to the left of the particle. In isolation, *dōu* appears to be genuinely vague between the "also" and "even" readings.

(136) Ngóh a-John dōu gin-jó.
I prt-John also see-pfv
(i) 'I even saw John.'
(ii) 'I saw John too.'

The two readings of *dōu* can be disambiguated by using *lìhn* "include" before the focussed item. *Lìhn* always forces the scalar "even" reading.

(137) Ngóh lìhn a-John dōu gin-jó.
I include prt-John also see-pfv
(i) 'I even saw John.'
(ii) * 'I saw John too.'

König (1991) observes that scalar and non-scalar additive particles are not always lexically distinct in languages. I will hereafter assume that *dōu* always carries an existential presupposition but does not necessarily carry a scalar presupposition. However, in discourses in which a scale is salient, *dōu* may additionally have a scalar presupposition.[62]

Scales are always contextually salient in sentences involving numerals. Therefore, in (138) where *dōu* is associated with the preverbal focus *yāt go yàhn* "one person", the additive particle is interpreted as meaning "even".

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[61] A version of this section has been accepted for publication. Shank, Scott. 2003. Preverbal negative polarity items in Cantonese. *NELS 34*.

In this earlier paper I primarily concentrate on the scope issue. To ease the exposition I did not introduce my novel assumptions about domain widening, but rather adopted Lahiri (1998). Shank (2003) also includes an expanded discussion of why *dōu* in emphatic NPIs cannot be regarded as meaning "all". See that paper for details.

[62] Alternatively, one might want to argue that when the "even" reading emerges, there is an unpronounced *lihn* present in the sentence. See Footnote 43 for my view of the difference between *even* and *also*.

(138) Ngóh yāt go yàhn dōu móuh gin.
I one CL person dou neg.have see
(i) ∃¬: * 'There is even one person that I didn't see.'
(ii) ¬∃: 'I didn't even see one person.'

As mentioned, when *dōu* is associated with a preverbal *yāt* indefinite in a negative sentence, the indefinite must be interpreted below negation. This is reflected in the English gloss of (138).

The presence of *dōu* is crucial for the indefinite to be interpreted below negation. This is shown by the following striking minimal pair containing subject *yāt* indefinites. In (139), where there is no *dōu* associated with the subject, the numeral must be interpreted with wide scope over negation. The example in (140), however, is exactly the opposite. In this case, the indefinite is focussed and associated with *dōu*, and only the reading in which the indefinite takes narrow scope with respect to negation is possible.[63]

(139) Yāt go yàhn móuh sihk.
one cl person neg.have eat
(i) ∃¬: 'One person did not eat.'
(ii) ¬∃: * 'Not one person ate.'

(140) Yāt go yàhn dōu móuh sihk.
one cl person even neg.have eat
(i) ∃¬: * 'Even one person didn't eat.'
(ii) ¬∃: 'Not even one person ate.'

The pattern here is that when a low-scalar indefinite is focussed and associated with *dōu* "also/even", the indefinite must be interpreted with narrower scope than negation. In order to account for this, below I will pursue the hypothesis that the indefinite has lowered back to its base position at LF to a position within the scope of negation. I will argue that this lowering is forced on semantic grounds. If the indefinite were to be interpreted outside the scope of negation here, the presuppositions of *dōu* "also/even" could not be satisfied. In the next subsection I will introduce the details of the analysis.

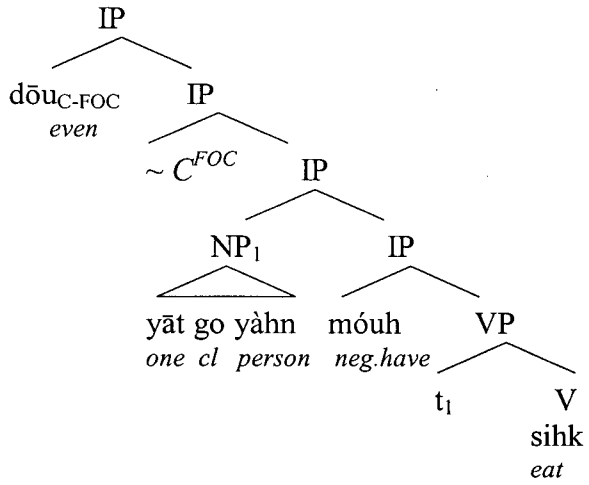
2.4.1.1 Semantic analysis of preverbal yāt indefinites

I begin by discussing how interpreting the *yāt* indefinite in its surface position above negation leads to *dōu* carrying impossible presuppositions. The discussion is inspired by the work of Lahiri (1998), discussed in 2.3.3.

[63] The acceptability of preverbal numeral phrases in Chinese is a matter of some debate. See Li (1998) for an overview of the issue. The Cantonese speakers I have consulted accept (139). The acceptability of preverbal numeral phrases in negative sentences with *dōu*, as in (138) and (140), is uncontroversial.

The sentence in (140) has the LF in (141). Note that since the complex issue of why the focussed NP must precede *dōu* is not being addressed, I am making the simplifying assumption that *dōu* has clausal scope here.[64]

(141) Yāt go yàhn dōu móuh sihk.
LF: [dōu [[yāt go yàhn][móuh sihk]]].



This sentence has the ordinary semantic value given in (142)i and the focus semantic value given in (142)ii.

(142) LF: [dōu[[yāt$_F$ go yàhn] [móuh [sihk]]]].
i. [[dōu[[yāt$_F$ go yàhn] [móuh [sihk]]]]°
$= |\{x \mid x \text{ is a person}\} \cap \{x \mid x \text{ didn't eat}\}| \geq 1_F$
ii. [[dōu[[yāt$_F$ go yàhn] [móuh [sihk]]]]^f
$= \{|\{x \mid x \text{ is a person}\} \cap \{x \mid x \text{ didn't eat}\}| \geq n)]| \; n \in |N\}$
= {There is one person who didn't eat, There are two people who didn't eat, There are three people who didn't eat...}

The set of salient focal alternatives in C^{FOC} is given in (143).

(143) $[[C^{FOC}]] = \{ |\{x \mid x \text{ is a person}\} \cap \{x \mid x \text{ didn't eat}\}| \geq 1, |\{x \mid x \text{ is a person}\} \cap \{x \mid x$ didn't eat$\}| \geq 2, \; |\{x \mid x \text{ is a person}\} \cap \{x \mid x \text{ didn't eat}\}| \geq 3\}$
= {There is one person who didn't eat, There are two people who didn't eat, There are three people who didn't eat}

Since a scale is so salient in this example, the particle *dōu* can be regarded as meaning "even" here. It has no effect on the truth conditions, but it brings in a scalar and existential presupposition. As discussed, I will follow Kay (1990) and treat the scalar presupposition as

[64] The alternative would be to say that *dōu* has scope below negation, in which case *dōu* would be an NPI "even$_{NPI}$". This issue is irrelevant to my point, and I have no reason to believe that *dōu* is an NPI here, so I will assume *dōu* has scope over negation.

presupposing that the focus is ranked high on a scale of informativity. These existential and scalar presuppositions are given in (144)a and (144)b respectively.

(144) a. $\exists q[q \in C^{FOC} \wedge q \neq |\{x \mid x \text{ is a person}\} \cap \{x \mid x \text{ didn't eat}\}| \geq 1 \wedge q = 1]$
= There is another true proposition in the salient set of alternatives besides "There is one person who didn't eat".

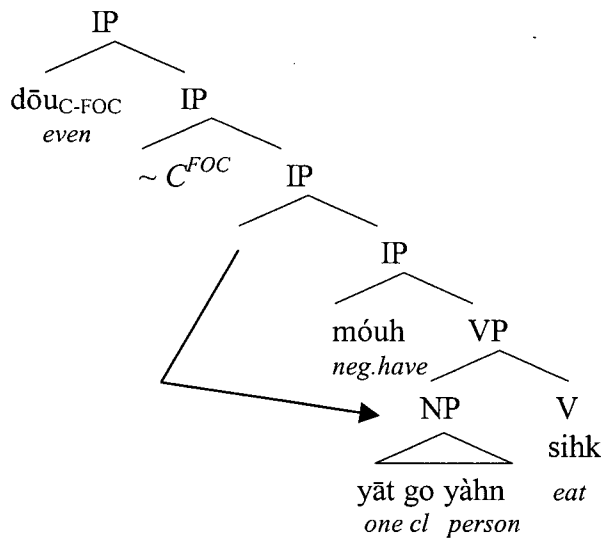
b. $\forall q[[q \in C^{FOC} \wedge q \neq |\{x \mid x \text{ is a person}\} \cap \{x \mid x \text{ didn't eat}\}| \geq 1 \rightarrow q <_{\text{informative}} |\{x \mid x \text{ is a person}\} \cap \{x \mid x \text{ didn't eat}\}| \geq 1]$
= All salient unasserted alternative propositions are less informative than the proposition "There is one person who didn't eat".

The scalar presupposition of this sentence cannot be satisfied. The scalar presupposition ensures that the asserted alternative is more informative than all alternative presuppositions. However, this would mean that the assertion "There is one person who didn't eat" would have to be more informative than the alternative "There are two people who didn't eat". This conflicts with the fact that the numeral *one* is ranked lower and is less informative than the numeral *two*. The scale of alternative propositions is schematized below, with the asserted alternative underlined.

(145) <There are two people who didn't eat, <u>There is one person who didn't eat</u>>

This problem does not arise if the *yāt* indefinite lowers, because then the entire proposition is within the scope of negation and this scale would be reversed. To see why this is so, let's now assume that in (140) the indefinite subject lowers at LF to its base position. This LF is given in (146).

(146) Yāt go yàhn dōu móuh sihk.
LF: [dōu [móuh [[yāt go yàhn] sihk]]].



This sentence has the ordinary semantic value in (147)i and the focus semantic value in (147)ii.

(147) [[dōu[móuh [[yātF go yàhn] sihk]]]]

i. [[dōu[móuh [yātF go yàhn] sihk]]]]°
= ¬[|{x | x is a person} ∩ {x | x ate}| ≥ 1]
= There is not one person who ate.

ii. [[dōu[móuh [yātF go yàhn] sihk]]]]^f
= ¬[|{x | x is a person} ∩ {x | x ate}| n ∈ |N}
= {There is not one person who ate, There are not two people who ate, There are not three people who ate…}

The set of salient alternatives in C^{FOC} is given in (148).

(148) $[[C^{FOC}]]$ = {¬[|{x | x is a person} ∩ {x | x ate}| ≥ 1], ¬[|{x | x is a person} ∩ {x | x ate}| ≥ 2], ¬[|{x | x is a person} ∩ {x | x ate}| ≥ 3]}
= { There is not one person who ate, There are not two people who ate, There are not three people who ate }

The existential and scalar presuppositions of *dōu* in this sentence would be as in (149).

(149) a. ∃q[q∈ C^{FOC} ∧ q ≠ ¬[|{x | x is a person} ∩ {x | x ate}| ≥ 1] ∧ q = 1]
= There is another true proposition in the salient set of alternatives besides "There is not one person who ate".

b. ∀q[[q∈ C^{FOC} ∧ q ≠ ¬[|{x | x is a person} ∩ {x | x ate}| ≥ 1]
→ q <informative ¬[|{x | x is a person} ∩ {x | x ate}| ≥ 1]
= All salient unasserted alternative propositions are less informative than the proposition "There is not one person who ate".

This is a fair rendering of what (140) means. The problem with the scalar presupposition of *dōu* does not arise here. Because negation takes scope over the entire proposition, the entailment relations among the alternatives are reversed (150) (Fauconnier 1978).

(150) <There is not one person who ate, There are not two people who ate >

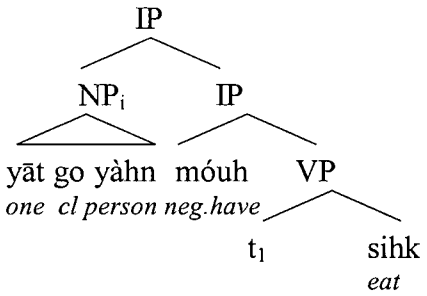
The asserted proposition "There isn't one person who ate" entails "There aren't two people who ate" but not vice versa. Since the asserted proposition entails its alternatives, it is more informative than them. This matches the scalar presupposition of *dōu* in (149)b.

Before closing this section, I will briefly turn to the example in (139), repeated here as (151), where there is no focus on the numeral and no *dōu*, and only a reading where the indefinite gets wide scope is possible.

(151) Yāt go yàhn móuh sihk.
one cl person neg.have eat
(i) ∃¬: 'One person did not eat.'
(ii) ¬∃: * 'Not one person ate.'

This sentence has an LF which closely resembles the surface structure.

(152) a. Yāt go yàhn móuh sihk.
LF: [[yāt go yàhn]$_1$ [móuh [t_1 sihk]]].

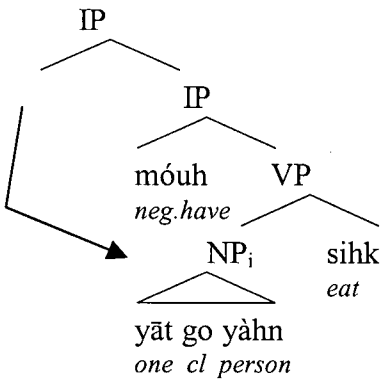


b. $|\{x \mid x \text{ is a person}\} \cap \{x \mid x \text{ didn't eat}\}| \geq 1$

Since there are no focal alternatives and no presuppositions of *dōu* "even" which must be satisfied, a wide scope reading of the indefinite is completely acceptable.

This leaves the puzzle of why reconstruction is not possible in this sentence. That is, why is (153) impossible?

(153) a. Yāt go yàhn móuh sihk.
* LF: [[móuh [[yāt go yàhn]$_1$ sihk]]].



b. * $\neg[|\{x \mid x \text{ is a person}\} \cap \{x \mid x \text{ ate}\}| \geq 1]$

This is an interesting question, and at this point I do not have a very firm answer. However, I will speculate a little and point out some similar data in English. Since negation cannot

normally scope over an indefinite subject in English, I will discuss an example with the indefinite in object position. The sentence in (154) has the two scopal readings in (i) and (ii).

(154) I didn't talk to one student.
(i) $\exists\neg$: There is one student that I did not talk to.
(ii) $\neg\exists$: There is not one student that I talked to.

The two readings are brought out by the following dialogues.

(155) Q: Have you talked to the students yet?
A: $_{\exists\neg}$ Mostly. I haven't talked to one student. Bill is out of town until Monday.

(156) Q: Have you talked to the students yet?
A: $_{\neg\exists}$ I'm sorry. I haven't talked to one student. It's been a hectic week.

It is difficult to not to put focal stress on the numeral *one* in (156) in order to get the narrow reading of the indefinite below negation. In this case, the sentence essentially means the same thing as (157) with *even*.

(157) I haven't even talked to one_F student.

If this observation holds for other languages as well, then the question of why the *yāt* indefinite in Cantonese cannot take low scope unless *dōu* is used arguably has something to do with this independent crosslinguistic pattern.

I conclude from this discussion that the lowering of preverbal low-scalar focussed indefinites in negative sentences is forced in sentences containing *dōu*. It is perhaps a surprising claim that semantics and syntax could interact in this way, where unusual syntactic movements are being forced on semantic grounds. However, the interpretation of sentences like (140) above only seem to follow if the indefinite is moved below negation, and the presuppositional criteria of the additive particle seems to be the most likely motivation for this exceptional movement.

Although I believe this is the proper analysis of these preverbal *yāt* indefinites, I have not had the opportunity to determine the significance of such cases for the larger question of the syntax/semantics interface. I will note, however, that unusual movement merely for the satisfaction of certain presuppositions cannot be regarded as a wholly unrestricted and general phenomenon in language. For instance, *even one* cannot lower when used preverbally in English.

(158) # Even one person didn't eat.

The sentence in (158) is infelicitous. It is unacceptable because the presuppositions of *even* cannot be satisfied. In the parallel Cantonese case (140), the indefinite apparently can lower to a position below negation to ensure that these presuppositions can be satisfied. This is not so in English. As of yet, I have no account of this difference between Cantonese and English.

Having established that lowering is a possibility for preverbal *yāt* indefinites in Cantonese, in the next section I turn to the question of emphatic NPIs in this language.

2.4.2 The interpretation of preverbal indefinite NPIs

Now I will return to the main thread of this chapter, and discuss the interpretation of preverbal emphatic negative polarity indefinite pronouns. Unlike a numeral, it is not so obvious what scale these items could be placed on. I think that we can treat them essentially like indefinites involving stressed *ANY* as examined earlier in this chapter. In this section I will concentrate on what I find to be the most interesting type of examples – those in which there is negotiation going on about the domain of quantification.[65]

My claim is that preverbal polarity items are more informative than postverbal indefinites because they have undergone domain widening. These preverbal forms are focussed and are associated with the additive particle *dōu* "even", which indicates that an indirect scalar implicature has been cancelled. Once again, I will ground the discussion in a realistic dialogue so that the effect of domain-size-negotiation can be appreciated.

Let us consider the dialogue in (159). The relevant contrast for current purposes is of course between the indefinite *yàhn* "person" in (159)b and *bīngo dōu* "ANYbody even" in (159)d. Although the postverbal *yàhn* can probably be treated as a plain indefinite rather than as a weak negative polarity item,[66] I assume that the preverbal indefinite in *bīngo dōu* is indeed a sort of emphatic polarity item.

(159) a. A: Léih hóuchíh hóu jihkmohk.
you seem very lonely.
'You seem lonely.'

b. B: Ngóh gāmyaht móuh gin yàhn.
I today not.have see person
'I didn't see anybody today.'

c. A: Léih lóuhmóu dōu móuh gin?
you mom even not.have see
'You didn't even see your mother?'

d. B: Ngóh gāmyaht bīngo dōu móuh gin.
I today who even not.have see
'I didn't see ANYbody today.'

Situating the two types of indefinites in discourse makes it clear exactly how they differ and that they are not in fact redundant. Furthermore, the nature of their difference is essentially spelled out explicitly by A's verifying question in (159)c.

I begin with an informal discussion to get the main idea across before moving on to a more formal account. Imagine that A is an inquiring adult and B is a moody teenager who

[65] Note that the preverbal *yāt*-indefinites discussed in the previous section do not exhibit widening since no change in the domain of quantification has taken place.

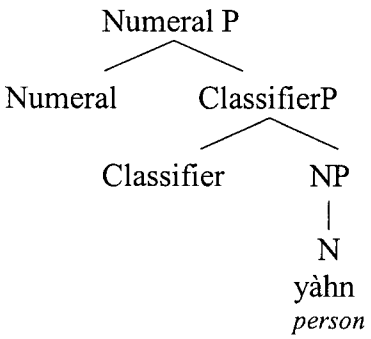
[66] I discuss the case of using *bīngo* "who" postverbally in place of *yàhn* "person" in a parallel example in (173)B. As we will see there, using *bīngo* instead of *yàhn* here leads to an interestingly different meaning.

still lives at home with his parents. In (b) the teenager B says that he didn't see anybody. The indefinite *yàhn* "people" is contextually restricted. For example, this sentence is true even if the mailman dropped off some packages that B had to sign for because a mailman's brief visit doesn't do much to alleviate one's loneliness. So, one can assume that *yàhn* is restricted to people that would alleviate his loneliness. This might include his girlfriend, school buddies, and maybe even family members. Now A knows that B doesn't get much joy out of hanging out with his mother, whose home B lives at, so A is not certain whether B meant to include B's mother in the contextually restricted set of individuals who he did not see that would have alleviated his loneliness. Because A wants to know who exactly is meant by *yàhn*, (i.e., who is in the domain) he asks the clarifying question in (c) "not even your mother?". Since B sees his mother every day, she is not very "extraordinary" and she is ranked low on a scale of individuals who B could see to cheer him up. If B were to answer that he did see his mother, then A would understand that he could have drawn an indirect scalar implicature excluding low ranked people like B's mother from the generalization. If B were to answer that he didn't see his mother, then he would understand that no such indirect implicature should be drawn. Or, to put it otherwise, that he should cancel any such implicature that he has inferred. B's actual response is to use an emphatic negative polarity item. This is in response to the two conceptions of the domain of the indefinite floating out there – one including B's mother, and one which does not. B obviously meant for his mother to be in the set of individuals who he did not see, but he can understand from A's second question that this was not clear. By using the emphatic polarity item he is cancelling any scalar implicatures that might have been generated from his earlier response, and making it clear that he didn't see anybody that would alleviate his loneliness, including his mother.

The formal analysis starts with the postverbal indefinite in (159)b. This is a bare noun. In English, I only considered cases involving quantificational determiners, and was able to claim that there was a resource domain index on the determiner which accounted for contextual restriction. Since there is no determiner here, we will have to say something a little different.

Cheng and Sybesma (1999) argue that bare nouns in Cantonese have a lot of covert structure to them. They argue that indefinite bare nouns are embedded within a Classifier Phrase, which is itself embedded within a Numeral Phrase. The head of both of these phrases is empty. This is exactly the same syntactic structure as *yāt go yàhn* "one cl person" without the lexical content.

(160)

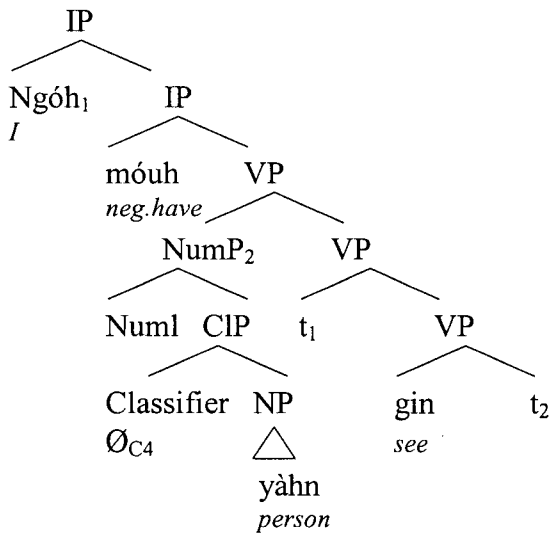


I will adopt this structure for the sake of explicitness. For current purposes, the important point is the availability of a classifier position. Cheng and Sybesma argue that classifiers have an individualizing-singularizing function similar to that of determiners in other

languages, and furthermore that like determiners they have something like a deictic function in mediating between the description given by the NP and some entity in the world that the description applies to. In terms of where a contextual restriction enters the picture in such a structure, I take their argument to support placing the source of contextual restriction in Cl°. Pushing the parallel they draw between determiners and classifiers a bit further, it is interesting that Matthewson (2001) has argued that D° is always the locus of contextual restriction in the NP superstructure. If a classifier really does play the role of a determiner in Cantonese, then Matthewson's claim would presumably extend to classifiers in this language[67].

I will therefore assume that such bare nouns can be interpreted with a null classifier which houses a resource domain variable. As for the empty numeral position, I will ignore it in the following discussion and assume it does not contribute to the interpretation of this structure.[68] The LF of sentence (159)b is given in (161).

(161) a. Ngóh gāmyaht móuh gin yàhn.
LF: [Ngóh (gāmyaht) móuh gin [$_{NumP}$ [$_{ClP}$ Ø [$_{NP}$ yàhn]]]]



b. $\neg[[C_4 \cap \{x \mid x \text{ is a person}\}] \cap \{x \mid b \text{ saw } x\} \neq \varnothing]$ [69]
$= [C_4 \cap \{x \mid x \text{ is a person}\}] \cap \{x \mid b \text{ saw } x\} = \varnothing$

The indefinite *yàhn* can be treated as contextually restricted if we posit a resource domain index in the null ClassifierP head. This is indexed C_4.

(162) $[[C_4]]$ = {x | x is b's mother, b's friend, b's girlfriend}

---

[67] Note that this particular treatment of nominals in Cantonese is not an integral part of my overall analysis. I adopt Cheng and Sybesma's system here to present a possible analysis of where the resource domain index is situated.

[68] Analyzing NumP as filled by a covert "one" would be one possible option, though I will not pursue it.

[69] Note that I am treating the 1st and 2nd person as constants, b and a, depending on whether they refer to Speaker B or to Speaker A. This is simpler for present purposes since I am discussing multiple utterances over a turn-taking discourse.

This domain contains relevant individuals who B might have seen throughout the day that could have cured him of his loneliness. As mentioned, certain individuals, like the mailman, will not be in this domain. So B's utterance in (159)b is true even if he did see the mailman today.

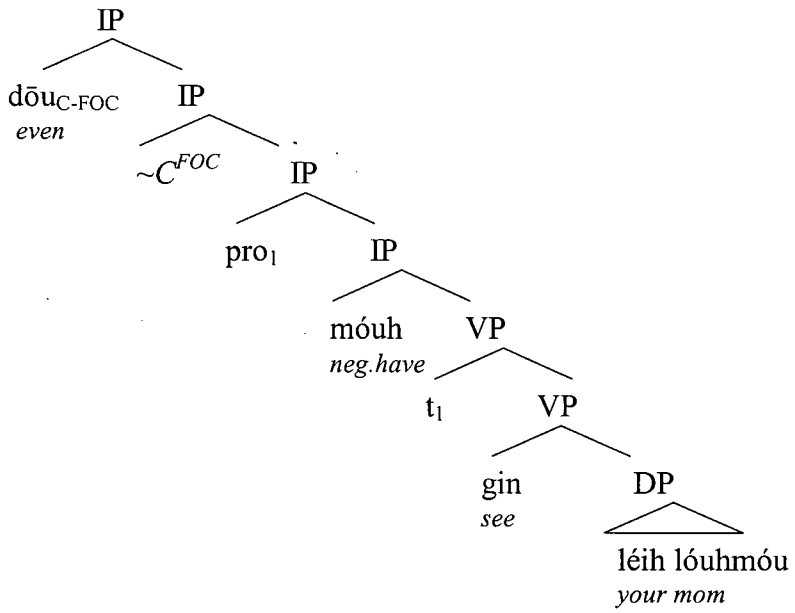
Speaker A follows up with the question *Léih lóuhmóu dōu móuh gin?*, "You didn't even see your mother?" in (159)c. This reflects A's inability to confidently judge exactly what resource domain B was using to restrict the quantification. Let's say that A is considering two alternative resource domains, C_4 and C_3. C_4 is as given in (162). C_3 is given below in (163).

(163) $[[C_3]]$ = {x | x is b's friend, b's girlfriend}

These two domains differ only on the basis of whether B's mother is included, so $[[C_4]] - [[C_3]]$ = {x | x is b's mother}.

These two domains cannot be referred to directly without listing all the members. But since they differ only in one member and since A seeks clarification on which domain is currently under discussion, A's asking about B's mother is a proxy for asking about C_4. The LF of this sentence is given below in (164). Notice that the focussed constituent has reconstructed to its base position within the VP. I treat *dōu* "even" as if it has clausal scope.

(164) a. Léih lóuhmóu dōu móuh gin?
LF: [dōu[pro$_i$ [móuh [t$_i$ gin [léih lóuhmóu]]]]]



b. ¬see(b,mother) [70,71]

[70] The *pro* subject is 2nd person. Following the convention I mentioned earlier, I translate 1st and 2nd person with constants. So here *pro* is translated as b.

[71] This is actually *b's.mother*, but I omit the possessor to make the formula more legible.

The important aspect of this example not captured in the LF in (164) is the presuppositions carried by *dōu*. Since I am treating *dōu* as if it means "even", it has the following existential and scalar presuppositions.

(165) a. $\exists q[q \in C^{FOC} \wedge q \neq \neg see(b,mother) \wedge q = 1]$

b. $\forall q[[q \in C^{FOC} \wedge q \neq \neg see(b,mother) \rightarrow q <_{informative} \neg see(b,mother)]$

The value of the focus anaphor C^{FOC} here is given in (166).

(166) $[[C^{FOC}]] = \{\neg see(b,mother), \neg see(b,friend), \neg see(b,girlfriend)\}$

These alternatives are actually ranked on a scale and C^{FOC} can be construed as an ordered set. The reason A is picking out the alternative proposition with *lóuhmóu* "mom" here is because this alternative is the strongest. On a non-reversed scale the alternative with *lóuhmóu* would be low-ranking, but since the alternatives are negated this alternative is high-ranking. This is overtly indicated by the use of *dōu*, whose scalar presupposition ensures the asserted alternative is the most informative.

I would like to propose that A's strategy in asking this question is to find out whether he should cancel an indirect implicature. The existential presupposition ensures that it is uncontroversially understood that there are other relevant people who B did not see. These others are ranked lower on a negative scale.[72] They are the members of the resource domain C_3, given in (163).

If B were to answer A's question by saying "I saw my mother", this would indicate that the indirect scalar implicature was valid and that it should not be cancelled. This indirect scalar implicature is schematized below, where the strongest alternative is negated, resulting in double negation and the resulting inference that B saw his mother.

(167) <~~¬see(b,mother)~~, ¬see(b,friend), ¬see(b,girlfriend)>

If B were instead to answer "I did not even see my mother", then A would understand that this implicature should not arise, and that if it has been generated, then it should be cancelled.

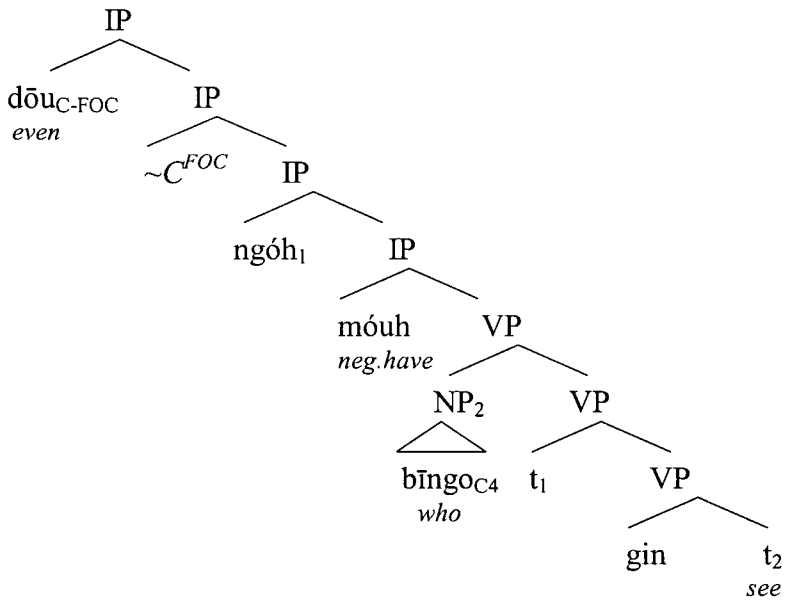
(168) <¬see(b,mother), ¬see(b,friend), ¬see(b,girlfriend >

B does not answer A's question directly in his response in (159)d. B understands what A is getting at. He understands that aside from the resource domain he used, C_4, context has also supplied another domain, C_3, and A is effectively asking which domain is under discussion. If B were simply to repeat what he said in (159)b he would not be very cooperative, since this was ambiguous in the first place. So, what he does do is use an indefinite which is contextually restricted with C_4, but one that is in focus and associated

[72] If this were a positive scale, they would be ranked higher since seeing them is more informative, or a highlight in a teenager's average day.

. with *even*. As with the case of stressed *ANY* earlier, the focal alternatives in this case are different resource domain indexings which pick out these alternative domains, C_4 and C_3.

(169) a. Ngóh (gāmyaht) bīngo dōu móuh gin.
LF: [dōu[ngóh [móuh [t_i gin [bīngo]]]]]



b. $\neg[[C_4 \cap \{x \mid x \text{ is a person}\}] \cap \{x \mid b \text{ saw } x\}] \neq \varnothing]$
$= [C_4 \cap \{x \mid x \text{ is a person}\}] \cap \{x \mid b \text{ saw } x\}] = \varnothing$

This sentence has the following presuppositions, as signalled by *dōu*.

(170) a. $\exists q[q \in C^{FOC} \wedge q \neq \neg[[C_4 \cap \{x \mid x \text{ is a person}\}] \cap \{x \mid b \text{ saw } x\}] \neq \varnothing] \wedge q = 1]$

b. $\forall q[[q \in C^{FOC} \wedge q \neq \neg[[C_4 \cap \{x \mid x \text{ is a person}\}] \cap \{x \mid b \text{ saw } x\}] \neq \varnothing]$
$\rightarrow q <_{\text{informative}} \neg[[C_4 \cap \{x \mid x \text{ is a person}\}] \cap \{x \mid b \text{ saw } x\}] \neq \varnothing]$

As with the case of stressed English *ANY*, I assume here that the alternatives to *bīngo*$_{C4}$ are other substitution instances of *bīngo* with alternate resource domain indexings. Since there are two contextually supplied domains under discussion here, the value of the focus anaphor C^{FOC} will be a set containing alternatives that differ along this dimension.

(171) $[[C^{FOC}]] = \{\neg[[C_4 \cap \{x \mid x \text{ is a person}\}] \cap \{x \mid b \text{ saw } x\}] \neq \varnothing],$
$\neg[[C_3 \cap \{x \mid x \text{ is a person}\}] \cap \{x \mid b \text{ saw } x\}] \neq \varnothing]\}$

The alternative resource domains here stand in a subset relation to each other, $[[C_3]] \subseteq [[C_4]]$. Consequently, these alternatives can be placed on a scale, since in a negative context using the wider domain C_4 results in a stronger statement.

(172) <$\underline{\neg[[C_4 \cap \{x \mid x \text{ is a person}\}] \cap \{x \mid b \text{ saw } x\}] \neq \varnothing}$],
$\neg[[C_3 \cap \{x \mid x \text{ is a person}\}] \cap \{x \mid b \text{ saw } x\}] \neq \varnothing$]>

Due to the existential presupposition of *dōu*, it is clear that one of these alternatives is known to be true already. Due to the scalar presupposition, it is clear that of all the alternatives, the one being asserted here is the strongest. Therefore, unlike B's original utterance in (159)b, this sentence unambiguously asserts that he did not see anybody in resource domain C_4 because the strongest alternative has *bīngo* indexed with C_4.

As mentioned, A's question which prompted this response was essentially a question of whether a scalar implicature should have been generated in the first place. By asserting the strongest alternative under discussion, B signals that indeed this scalar implicature should not be generated, and if it has been, that it should be cancelled.

The interesting difference between English and Cantonese is that English can only use an additive particle in cases where individuals are in focus, like the question "not even your mother", but English cannot use an additive particle when focus is on a determiner. Rather, English must rely on focal stress alone, as in the case of stressed *ANY*. Cantonese is more liberal in this regard, and its grammar allows *dōu* to associate with such foci. In both languages, exactly the same process is happening. Alternative resource domain indexings are evoked in order to cancel a scalar implicature. Cantonese is just a little more explicit.

2.4.3 The interpretation of postverbal indefinite pronouns

In the preceding section I outlined how preverbal emphatic indefinite pronouns are interpreted in Cantonese. Their distinctive meaning can only be appreciated when considered against the interpretation of postverbal non-emphatic indefinites. As we will see, postverbal non-emphatic NPIs have a peculiar interpretation which has not been previously accounted for. However, this unexpected interpretation receives a very natural explanation within my approach.

In the above discussion I was careful to use the postverbal indefinite *yàhn* "person". As noted in (128)-(130) above, *wh*-words used as indefinite pronouns may also be used postverbally in a non-emphatic fashion. However, in the dialogue in (159), substituting non-emphatic postverbal *bīngo* for *yàhn* would have been entirely inappropriate. This is illustrated in the following aberrant dialogue.

(173) a. A: Léih hóuchíh hóu jihkmohk.
you seem very lonely.
'You seem lonely.'

b. B: (#) Ngóh gāmyaht móuh gin <u>bīngo</u>.
I today not.have see who
'I didn't really see anybody today.'
('I didn't see anybody special today.')

c. A: # Léih lóuhmóu dōu móuh gin?
you mum even not.have see
'You didn't even see your mother?'

d. B: Ngóh gāmyaht bīngo dōu móuh gin.
I today who even not.have see
'I didn't see ANYbody today.'

The aberration begins with B's initial use of *bīngo* in (173)b. Postverbal indefinite pronouns like *bīngo* are perhaps best translated as "anybody in particular/special/much".[73] Interestingly, there is no overt modifier in the sentence that signals this meaning. Because (173)b has this interpretation, it is a little unusual to use it as an answer to the implied question in (173)a "Why are you sad?". Presumably this is because when somebody comments that you look lonely, to tell them straight out that you haven't seen anybody special is an overt admission of having very high standards of companionship.

But where the dialogue really breaks down altogether is in A's follow up question in (173)c. As discussed, B's mother is not that special in the sense that B lives with her and sees her every day, so it is pragmatically odd to ask this question. Intuitively this is because B has just said that he didn't see anybody special, and intentionally left the door open for any inferences concerning non-special people.

I think it is fair to say that it is rather surprising that an unmodified indefinite pronoun would have this meaning. Yet the lack of an overt modifier in this type of example can be naturally explained by my approach, which is a significant successful prediction. The problem with (173)c is that Speaker A is using an additive particle *dōu* to ask about cancelling an implicature that cannot be cancelled.

Normally, when postverbal indefinites like *yàhn* are used, their resource domain is vague and will be supplied by context. If the resource domain is understood to include only remarkable individuals in some sense, then an indirect scalar implicature can be generated concerning other domains which include additional less remarkable individuals. Since this is a conversational scalar implicature, it can be cancelled.

In this case with postverbal *bīngo*, the implicature cannot be cancelled. What I would like to propose is that postverbal non-emphatic indefinite pronouns carry a *conventionalized* indirect scalar implicature. Consequently, if the two most contextually salient resource domains are C_3 and C_4, repeated here in (174), the use of a postverbal indefinite pronoun signals that the less informative of the resource domains is being used, and directs the hearer to generate the appropriate indirect scalar implicature.

(174) a. $[[C_4]] = \{x \mid x \text{ is b's mother, b's friend, b's girlfriend}\}$
b. $[[C_3]] = \{x \mid x \text{ is b's friend, b's girlfriend}\}$

(175) $<\neg[[C_4 \cap \{x \mid x \text{ is a person}\}] \cap \{x \mid \text{b saw } x\}] \neq \varnothing]$,
$\underline{\neg[[C_3 \cap \{x \mid x \text{ is a person}\}] \cap \{x \mid \text{b saw } x\}] \neq \varnothing]}>$

[73] Lin (2002) remarks that postverbal wh-words used as indefinite pronouns may also receive this interpretation in Mandarin.

Since using a postverbal indefinite pronoun signals that the less informative of the resource domains is to be selected, the scalar implicature in (175) is essentially conventionalized. Hence, it cannot be cancelled using the normal device of an additive particle like *dōu*. There is no need to negotiate which domain is being selected.

This makes Cantonese quite different from English. In English, in order to get the same inference from a non-emphatic indefinite pronoun, some overt modifier must be used which can be thought of as downplaying the indefinite in terms of how informative it is. Some examples are given below.

(176) a. I didn't see anybody special.
b. I didn't see anybody in particular.
c. I didn't see anybody much.
d. I didn't really see anybody.

Within the system of negative polarity indefinite pronouns in Cantonese, a sort of binarity has developed which is not present in English. In English, although focussed emphatic indefinite pronouns are informationally strong and can be used to cancel scalar implicatures, non-emphatic indefinite pronouns which are not modified by any of the methods in (176) are ambiguous. They may have very informative resource domains, or they may not. Maybe a scalar implicature should be generated, or maybe it shouldn't. This is much more like the case of normal indefinites in Cantonese, like postverbal *yàhn* "person".

Like emphatic pronouns in English, preverbal focussed indefinite pronouns associated with *dōu* in Cantonese are informationally strong and are used to cancel scalar implicatures. Unlike in English, postverbal non-emphatic indefinite pronouns in Cantonese are equally unambiguous. They are purposefully uninformative and always give rise to indirect scalar implicatures. This is captured quite elegantly within the present framework.

CHAPTER THREE: DOMAIN WIDENING OF FREE CHOICE ITEMS

3 Introduction

In Chapter Two I argued that focus is used in order to widen the contextually supplied domain which restricts a negative polarity indefinite. This use of focus is not contradictory in that it is not used to contradict another proposition in discourse. Rather, it merely precludes or cancels a possible scalar implicature from arising which would have resulted in a smaller domain for the quantifier. In this chapter I will extend consideration to free choice items and argue that a similar process of widening and scalar implicature cancellation is instantiated by the use of focus on the determiner.

I begin my discussion in Section 3.1, where I briefly discuss the importance of focus and the role of *even* in the formation of free choice items crosslinguistically. In Section 3.2, I discuss the analysis of free choice items as generic indefinites proposed by Kadmon and Landman (1993) and Lahiri (1998), and then introduce a new variation derived from these and my own analysis of emphatic NPIs from the previous chapter. The heart of the chapter is Section 3.3, in which I discuss free choice licensing in non-generic environments. Here, I develop a brand new analysis of free choice items as widened indefinites which have the particular properties they do because their narrower alternative is a singleton indefinite (Schwarzschild 2002). The result is a new conception of the relation of free choice to specificity, formulated from a domain widening point of view. In Section 3.4 I compare my analysis of non-generic free choice items to an alternative proposal by Giannakidou (2001). I close the chapter with Section 3.5, in which I discuss the distinction between emphatic NPIs and free choice items in environments where ambiguity may arise, and examine the disambiguating role of *just* in these cases.

3.1 Typological characteristics of free choice items

In Section 2.1 I briefly noted in passing that free choice items are obligatorily focussed crosslinguistically (Haspelmath 1997). For instance, Carlson (1981) and Dayal (1998) have remarked that free choice *any* in English differs from negative polarity *any* in that the former is obligatorily stressed whereas the latter is not. A similar pattern is reflected in other languages in which a free choice indefinite pronoun is distinguished from a regular indefinite pronoun merely by focal stress. The examples below are repeated from Chapter Two. In the English example in (1)a, we see that DPs may be stressed. The example in (1)b demonstrates that when the free choice item *anyone* is used, focus may not lie elsewhere in the sentence. The requirement that *anyone* be stressed sets it apart from *someone*, which does not attract sentential stress.[1]

[1] Henry Davis (p.c.) points out that in examples similar to (1)b, it is possible for *book* to be focussed if it is contrasted with some other element in the discourse context.

(1) a. Ram may buy a BOOK..
b. ANYONE may buy a book (?* Anyone may buy a BOOK.)
c. Someone may buy a BOOK. Haspelmath 1997: 124 (272)

(2) a. You may invite SANGITA.
b. You may invite ANYONE.
c. You may INVITE someone. (?* You may invite SOMEONE.)
Haspelmath 1997: 124 (273)

Russian

(3) a. **KTO UGODNO** možet kupit' knigu.
(?* **Kto ugodno** možet kupit' KNIGU)
'Anyone may buy a book.'

b. **Kto-nibud'** možet kupit' KNIGU.
(?* **KTO-NIBUD'** možet kupit' knigu)
'Someone may buy a book.' Haspelmath 1997: 124 (274)

(4) a. Ty možeš' priglasit' **KOGO UGODNO**.
(?*Ty možeš' PRIGLASIT' **kogo ugodno**.)
'You may invite anyone.'

b. Ty možeš' PRIGLASIT' **kogo-nibud'**.
(?*Ty možeš' priglasit' **KOGO-NIBUD'**.)
'You may invite someone.' Haspelmath 1997: 124 (275)

German

(5) a. **IRGEND JEMAND** kann ein Buch kaufen.
'Anyone can buy a book.'
(≠**Irgend jemand** kann ein BUCH kaufen.
'Someone can buy a book.')

b. **Jemand** kann ein BUCH kaufen.
(?* **JEMAND** kann ein Buch kaufen.)
'Someone may buy a book.' Haspelmath 1997: 124 (276)

(6) a. Du darfst **IRGEND JEMANDEN** einladen.
'You may invite anyone.'
(≠ Du darfst **igened jemanden** EINLADEN.
'You may invite someone.')

(i) Anyone may buy a BOOK, not a RADIO.

While it is true in (i) that the focal stress on *book* eclipses the stress on *anyone*, it is still the case that *anyone* cannot be totally deaccented. There is still some residual stress on this item even in this case.

b. Du darfst **jemanden** EINLADEN.
(?* Du darfst **JEMANDEN** einladen.)
'You may invite someone.' Haspelmath 1997: 124 (277)

As with emphatic NPIs, free choice items in many languages incorporate a particle meaning "even".[2] Examples from a few languages are given below, where the additive particle has been underlined.

Hausa
(7) Anàa saamùn-sà **koo-'ìnaa**.
one:pres get-3sg also-where
'You can get it anywhere.' Haspelmath 1997: 301(A239)

Hindi
(8) Ghar me **koii** **bhii** aa sak-taa hai.
house in someone even come can-impf is.
'Anyone can come into the house.' Haspelmath 1997: 285(A173)

Kannada
(9) Raamu **ellig-uu** hoodaanu
Ramu where-even may.go
'Ramu may go anywhere.' Haspelmath 1997: 306(A260)

Ancash Quechua
(10) **Pi-pis** kay prolema-ta-qa atinman-mi
who-even this -problem-acc-top solves
'Anyone can solve this problem.' Haspelmath 1997: 311(A278)

From the preceding data, I draw the generalization that both focus and the scalar semantics of *even* are relevant in the analysis of free choice.

3.2 Free choice items as widened generic indefinites

The proper analysis of free choice items remains highly controversial after decades of research. On the one hand, in several languages free choice items are clearly morphologically drawn from the stock of indefinite pronouns (as in the data in (4)-(6)), which suggests that free choice sentences involve existential quantification. This analysis of free choice has been advocated by Kadmon and Landman (1993), Lahiri (1998) and Giannakidou (2001). Yet, in very many instances free choice items are naturally paraphrased as universal quantifiers which suggests that, although morphologically similar to indefinites in some languages, they should be given an independent analysis and treated as genuine universal quantifiers of some

[2] Rullmann (1996), in his survey of Dutch negative polarity items, points out that *ook maar* "even-NPI" is not used in the make-up of free choice items and speculates this may reflect a crosslinguistic pattern whereby particles meaning "even" are never incorporated into free choice items. The data above suggest that this is not in fact the proper crosslinguistic generalization.

type. This position has been defended by Ladusaw (1979), Carlson (1981), Linebarger (1981) and Dayal (1998).

Kadmon and Landman (1993) and Lahiri (1998) both extend their analyses of negative polarity items to free choice. Drawing from the literature on the quantificational variability of indefinites in general, under their approaches the apparent universal force of free choice items is due to a generic quantifier which binds the indefinite. Other authors who have discussed a relation between generic indefinites and *any* include Vendler (1967), Perlmutter (1970), Nunberg and Pan (1975) and Burton-Roberts (1976) (see Krifka et al. (1995) for an overview discussion). Kadmon and Landman's key insight is once again that these free choice indefinites in the restriction of the generic quantifier have a wider domain then other generic indefinites. Lahiri shows that the mechanics of focus play a role in this effect and that free choice items occur in exactly the environment in which the presuppositions of *even* are satisfied.

Keeping in line with the themes of Chapter Two, my own analysis of generic free choice refines those of Kadmon and Landman (1993) and Lahiri (1998). After reviewing Kadmon and Landman's treatment in 3.2.1 and Lahiri's in 3.2.2, I introduce my own analysis of free choice items in generic contexts in 3.2.3.

3.2.1 Kadmon and Landman (1993)

Kadmon and Landman observe that free choice *any* occurs in the same environment as generic indefinites. These are sentences which are non-episodic and express modal law-like generalizations. Furthermore, both generic indefinites and free choice *any* allow for exceptions. For example, both the generic in (11) and free choice *any* in (12)B have the counterfactual entailment in (13) (Kadmon and Landman 1993: 405).

(11) A dog gives live birth.

(12) A: A large dog gives live birth.
B: What!? ANY dog gives live birth.

(13) If you were a dog, and not a legitimate exception (not a male, for example), you would give live birth.

This similarity leads Kadmon and Landman to propose that free choice *any* noun phrases are widened generic indefinites.

Kadmon and Landman derive genericity from a covert generic operator, which is a type of modal universal quantifier with a vague restriction. While the particular technical details of their analysis of the generic operator will not concern us here, their fundamental insight once again is that generics involve domain widening of an indefinite, which leads to a stronger proposition. This is demonstrated in (12)B, a sentence for which the following entailment holds.[3]

[3] This of course depends on generics creating a downward entailing environment. This is discussed my fully in Section 3.3.

(14) wide: A (large or small) dog gives live birth
narrow: ⇒ A large dog gives live birth

In (12) the two sentences differ in that the weaker sentence contains an adjective which restricts the indefinite, thus narrowing the set denoted by the entire NP.

To take another example, in the following dialogue the generic indefinite in (15)a is widened in (15)c. Within the discourse, it is clear that *ANY owl* in (15) can only be understood to include both healthy and sick owls. In (15)a it is possible to construe *an owl* more narrowly as only including healthy owls but not sick ones, as shown by B's question in (15)b.

(15) a. A: An owl hunts mice.
b. B: A healthy one, that is?
c. A: No, ANY owl.

Once again, the sentence containing the wider indefinite entails and is hence stronger than the parallel sentence containing the narrower indefinite.

(16) wide: A (sick or healthy) owl hunts mice.
narrow: ⇒ A (healthy) owl hunts mice.

By widening the implicit restriction of a generic indefinite, a stronger proposition is asserted. This is the nature of free choice in Kadmon and Landman's system.

3.2.2 Lahiri (1998)

Lahiri's treatment of free choice *bhii* "even" indefinites in Hindi is also a straightforward extension of his treatment of negative polarity *bhii* indefinites. Like Kadmon and Landman, he argues that these free choice items occupy the restriction of the generic operator. These free choice words are focussed, and the sentence in which they occur is interpreted against a background set of alternative propositions. The free choice item itself is formed from the additive particle *bhii* "even", along with one of the indefinites *ek* or *koii*, which are cardinality predicates meaning "one". Lahiri claims that the alternatives substituted for *ek* are other cardinality predicates such as **two**, **three**, etc., whereas the alternatives substituted for *koii* are contextually supplied properties P_1, P_2, P_3 that are more specific than "one". Since *ek/koii* "one" is the most general property, these alternative values are all in fact subsets of *ek/koii*. Once again, Lahiri shows that the restriction of the generic operator is an environment in which the presuppositions of *bhii* can be satisfied when associated with a very general property.

Lahiri (1998: 91 (91)) discusses the example in (17).

(17) ek bhii aadmii is mez-ko uThaa saktaa hai.
one even man this table lift can
'Even one man can lift this table.'

This sentence asserts (18)a, and due to the presence of *bhii* "even", has the existential presupposition in (18)b and the scalar presupposition in (18)c. In these formulas, C is a context variable restricting the generic operator to salient normal situations. The assertion in (18)a may be paraphrased "Generally, contextually salient situations s in which x is one (man) are extendable to situations s′ in which x can lift a table".

(18) a. As: $GEN_{x,s}$ [**one**(x) ∧ C(x,s)][∃ s′ ≥ s: x can lift this table in s′]
b. Ps: For some cardinality predicate other than **one**, say Z,
$GEN_{x,s}$ [Z(x) ∧ C(x,s)][∃ s′ ≥ s: x can lift this table in s′].
c. Ps: For every cardinality predicate other than **one**, say U,
if $GEN_{x,s}$ [**one**(x) ∧ C(x,s)][∃ s′ ≥ s: x can lift this table in s′], then likelihood (ˆ$GEN_{x,s}$ [**one**(x) ∧ C(x,s)][∃ s′ ≥ s: x can lift this table in s′]) < likelihood (ˆ$GEN_{x,s}$ [U(x) ∧ C(x,s)][∃ s′ ≥ s: x can lift this table in s′]). (Lahiri 1998: 91 (92-94))

The set of alternative propositions against which this sentence is interpreted will be something like the set given in (19).

(19) {ˆ$GEN_{x,s}$ [**one**(x) ∧ C(x,s)][∃ s′ ≥ s: x can lift this table in s′],ˆ$GEN_{x,s}$ [**two**(x) ∧ C(x,s)][∃ s′ ≥ s: x can lift this table in s′], ˆ$GEN_{x,s}$ [**three**(x) ∧ C(x,s)][∃ s′ ≥ s: x can lift this table in s′]}

In most natural contexts, the presuppositions of (17) will be satisfied. That is, it is normally the case that if one person can lift a table, it is also the case that two people can lift a table. Since in every situation in which one person can lift a table, two people can lift a table, it must be the case that it is more likely that two people can lift a table than that one person can lift a table. Therefore, the scalar presupposition in (18)c is satisfied.

3.2.3 A new analysis of free choice in generic environments

My own analysis of free choice items in generic environments is also an extension of my approach to emphatic negative polarity items. Once again, my approach incorporates elements of both Kadmon and Landman (1993) and Lahiri (1998). I will adopt the view that generic free choice items are really just indefinites that have a focussed determiner and that are interpreted within the restriction of a generic operator.[4] I will argue that free choice items

[4] I adopt this position while acknowledging there is some doubt that this is the best analysis of generic free choice items. Dayal (1998) has questioned this approach by noting that, unlike other indefinites, free choice items appear to resist being bound by adverbs of quantification. For instance, (ii) is perhaps acceptable on a frequency reading, but not acceptable on the reading in which the adverb *usually* binds the indefinite, so that this sentence may be paraphrased that "Most lions are majestic".

(i) A lion is usually majestic.
(ii) *Any lion is usually majestic

Dayal argues that if free choice items cannot be bound by adverbs of quantification then one might not expect them to be bindable by a generic operator.

involve focus and the scalar presuppositions of *even*, as well as genuine domain widening. In my approach, the generic indefinite *an owl* in (20)a and the free choice *any owl* (which is focussed) in (20)c crucially differ in the value of the index of the resource domain variable within the determiner.

(20) a. A: An owl hunts mice.
b. B: A healthy one, that is?
c. A: No, ANY owl.

We can regard this dialogue as a process of domain negotiation for the generic indefinite. Although Speaker A presumably meant her generalization in (20)a to cover sick and healthy owls, Speaker B's question reveals that it is possible to construe it as only pertaining to healthy owls. Speaker B's question here is not necessarily meant as a correction of Speaker A, but merely a request for explicit clarification. There are two sets of owls under consideration, one the subset of the other. As in Chapter Two, we can model this by saying that the two speakers are considering different indices on the resource domain variable contained within the determiner of the generic indefinite. These two resource domains differ minimally on whether the set of sick individuals counts as a subset.

(21) Speaker A is thinking of C_9: $[[C_9]] = \{x \mid x \text{ is healthy or } x \text{ is sick}\}$
Speaker B is thinking of C_8: $[[C_8]] = \{x \mid x \text{ is healthy}\}$
note that $[[C_8]] \subseteq [[C_9]]$

Free choice *ANY* in (20)c can be regarded as an emphatic version of the indefinite determiner *a* in (20)a, differing only in being interpreted against a set of scalar alternatives. By using it in (20)c, Speaker A is indicating that she is making a generalization about the set of owls which intersect with the wider resource domain variable, C_9.

Taking (20)c as elliptical for "ANY owl (hunts mice)", this sentence has the normal semantic value in (22)i and the focus semantic value in (22)ii. I am assuming that the indefinite determiner is ambiguous between a quantificational version, which creates generalized quantifiers, and a non-quantificational one. However, in the latter case I am not treating the determiner as entirely vacuous since it is responsible for introducing the resource domain variable of type <e,t> which intersects with the NP restriction. Therefore, the determiner is still playing an important semantic role as a host for the nominal contextual variable.[5]

[5] The idea that the determiner may play some sort of role in assisting contextual restriction, even in the absence of it having obvious quantificational force, is similar to a proposal by Matthewson (2001), who claims that in the Salishan language St'át'imcets, a quantificational DP consists of a quantificational element Q, a determiner D and the NP restriction: $[_{QP}$ Q $[_{DP}$ D $[_{NP}$ NP]]]. Here Q provides quantificational force and D simply introduces the contextual variable.

Incidentally, in languages in which a quantificational element is not syntactically co-extensive with the element that houses contextual restriction, one would not necessarily expect focussing on a quantifier itself would achieve domain widening. In such a case, quantificational focal alternatives would never vary for the value of an indexed variable. Then again, if Q is the head of a larger phrase as in Matthewson's system, it is possible that focal stress on the Q would indicate that the entire QP is in focus. I leave investigating such systems to future work.

(22) ANY_{C9} owl hunts mice.

i. $[[ANY_{C9}$ owl hunts mice.$]]^{\circ}$

$= \text{GEN}x,s[x \in [C_9 \cap \{y \mid y \text{ is an owl}\}] \wedge C^{GEN}(s)]$

$[\exists s',y[s' \geq s \wedge y \text{ is a mouse} \wedge x \text{ hunts } y \text{ in } s']]$

ii. $[[ANY_{C9}$ owl hunts mice.$]]^{f}$

$= \{\text{GEN}x,s[x \in [X \cap \{y \mid y \text{ is an owl}\}] \wedge C^{GEN}(s)]$

$[\exists s',y[s' \geq s \wedge y \text{ is a mouse} \wedge x \text{ hunts } y \text{ in } s']]] \mid X \in D_{<e,t>}\}$

$= \{an_{C9}$ owl hunts mice, an_{C8} owl hunts mice ...$\}$

These formulas have two contextual variables. The first variable, C^{GEN}, is the contextual variable which restricts the generic operator to relevant situations. This variable is responsible for ensuring that only normal situations should be taken into account. For instance, in the current example it might restrict the operator to situations involving owls eating but exclude situations involving owls sleeping. The second variable, C, is the familiar resource domain variable which intersects with the value of the noun phrase. This is the variable which is within the indefinite determiner and is focussed. This contextual variable is used to restrict which individuals fall within the quantificational generalization. The two variables play different roles. The variable C^{GEN} ensures that only normal situations be considered, and the variable C ensures that the right individuals within these normal situations be considered.

A third contextual variable which is relevant in this example is the set of contextually salient focal alternatives. This is the variable C^{FOC} introduced by the focus ~ operator, and which according to Rooth's (1992) Focus Interpretation Principle has a value that is a subset of the focus semantic value of the sentence. Since the indefinite determiner is focussed, these salient alternatives correspond to the different substitutions for the value of the resource domain indexing on the determiner. This set is given in (23).

(23) $[[C^{FOC}]] = \{an_{C9}$ owl hunts mice, an_{C8} owl hunts mice$\}$

As the alternative containing the indefinite with the widest contextual domain has been asserted, one can say that widening has occurred. As with emphatic negative polarity items, this approach differs from Kadmon and Landman's in that the present system relies on focus and substitution for the value of the resource domain variable on the determiner.

Since the wider proposition entails the truth of its scalar alternative, the presuppositions of *even* are also satisfied, although no overt additive particle is used in the sentence.[6] This corresponds to the major finding of Lahiri (1998). As with emphatic negative polarity items, this approach differs from Lahiri's in that it incorporates the intuition of widening of the contextual restriction.[7] Lahiri's theory, on the other hand, relies on the idea that since the focussed item is the most general property the alternatives are bound to be less specific alternatives.

Finally, since the strongest scalar alternative has been asserted in lieu of a weaker one, one can say that an exhaustivity inference, that only the weaker proposition is true, has

[6] If the asserted value for the resource domain variable were not wider than its salient focal alternative, then this would be a contradictory use of focus and the presuppositions of *even* would not be satisfied.

[7] Note that the contextual variable in Lahiri's formulas in (18)-(19) is not the resource domain variable on the determiner, but the contextual variable of the generic operator which restricts GEN to appropriate situations.

been cancelled. This act of domain negotiation can be considered an instance of scalar implicature cancellation, leading to the corrective flavour of (20)c.[8] Using the informal notation from the previous chapter, this scalar implicature can be schematized as in (24). Here the underlined low-ranking proposition corresponds to the weak construal of (20)a. This gives rise to an implicature that negates the stronger higher-ranking proposition, which is struck through.

(24) < ~~an$_{C9}$ owl hunts mice~~, an$_{C8}$ owl hunts mice >

This implicature is cancelled when the domain is widened with free choice *any*, as schematized in (25) where the underlined proposition corresponds to the stronger proposition which is now being asserted.

(25) < an$_{C9}$ owl hunts mice, an$_{C8}$ owl hunts mice >

This cancellation of a scalar implicature is not incorporated into either Kadmon and Landman's or Lahiri's proposal.

3.3 The problem of non-generic free choice items

The previous section explored the nature of generic free choice items. Adopting the key insights of Kadmon and Landman (1993) and Lahiri (1998), I argued that such free choice items are widened generic indefinites. In this section I move beyond this previous research to present a wholly novel analysis of non-generic free choice items. Rather than relating these items to generic indefinites, I will demonstrate that non-generic free choice items are profitably analyzed as bearing a relationship with specific indefinites. My proposal builds on the general themes of this dissertation, and argues that these free choice items too can be analyzed in terms of contextual restriction and scalar implicature.

Dayal (1998) criticizes Kadmon and Landman's analysis of free choice items, and her criticism extends to Lahiri's and my treatment as presented thus far as well. While the widening approach may work for examples in which free choice items occur in characterizing sentences, she observes that it does not straightforwardly account for other types of examples in which genericity plays no role. She identifies two problematic cases – the use of free choice in subtrigging environments and the use of free choice items in non-generic modal contexts.

Subtrigging is a term coined by LeGrand (1975) which refers to the licensing of free choice *any* by a subordinate clause.

[8] One might be suspicious that a scalar implicature has been cancelled and instead take the "No" in (20)c as indicating that the proposition questioned in (20)b is false rather than not being the whole truth, as on my account. I do not think it is the case, though. I take the "No" answer not as descriptive negation denying the truth of "A healthy owl hunts mice", but rather as metalinguistic negation cancelling the scalar implicature "It is not the case that a sick owl hunts mice". See Horn (1985, 1989) for discussion of metalinguistic negation and Section 3.5 for the interaction of metalinguistic negation and free choice.

(26) a. John talked to any woman who came up to him.
b. Any woman who heard the news contributed to the fund.
c. Any man who saw the fly in the food didn't eat dinner.
Dayal 1998: 435 (3)

Any without the subtrigging relative clause in these examples is ungrammatical.

(27) a. * John talked to any woman.
b. * Any woman contributed to the fund.
c. * Any man didn't eat dinner. Dayal 1998: 435 (3)

The contrast between the examples in (26) and (27) has nothing to do with genericity. Both sets of examples are episodic; the sole difference is the presence of the subordinate subtrigging clause.[9]

The modal contexts which permit free choice *any* typically involve possibility modals. The examples in (28) are once again problematic for the generic indefinite account because these sentences are episodic. Furthermore, the parallel version of these sentences with a plain singular indefinite must be interpreted episodically as well.

(28) a. You may pick any flower. Dayal 1998: 435 (4a)
b. Any pilot could be flying this plane. Dayal 1998: 435 (5a)

(29) a. You may pick a flower.
b. A pilot could be flying this plane. Dayal 1998: 439 (14a-b)

The facts concerning necessity modals and free choice *any* in episodic contexts are somewhat more subtle. While the parallel examples to those in (28) with a necessity modal are ungrammatical (30), in other cases necessity statements tolerate free choice *any* (31).

(30) a. * You must pick any flower. Dayal 1998: 435 (4b)
b. * Any pilot must be flying this plane. Dayal 1998: 435 (5b)

(31) Any student must work hard. Dayal 1998: 435 (6)

The subtrigging and modal environments Dayal discusses are not simply problematic for the widening analysis because of the lack of genericity.[10,11] The real problem is that widening the domain of an indefinite only makes for a more informative statement in

[9] It has been suggested by Kai von Fintel (p.c.) that these subtrigged sentences, despite appearances, do in fact encode genericity since there is a very strong intuition that the generalizations expressed in these sentences are non-accidental facts.

I attribute this not to genericity, but rather the semantics of *even*. My analysis is that these FCIs are domain widened specific indefinites that satisfy the presuppositions of *even*. I would relate the "non-accidental" character of these sentences to Heim's (1984) observation that minimizers can only be used to express non-accidental generalizations because of an inherent *even*. See Section 2.2.3.5 for more discussion of Heim's observation.

[10] Dayal goes on to develop her own theory of free choice items as modal universal quantifiers.

[11] I will argue below that certain examples such as (31) are in fact generic.

downward entailing environments. Generic sentences are downward entailing; episodic subtrigging sentences and those containing possibility modals are not downward entailing.

Some care needs to be taken when claiming that generic environments are downward entailing. It is necessary to qualify this statement and say generic environments are downward entailing "in context" because these environments are actually not logically downward entailing (Heim 1984). This is so because generic quantification allows for exceptions. As a result, the entailment in (32) fails to go through even though the set denoted by [[dogs]] is a superset of the set denoted by [[male dogs]]. Male dogs are considered a legitimate exception to the generalization that dogs give live birth, since in a context in which the birthing process is under consideration, male animals will always be excluded on principled grounds.[12] Note, however, that dogs of various hues will not constitute legitimate exceptions in this context, because fur colour does not have any fundamental effect on giving birth the way gender does. Consequently the entailment in (33) does go through because when legitimate exceptions in context are excluded from consideration, the restriction of a generic operator can be considered a downward entailing environment.

(32) Dogs give live birth.
$\neq\Rightarrow$ Male dogs give live birth. [[dogs]] $\supset$ [[male dogs]]

(33) Dogs give live birth.
$\Rightarrow$ Black dogs give live birth. [[dogs]] $\supset$ [[black dogs]]

Both the subtrigged and modal contexts discussed above are not downward entailing. As seen in (34), widening the domain of a subtrigged indefinite does not license downward entailments.

(34) John talked to a woman who came up to him.
$\neq\Rightarrow$ John talked to a strange woman who came up to him.

In fact, the sentence with the narrower domain is more informative, as seen by the upward entailment in (35).

(35) John talked to a strange woman who came up to him.
$\Rightarrow$ John talked to a woman who came up to him.

The same point can be made about modals. Example (36) demonstrates that a possibility modal *may* does not license downward entailments. In fact, the narrower the domain the more informative the sentence, as seen in (37).

(36) You may pick a flower.
$\neq\Rightarrow$ You may pick an orchid.

[12] This is the role of the other contextual variable in the restriction of the generic operator, restricting the generic quantification to appropriate situations.

(37) You may pick an orchid.
⇒ You may pick a flower.

Unlike the restriction of a generic operator, it is not a matter of logical versus in-context downward entailingness. It is not the case that, while discussing who John talked to, strange women would constitute a legitimate exception in (34) or that when offering somebody a flower a particularly nice and expensive one would be automatically excluded from consideration in (36).

Given that free choice items occur in subtrigged and modal environments, it is not clear how the hypothesis that these are widened indefinites can be maintained. However, in the following sections I will defend this position and propose a novel analysis of free choice items in these environments. Rather than treating these free choice items as widened generic indefinites, I treat them as widened specific indefinites whose specificity has been destroyed.

3.3.1 Free choice as non-specificity

I begin the discussion by accounting for the problematic cases of subtrigging identified by Dayal. The examples discussed in (26) are repeated here in (38).

(38) a. John talked to any woman who came up to him.
b. Any woman who heard the news contributed to the fund.
c. Any man who saw the fly in the food didn't eat dinner. Dayal 1998: 435 (3)

As shown in (27), repeated here as (39), free choice *any* without the subtrigging relative clause is usually unacceptable in episodic contexts.[13]

(39) a. # John talked to any woman.
b. # Any woman contributed to the fund.
c. # Any man didn't eat dinner.

The challenge is to develop a widening account which predicts this difference in acceptability. Ideally, the difference in acceptability between (38) and (39) can be explained wholly by the presence of the relative clause.

My proposal is that subtrigged free choice items are widened versions of indefinites on their specific reading. I adopt the notion of specificity proposed by Schwarzschild (2002) whereby specifics have a domain containing only a single individual, unlike other indefinites that do not have singleton domains. The intuition is that by widening the contextual domain of these specifics, the specificity effect is destroyed and replaced by the free choice interpretation of the indefinite. This proposal aims to formally capture the insight of researchers such as Jennings (1994), Haspelmath (1997) and Horn (2000b) who characterize free choice items by their extreme non-specificity. More particularly, I am not only proposing that free choice items are simply non-specific, but more accurately they are

[13] I mark these sentences with # since I will later show that the anomaly in these sentences has a pragmatic source. Dayal originally marked these as ungrammatical with *.

destroyed specifics. Their non-specificity must be understood with respect to a specific alternative, and hence they encode a contrastiveness not found with other non-specifics.

According to this analysis, free choice items appear in contexts in which specific indefinites appear. Not every indefinite noun phrase is interpreted specifically, so free choice items will not always be licensed. Among the factors identified by Fodor and Sag (1982) which strongly favour specific, or referential, readings of indefinites is the presence of a restricting relative clause. This is part of a more general pattern that the more contentful a noun phrase, the more likely it is to be interpreted as specific. For example, the sentences in (40), which are the non-free choice versions of (38), are most naturally understood as specific in the sense that the speaker seems to be referring to some individual in particular.

(40) a. John talked to a woman who came up to him.
b. A woman who heard the news contributed to the fund.
c. A man who saw the fly in the food didn't eat dinner.

The more properties that a speaker can ascribe to an individual, the more likely that the speaker has some acquaintance with this individual and hence has somebody in particular in mind. These same indefinites in (40) without the restrictive relative clause, as in (41), certainly may be construed specifically. However, it is far easier to understand these examples as if the speaker does not have anybody in particular in mind since the speaker is providing such minimal information about the referent(s) of the indefinite.

(41) a. John talked to a woman.
b. A woman contributed to the fund.
c. A man didn't eat dinner.

What is special about subtrigging relative clauses, then, is that they strongly encourage a specific indefinite interpretation of the narrower alternative. In such examples where specificity is so easily accessible, so too is its destruction by the use of a free choice item.[14]

Strong support for linking free choice licensing to specificity comes from examples of *supplemental free choice*, discussed by Jennings (1994) and Horn (2000b). Horn discusses several cases in which the use of free choice *any* is not licensed by a generic, subtrigged or modal context, but merely by its proximity to a "particularizing" *some* or other indefinite. The pattern seems to be that a rectifying, normally parenthetical, free choice item can supplement a preceding indefinite to make sure that a specific reading is blocked.

(42) a. The graffiti was intense, and brilliant; an angry, aggressive plaint of garish color on almost every surface. Somebody see me! Anybody!

Horn 2000b: 178 (84);
from Robert B. Parker, *Thin Air* (1995)

[14] Under my analysis, the subtrigging clause therefore does not "license" free choice in any way similar to the way a downward entailing environment licenses non-emphatic negative polarity items. The subtrigging clause merely facilitates a certain reading of the narrower alternative, which itself is a precondition to using free choice. That is, the narrow alternative must be specific in order for a free choice (destroyed specific) to be used. This is elaborated upon below.

b. Caudell hoped that someone, anyone would speak up and greet her by her right name. Horn 2000b: 179 (84); from Harry Turtledove, *Guns of the South* (1992), 436

c. I think she went to Lake Chapala deliberately to find a man. Any man. Jennings 1994: 191: from MacDonald (1962)

d. I am standing here only until a policeman, *any* policeman, turns up. Jennings 1994: 191

In each of these cases, Horn argues that the free choice *any* follows on the heels of another indefinite in order to prohibit an unintentional "particular" construal of the earlier indefinite. Likewise, Horn discusses instances in which the free choice *any* is negated, as in *not just any*, and used for just the opposite purpose. In the following examples, *not just any* is used after another indefinite, apparently to ensure a particular construal of the earlier indefinite.[15]

(43) a. CALL FOR PAPERS
But not just any papers, papers on KLINGON!
Horn 2000: 177 (81); from Linguist List posting (8 Nov 1995)

b. The other night I went looking for somebody. [PAUSE.]. Not just anybody. [PAUSE.] Well, actually ANYbody. Horn 2000: 177 (82); from a radio commercial for British Airways, voice-over à la faux-noir detective, (spring 1996)

By "particular" I take it that Horn is referring to something which might also be labelled specific. That is, particular indefinites are specific because the speaker has very narrow criteria and hence something particular or specific in mind when uttering the sentence.

Supplemental free choice is not licensed by extra content in the noun phrase like a subtrigging relative clause, but merely a rich discourse context which encourages a specific reading of an indefinite. Dayal (1998) discusses other instances of non-subtrigged and non-supplemental free choice licensed in episodic contexts, such as the following examples.

(44) a. Mary confidently answered any objections.
b. After the dinner, we threw away any leftovers. Dayal 1998: 446 (31)

These examples involve rare instances of free choice *any* licensed in episodic contexts without a subtrigging relative clause. Dayal (1998) argues that in these cases where free choice *any* is unexpectedly permitted, there is a clear intuition that some covert restriction for the *any* phrases can be easily provided. Dayal suggests covert restrictions like

[15] I present a novel analysis of the *not just any* construction in Section 3.5.

raised against her proposal in (44)a and *that we saw* in (44)b.[16] This fits in with my perspective on the issue. Although the extra content here is not overt like a subtrigging clause, in these examples this content is very easy to recover and hence these are examples in which one expects specific indefinites to occur.

Before presenting my analysis of subtrigged free choice items in a more concrete way, I must first discuss my assumptions about specificity and how it relates to contextual restriction. This is the topic of the next section.

3.3.2 Specificity as extreme contextual restriction

At this point it would be fair to say that there is a lack of consensus in the semantic literature on how to formalize specificity. One persistent insight is that specific readings of indefinites correspond to *de re* readings. That is, specific indefinites are existential quantifiers with wide scope over some other operator in the sentence. A variation currently in ascendancy is to capture specificity by treating indefinite determiners as variables ranging over choice functions which may potentially be existentially closed at a variety of levels. Researchers who argue for different versions of this approach include Reinhart (1997), Winter (1997), Kratzer (1998) and Matthewson (1999). This analysis has become popular to account for cases in which positing widest scope for the indefinite violates standard assumptions restricting how far quantifiers may raise.

Neither of these approaches very naturally melds with my main assumption about widening – namely, that focus is used to evoke alternative resource domains. Under the analysis that I will propose, free choice items are non-specific indefinites and their salient alternative is a specific alternative. Under my current assumptions about focus, focal alternatives differ only in the value of the item substituted for the focus value. Both the wide scope and choice function analysis of specifics are incompatible with the view that specific and non-specific indefinites could be alternatives to each other.

The wide scope analysis would require that the alternative construed specifically be bound by an existential operator at the highest level, whereas the non-specific alternative would be interpreted with the existential operator binding the alternative from some lower position. Two such sentences could not be focal alternatives of each other if focus is on the indefinite determiner, because they differ in more than the value substituted for the focussed item. Namely, the level of existential closure.

The choice function analyses of Reinhart (1997) and Winter (1997) suffer from the same problem. Under the choice function analysis, the indefinite determiner may be interpreted as a variable ranging over choice functions. Under Reinhart and Winter's approach, a specific reading results when this variable is bound by an existential operator at the highest level, whereas the non-specific reading results when this variable is bound by an existential operator at a lower level. Once again, this is a bigger difference than simply substituting the value of the focussed item, and so two such sentences could not be focal alternatives of each other.[17] The approach to choice functions advocated by Kratzer (1998), on the other hand, is in principle compatible with specific and non-specific indefinites being

[16] Dayal further suggests that it is important that these covert restrictions provide some temporal location.

[17] If focus were on the whole sentence, then sentences with such different LFs could be alternatives, but my arguments rely on focus being interpreted on the indefinite determiner.

substituted for each other in focal alternatives. This is because her theory treats indefinite determiners as ambiguous between being choice function variables and being inherently quantificational. A specific indefinite determiner would be interpreted as a free (i.e., unbound) choice function variable that gets its value assigned from context. A non-specific indefinite determiner is interpreted as a quantificational determiner that creates a generalized quantifier. Neither involves existential operators at various levels, but rather they differ merely in the value assigned to the determiner. Therefore, in principle a Kratzer-type approach to indefinites is compatible with specific indefinites and non-specific indefinites being substituted for each other in focal alternatives.[18] However, since my goal is to derive the difference merely from the size of the quantifier's domain, this version of the choice function analysis still does not match up nicely with my goals.

However, there is yet another recent proposal of specificity in the literature, namely Schwarzschild (2002), which does dovetail nicely with my agenda. Hereafter I will adopt this novel treatment of specificity. Schwarzschild argues that specific indefinites should be regarded as singleton indefinites – that is, indefinites which have only a single member in their domain. He proposes that such indefinites are possible due to covert contextual restriction which restricts the indefinite to a particular individual which the speaker has in mind. The unusual scopal behaviour of specific indefinites falls out in this approach because singletons are essentially name-like since they only have a single entity in their restriction. Insofar as names are scopeless, so too are singleton indefinites.

Schwarzschild (2002) discusses the following example to show why singleton indefinites are basically referential.

(45) Everyone at the party voted to watch a movie that Phil said was his favorite.

The indefinite in this example is very naturally understood as having a singleton domain. We can suppose that the lone individual in this set is the movie White Dust. Given a generalized quantifier treatment of the indefinite, the DP will denote a set of all sets containing some movie that Phil said was his favorite. In this example, this will be the set of sets containing the movie White Dust. The set of sets containing White Dust is also the generalized quantifier meaning of the name *White Dust*. Therefore, the generalized quantifier meaning of a singleton indefinite and the generalized quantifier meaning of a name are interchangeable. Schwarzschild (2002: 290) sums up the referentiality of singleton indefinites with the following, "This means that if singleton indefinites aren't actually referring expressions, they are pretty close to being referential. Like names, they 'speak about' a single entity."

This approach to specificity is promising, because it offers an explanation for the following type of data. Sometimes, the use of a free choice item is not aimed at correcting the

[18] A variation on Kratzer's approach put forth by Matthewson (1999) is not compatible with specifics and non-specifics being focal alternatives. Matthewson argues that indefinite determiners may either create generalized quantifiers or choice functions, but that the choice function variable must be existentially bound at the highest level. Therefore, sentences with specific indefinites have an extra existential operator not found in sentences with non-specific indefinites.

In fact, all the other choice function approaches cited here besides Kratzer's rely on existential closure at various levels, including the topmost level, and are thus variations of a *de re* analysis of specificity.

use of an indefinite, but to correct statements involving names or other referential expressions.

(46) A: I wonder who's flying that jet up there. Maybe it's Smith.
B: What makes you think that? Any pilot could be flying that plane.

In this example, the use of free choice *any* in (46) by Speaker B clearly is a response to A's proposing that a particular individual named Smith might be flying the plane under discussion. Interestingly, B's statement that "Any pilot could be flying the plane" does not contradict "Smith might be flying that plane". B is merely trying to point out that there are many other possible pilots aside from Smith. Assuming first that I am correct that free choice is normally used to widen the domain of specific indefinites, and secondly that Schwarzschild is correct that due to their singleton nature, specifics are name-like, then the use of a free choice item to "widen a name" can be explained.[19]

In the next section I will introduce my own formal analysis of free choice in subtrigging contexts by adopting Schwarzschild's proposal treating specificity as extreme contextual restriction.

3.3.3 Informativity through non-specificity

My proposal for subtrigged free choice items is the following: a free choice item is a widened specific indefinite and this widening is done to avoid an unwarranted scalar implicature.[20]

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[19] The ability to "widen a name" is not restricted to free choice, given that names are interchangeable with singletons, and any quantifier restriction can theoretically be a singleton in Schwarzschild's approach. An example involving NPI *any* is given in (i) and an example with the universal *every* is given in (ii).

(i) A: How are your interviews progressing?
B: Very poorly. I haven't talked to Higgins... in fact I haven't talked to ANYbody!
(ii) A: Can Bill come?
B: Yes. EVERYbody is welcome.

Whereas the narrower alternative of these quantifiers *may* be a singleton, I will argue below that the narrower alternative of a non-generic free choice indefinite *must* be a singleton. I discuss the use of focus to widen the domain of a universal quantifier in Chapter Four. See Schwarzschild's paper for discussion of the aversion of most non-indefinite quantifiers to having a singleton domain.

[20] According to some traditional diagnostics of universality which have been used in the free choice *any* debate, subtrigged free choice items test as universals. This is not really a disaster for an indefinite analysis of these items, because as Horn (2000a) notes, most of these diagnostics do not exclusively test for universality. Below I discuss two diagnostics, *almost/absolutely* modification and the apparent fact that *any*'s restriction is a downward entailing environment.

First, subtrigged *any* can be accompanied by *almost* and *absolutely* (i), as can universals (ii). But as Horn has shown, these adverbs really only mark the item they modifier as being end-of-scale, and non-universals can also be modified by them (iii)-(iv).

(i) John talked to almost/absolutely any woman that came up to him.
(ii) John talked to almost/absolutely every woman.
(iii) John absolutely adores garlic.
(iv) John is almost forty.

Specific indefinites are referential and convey information about an individual rather than about a class of individuals, i.e., a set. A scalar implicature may arise when a specific indefinite is used much like the kind that arises when any referential DP is used, such as proper names. This implicature is generated on a scale of individuals. A free choice item is a widened (destroyed) specific. Since I am assuming that specifics must have singleton domains, this means that a free choice indefinite is no longer specific. It denotes a set comprising several individuals from the individual scale on which the scalar implicature derived from the specific indefinite is generated. Therefore, once a free choice item is used the unwanted scalar implicature is cancelled.

A concrete example will help to demonstrate this system. In order to simplify the discussion, I will assume the discourse in (47), in which the specific indefinite alternative to the free choice item is overtly uttered in (47)A.

(47) A: John is normally quite shy, but I was happy to see that he talked to a woman that came up to him. She looked rather friendly, so I guess he wasn't intimidated.

B: Yeah, John was really sociable last night. He actually talked to ANY woman that came up to him, even some that didn't look that friendly.

Imagine that three women came up to John at some party – Anne, Bernadette and Camille – comprising the set {a, b, c}. Speaker A uses a specific indefinite, which means that the indefinite is contextually restricted to contain only the single individual which she has in mind. Let's say that Speaker A is thinking about Anne. Speaker B does not have particular people in mind, and so uses a much wider resource domain with all women that came up to John in it. These alternative resource domains are given in (48).

(48) Speaker A is thinking of C_5: $[[C_5]] = \{a\}$
Speaker B is thinking of C_6: $[[C_6]] = \{a, b, c\}$

Horn suggests that the fact *almost/absolutely* cannot appear with NPI *any* is mostly due to an aversion to negative environments rather than an affinity for universals.

Subtrigged *any* also seems to license polarity items in its restriction, which would suggest it is a universal quantifier which creates a downward entailing environment in its left argument. But in fact, the left non-monotone determiner *most*, which does not form a downward entailing environment, also licenses NPIs. (This is surprising. Unravelling this surprise is not directly relevant to my point of trying to show that these diagnostics do not only isolate universals. Note that Horn does not discuss this unexpected feature of *most*). In (v), (vi) and (vii) the polarity item *ever* is licensed in the restriction of subtrigged *any*, the universal *every* and *most*.

(v) John acknowledged any woman that he had ever loved.
(vi) John acknowledged every woman that he had ever loved.
(vii) John acknowledged most women that he had ever loved.

In Section 3.3.7 I discuss the ban on subtrigged free choice items in *there*-insertion contexts, which has also been used as evidence of *any*'s universality, and link it to the ban on specific indefinites in *there*-insertion contexts. For further discussion of these diagnostics, see Horn (2000a).

The underlined portion of Speaker A's contribution to discourse in (47)A is interpreted as in (49). Note that I am treating the indefinite as a generalized existential quantifier.

(49) John talked to a_{C5} woman that came up to him.
$= [[C_5 \cap \{x \mid x \text{ is a woman that came up to John}\}] \cap \{x \mid j \text{ talk to } x\}] \neq \varnothing$
$= [[\{a\} \cap \{x \mid x \text{ is a woman that came up to John}\}] \cap \{x \mid j \text{ talk to } x\}] \neq \varnothing$

Speaker B counters this assertion by using a free choice item in the underlined sentence in (47)B. There is focus on *ANY* in this example, and so this sentence has both a normal and focus semantic value.

(50) John talked to ANY_{C6} woman that came up to him
i. [[John talked to a_{C6} woman that came up to him]]°
$=[[C_6 \cap \{x \mid x \text{ is a woman that came up to John}\}] \cap \{x \mid j \text{ talk to } x\}] \neq \varnothing$
ii. $[[\text{John talked to } a_{C6} \text{ woman that came up to him}]]^f$
$=\{[[[X \cap \{x \mid x \text{ is a woman that came up to John}\}] \cap \{x \mid j \text{ talk to } x\}] \mid$
$X \in D_{<e,t>}\}$
= {John talked to a_{C6} woman that came up to him,
John talked to a_{C5} woman that came up to him…}

The two salient focal alternatives correspond to the normal semantic value of the two sentences used by Speaker A and Speaker B. These are given in (51).

(51) $[[C^{FOC}]] =$ {John talked to a_{C6} woman that came up to him,
John talked to a_{C5} woman that came up to him}

Now we come to the crux of the analysis. In my earlier discussion of widening, exhaustivity inferences took the form of scalar implicatures generated when an indefinite with a narrow domain was used. Widening cancelled this scalar implicature because in a downward entailing environment, the wider the domain, the stronger the assertion. This is not obviously the case in the subtrigging environments. In fact, in this context, the narrower the domain, the stronger the proposition, if as before the ability to license monotonic inferences is the sole indicator of strength.

(52) <John talked to a_{C5} woman that came up to him,
John talked to a_{C6} woman that came up to him>
$= <[[\{a\} \cap \{x \mid j \text{ talk to } x\}] \neq \varnothing], [[\{a,b,c\} \cap \{x \mid j \text{ talk to } x\}] \neq \varnothing]>$

The sentence with the narrower domain for the indefinite entails the sentence with the broader domain, but not vice versa. This is because existential determiners are persistent, or upward entailing, in their first argument (Barwise and Cooper 1981).

(53) $[\{a\} \cap \{x \mid j \text{ talk to } x\}] \neq \varnothing$
$\Rightarrow$ $[\{a,b,c\} \cap \{x \mid j \text{ talk to } x\}] \neq \varnothing$

(54) $[\{a,b,c\} \cap \{x \mid j \text{ talk to } x\}] \neq \varnothing$
$\not\Longrightarrow \quad [\{a\} \cap \{x \mid j \text{ talk to } x\}] \neq \varnothing$

This is the difficulty with a widening analysis pointed out by Dayal.

However, given my analysis of specific indefinites as singletons, I believe there is a way to sidestep this issue and maintain a domain widening account of free choice items. Dayal's objection can be overcome if it is not monotonic inferences as in (53) and (54) which are the indicator of strength with specifics and free choice.

The intuition behind my analysis is that by using a specific indefinite, one is not making a statement about a set of individuals, but is rather making a statement about a particular individual. Consequently the exhaustivity inference that free choice is meant to cancel is not at the level of sets of individuals, but at the level of individuals.

Because specific indefinites are really assertions about individuals, the sentence in (49) communicates (55).

(55) John talked to a.

This is because singletons are interchangeable with their lone member, following the discussion of Schwarzschild (2002). The exact identity may not be known to the hearer, but the hearer will still be able to understand that an assertion is being made about a particular individual.

If it is the case that more than one woman came up to John, asserting a sentence that means (55) can easily give rise to an exhaustivity inference. The scale that the implicature is generated on might be fully ordered along some dimension of particularity, or it might alternatively be a partially ordered scale like the type of example discussed by Rooth (1992). For present purposes I will assume that the relevant scale is the partially ordered one in (56).

(56)

talk.to(j, a),	talk.to(j, b),	talk.to(j, c)	weak
talk.to(j, a ⊕ b),	talk.to(j, a ⊕ c),	talk.to(j, b ⊕ c)	↕
	talk.to(j, a ⊕ b ⊕ c)		strong

Because the asserted alternative, namely "talk.to(j, a)", is on the weakest tier of this scale, a scalar implicature can be generated negating higher alternatives. The stronger alternative "talk.to(j, a ⊕ b)" is implicated to be false. Since "talk.to(j, a)" is true, the stronger alternative "talk.to(j, a ⊕ b)" can only be false if "talk.to(j, b)" is false. Parallel reasoning tells us that "talk.to(j, a ⊕ c)", "talk.to(j, c)" and "talk.to(j, a ⊕ b ⊕ c)" are implicated to be false as well.

This scalar implicature is schematized in (57), where the asserted alternative is underlined and the alternatives implicated to be false are struck through.

(57)

talk.to(j, a),	~~talk.to(j, b),~~	~~talk.to(j, c)~~	weak
~~talk.to(j, a ⊕ b),~~	~~talk.to(j, a ⊕ c),~~	~~talk.to(j, b ⊕ c)~~	↕
	~~talk.to(j, a ⊕ b ⊕ c)~~		strong

Non-specific indefinites could not possibly give rise to this type of inference since they are not interchangeable with individuals. This is how free choice, which is a widened

specific, blocks the unwanted scalar implicature schematized in (57). The widened free choice indefinite in (50) is not interchangeable with an individual, but rather conveys (58).

(58) John talked to some $x \in \{a, b, c\}$.

It is impossible to generate the unwanted scalar implicature in this example. Furthermore, if this proposition is asserted directly after one which does generate such a scalar implicature, the effect can only be to cancel the implicature.[21]

Because specific indefinites are individual oriented, and the scale in (56)/(57) is the one on which an implicature has been generated, this is the scale that will be most salient rather than the monotonic scale in (52). The set of focal alternatives in (51) is not identical to the scale on which the implicature is generated in (56)/(57). The resulting picture is that a set is widened in order to cancel an implicature on a scale on which sets do not even play a role. Although this might appear to be a clumsily indirect way for a free choice item to play a role in discourse, it is a straightforward result of the fact that specific indefinites have the distinctive property of referring to an individual while still being expressed as sets.

3.3.4 Extending the analysis to modal contexts

Aside from subtrigging, the other non-downward entailing environment which Dayal (1998) identified as problematic for a widening approach to free choice items is modal contexts. She observes that free choice items are reliably licensed in possibility modal environments ((59)a, (60)a), and less reliably in the scope of a necessity modal ((59)b, (60)b, vs. (61)).

(59) a. You may pick any flower.
b. * You must pick any flower. Dayal 1998: 435 (4)

(60) a. Any pilot could be flying this plane.
b. * Any pilot must be flying this plane. Dayal 1998: 435 (5)

(61) a. Any student must work hard.
b. Any doctor will tell you that.
c. Any soldier should be prepared to die for her country.Dayal 1998: 435 (6)

Dayal cites LeGrand (1975), Davison (1980) and Carlson (1981) as previous researchers who have observed that free choice does not have an equally restricted distribution in possibility and necessity modal environments.

In fact, I think the difference between possibility and necessity modals is even stronger than Dayal reports.[22] In the next section I will discuss how my theory accounts for

[21] I will demonstrate in Section 3.3.5 how this scalar implicature cancellation is the root to the universal of such free choice items.

[22] Lahiri (1998) notes that the distribution of Hindi indefinite *bhii* phrases, which are used to express free choice, in modal contexts is even more restricted than in English. He reports that *bhii* indefinites are unacceptable in necessity modal contexts, and only acceptable in possibility modal contexts if the context is also generic.

the licensing of free choice items in necessity modal contexts, and in 3.3.4.2 I will discuss possibility modal contexts.

3.3.4.1 Licensing in necessity modal contexts

Dayal presents a complex array of data revealing the subtle pattern of free choice licensing in necessity modal contexts. First, she shows that in commands, necessity modals are incompatible with free choice. Rather, in this environment, free choice *any* must be subtrigged to be licensed.

(62) * You must pick any flower. Dayal 1998: 455 (46b)

(63) You must pick any flower you see. Dayal 1998: 456 (48a)

Next, she shows that with epistemic necessity modals factors in the sentence other than the form of the free choice item may influence the overall acceptability of the sentence. Example (64) shows an unacceptable use of a free choice item in the scope of an epistemic necessity modal. Example (65) shows that even adding material to the free choice indefinite, such as a modifying prepositional phrase, cannot save the sentence. However, by making changes in other parts of the sentence, namely the form of the complement of the verb from a singular definite to a bare plural, the sentence becomes much more acceptable (66).[23]

(64) * Any pilot must be flying this plane. Dayal 1998: 456 (49b)

(65) * Any pilot on duty today must be flying this plane. Dayal 1998: 456 (50b)

(66) Any pilot must be out flying planes today. Dayal 1998: 457 (52)

Deontic necessity modals are apparently unlike other necessity operators in that non-subtrigged free choice may freely occur with them (67).

(67) a. Any student must work hard.
b. Any doctor will tell you that.
c. Any soldier should be prepared to die for her country. Dayal 1998: 435 (6)

My view of the data is somewhat different from Dayal's. In fact, I will claim that the restrictions on free choice in necessity modal environments simply mirror the case of non-modal episodic environments. Starting with the data in (62)-(63), the use of a subtrigging clause to save a free choice item is familiar from the preceding discussion, where subtrigging clauses saved free choice items in non-modal environments from ungrammaticality. There I argued that a subtrigging clause forces the narrower focal alternative of a free choice indefinite to be a specific indefinite. In commands like (63), it appears subtrigging plays a similar role.

[23] The reported grammaticality of (66) is from Dayal. I do not find this sentence very good, which I will discuss below.

Next, skipping to the deontic necessity modals in (67), these sentences all express law-like prescriptions of appropriate behaviour. In other words, all of these sentences are generic. By hypothesis, one might posit a covert generic operator in these sentences too, which would result in the examples of deontic necessity free choice simply being another instance of free choice as widened generic indefinites. Support for this reanalysis of the data in (67) comes from a comparison of unambiguously non-generic deontic necessity modals, which are markedly less acceptable. Relevant cases are given in (68).

(68) a. ?? Any student must attend today's lecture.
b. * Any soldier should have been wearing a helmet.

As for the examples involving epistemic necessity, I will start with the ungrammatical subtrigged case. Dayal explains the ungrammaticality of (65) because this sentence claims that in different worlds of evaluation, each pilot must be flying the same plane and this conflicts with real world knowledge of plane-flying. In the real world, only one or maybe two pilots may fly a plane at one time. Therefore, subtrigging cannot save the sentence because something is wrong elsewhere in the sentence. This is similar to the inability of subtrigging to save free choice items in sentences in which the matrix predicate is non-iterative, which will be discussed in Section 3.3.6

As for the sentence in (66), Dayal claims that this sentence is "completely acceptable", but I am hesitant to agree with her judgement. This sentence seems quite marginal to me, and situating it in discourse does not help very much. This is especially clear when the sentence in (66) is embedded in a context like (69). Here, the free choice item is quite unacceptable in (69)B with an epistemic necessity modal, especially when compared to using *all the pilots* in (69)B′ or to a generic deontic modal in (69)B″.

(69) A: Why are the barracks so quiet?
B: * Any pilot must be out flying planes today.
B′: All the pilots must be out flying planes today.
B″: Any pilot must be out flying planes on Mondays.

A similar sort of example is given in (70). Once again, the free choice item is quite bad in (70)B.

(70) A: I'm looking for a teacher. But the staff room is empty.
B: * Any teacher must be teaching classes.
B′: All the teachers must be teaching classes.
B″: Any teacher must be teaching classes between 1:00 and 3:30 p.m..

The data suggest that free choice *any* is allowed in non-generic necessity modal contexts only if the indefinite is supported by a subtrigging clause, as in (63). By hypothesis, the subtrigging clause ensures that the narrow alternative of the free choice item is a specific indefinite with a singleton domain.

An interesting caveat must be made, however, before we can proceed and execute the analysis. Because the necessity modal introduces an independent quantificational structure to

sentences in which it occurs, one witnesses interpretational effects not seen with purely episodic non-modal subtrigged free choice items.

In a sentence like (63), repeated in (71)a, the free choice indefinite seems to be interpreted within the restriction of the necessity modal. This is given in (71)b.

(71) a. You must pick any flower you see.
b. $\forall w', x\ [w'Rw \wedge x \in \{y \mid y \text{ is a flower you see}\} \text{ in } w' \rightarrow \text{pick (you, x) in } w']$

This is quite surprising, because without the subtrigging relative clause, an indefinite is not interpreted like this, but seems to be interpreted within the nuclear scope of the modal. In (72), the R in the restriction represents an accessibility relation between possible worlds.

(72) a. You must pick a flower.
b. $\forall w'[w'Rw \rightarrow \exists x\ [\text{flower}(x) \wedge \text{pick (you, x) in } w']$

The contrast between (71) and (72) appears to demonstrate that subtrigged free choice indefinites are bound within the restriction of a modal operator. If this is the case, then one might suppose that it is possible to assimilate free choice in necessity environments as a variation of generic free choice items – both are bound by universal modals.

I will not adopt this analysis, however. There is a very obvious difference between generic free choice items and these necessity free choice items, namely the presence of the subtrigging clause.

Instead, as mentioned a few paragraphs above, I will treat these examples as basically parallel to the subtrigged cases in episodic contexts, and regard these necessity free choice items as destroyed specifics.[24] The subtrigging clause in both cases ensures that the narrower alternative is interpreted as a specific indefinite.

This leaves a rather large puzzle. Why does the relative clause seem to force the indefinite to be bound within the restriction of the universal modal operator? Although I will not explore it in great detail, I think this is related to the fact that the narrower alternative is a specific indefinite. Specific indefinites are topical. In quantificational environments with a conditional structure, such as a necessity modal, in which the different parts of the sentence are mapped to either the restriction or the nuclear scope of the operator, topics are mapped to the restriction (Haiman 1978, Partee 1992). Therefore, one may pin the quantificational variability effect of these sentences on the fact that the narrower alternative is specific.

To illustrate, I will use the sentence in (63) in the context in (73).

[24] Of course, like generic free choice items, these subtrigged free choice items in necessity modal contexts do not form generalized quantifiers but are non-quantificational. The point that I am trying to emphasize is that the nature of the widening and strengthening involved in these cases is the same kind found with episodic free choice items rather than generic free choice items. That is, it is not due to downward entailingness that widening produces a stronger proposition, but due to the fact that the narrow alternative is specific.

(73) Context: A landscaper (Speaker B) is giving instructions to her new inexperienced employee (Speaker A) who must weed unwanted flowers out of a lawn. There are a total of three flowers growing – a dandelion, a buttercup and a clover {b, c, d}.

A: Should I pick this one?
B: Yes. You must pick any flower you see.

Speaker B is directing Speaker A not to confine his picking to the flower that A happens to be pointing out, let's say a buttercup. Speaker B does this by using a free choice item. We can suppose that the narrower alternative to the free choice indefinite is a specific indefinite. This is a singleton whose domain contains the individual pointed out by Speaker A. Speaker B is actually "widening a definite" in a way, since the definite in (73)A is more or less interchangeable with the corresponding singleton indefinite (see (46)). I will continue to assume that the narrower alternative is a specific indefinite which has a smaller domain.[25]

(74) Speaker A is thinking of C_5: $[[C_5]] = \{b\}$
Speaker B is thinking of C_7: $[[C_7]] = \{b, c, d\}$
note that $[[C_5]] \subseteq [[C_7]]$

(75) You must pick ANY_{C7} flower you see
i. $[[\text{You must pick } ANY_{C7} \text{ flower you see}]]^{o}$
$= \forall w', x\ [w'Rw \wedge x \in [C_7 \cap \{y \mid y \text{ is a flower employee sees}\}] \text{ in } w'$
$\rightarrow \text{pick (employee, x) in } w']$
ii. $[[\text{You must pick } ANY_{C7} \text{ flower you see}]]^{f}$
$= \{\forall w', x\ [w'Rw \wedge x \in [X \cap \{y \mid y \text{ is a flower employee sees}\}] \text{ in } w'$
$\rightarrow \text{pick (employee, x) in } w'] \mid X \in D_{<e,t>}\}$
$= \{\text{Employee must pick } a_{C7} \text{ flower employee sees,}$
$\text{Employee must pick } a_{C5} \text{ flower employee sees } \ldots\}$

The two salient focal alternatives are given in (76).

(76) $[[C^{FOC}]] = \{\text{Employee must pick } a_{C7} \text{ flower employee sees,}$
$\text{Employee must pick } a_{C5} \text{ flower employee sees}\}$

Speaker A (the employee) asked a question about a particular plant – namely the buttercup. In order to keep the narrower alternative uniform to the widened free choice item, Speaker B acted as if a specific indefinite were used instead of the referential definite Speaker A actually did use. What is interesting about Schwarzschild's concept of specificity is that the intuition that the proposition is about a particular individual is possible even though the specific indefinite does not have a wide scope *de re* interpretation. This is because specifics are referential and so the presumed narrower alternative containing a specific

[25] Note that I translate Speaker A as "employee" rather than "you" in the following discussion to facilitate the exposition.

indefinite communicates the same thing as the overtly uttered sentence in (73)A. This is the proposition in (77).

(77) Employee must pick b.
$= \forall w', x\ [w'Rw \wedge x \in \{b\} \text{ in } w' \rightarrow \text{pick (employee, x) in } w']$

In a context in which there is a very salient set of other individuals, it is possible that this sentence will give rise to a scalar implicature that for other $x \neq b$, the new employee does not need to pick them. This can be formalized as a scalar implicature. This relevant scale is given in (78), the top row being the weakest.

(78) $\left\{ \begin{array}{c} \Box[\text{pick(employee, b)},\ \Box[\text{pick(employee, c)}],\ \Box[\text{pick(employee, d)}] \\ \Box[\text{pick(employee, c} \oplus \text{b)}],\ \Box[\text{pick(employee, c} \oplus \text{d)}],\Box[\text{pick(employee, b} \oplus \text{d)}] \\ \Box[\text{pick(employee, c} \oplus \text{b} \oplus \text{d)}] \end{array} \right\}$

The scalar implicature on this scale is schematized in (79), the asserted value being underlined.

(79) $\left\{ \begin{array}{c} \underline{\Box[\text{pick(employee, b)}]},\ \sout{\Box[\text{pick(employee, c)}],\ \Box[\text{pick(employee, d)}]} \\ \sout{\Box[\text{pick(employee, c} \oplus \text{b)}],\ \Box[\text{pick(employee, c} \oplus \text{d)}],\Box[\text{pick(employee, b} \oplus \text{d)}]} \\ \sout{\Box[\text{pick(employee, c} \oplus \text{b} \oplus \text{d)}]} \end{array} \right\}$

This is the implicature which Speaker B is trying to cancel by using a free choice item – an implicature on a scale in which the substituted values are individuals. She does this by using a non-specific with a wide domain. The widened free choice item is not referential and not interchangeable with an individual, but rather conveys (80).

(80) Employee must pick some $x \in \{b, c, d\}$.

The unwanted scalar implicature cannot be generated from this proposition, and the effect of asserting it on the heels of another proposition that does generate that implicature is to cancel it.

Interestingly, since the indefinite is interpreted within the restriction of a universal operator, the free choice indefinite is in a downward entailing environment. The alternatives can be placed on a monotonic scale, and the widened free choice item is stronger, schematized by the scale in (81) and illustrated by the entailment patterns in (82) and (83).

(81) < Employee must pick a_{C7} flower employee sees,
Employee must pick a_{C5} flower employee sees >
$= <\forall w', x\ [w'Rw \wedge x \in \{b, c, d\} \text{ in } w' \rightarrow \text{pick (employee, x) in } w'],$
$\forall w', x\ [w'Rw \wedge x \in \{b\} \text{ in } w' \rightarrow \text{pick (employee, x) in } w']>$

(82) $\forall w', x\ [w'Rw \wedge x \in \{b\} \text{ in } w' \rightarrow \text{pick (employee, x) in } w']$
$\neq\Rightarrow$ $\forall w', x\ [w'Rw \wedge x \in \{b, c, d\} \text{ in } w' \rightarrow \text{pick (employee, x) in } w']$

(83) $\forall w', x\,[w'Rw \wedge x \in \{b, c, d\} \text{ in } w' \rightarrow \text{pick (employee, x) in } w']$
$\Rightarrow \quad \forall w', x\,[w'Rw \wedge x \in \{b\} \text{ in } w' \rightarrow \text{pick (employee, x) in } w']$

However, since I am treating these necessity free choice cases as more similar to episodic subtrigged free choice than the generic cases, I would still like to claim that this is not the scale which is salient. Rather, a scale of individuals in (78)/(79) is. This is why the subtrigging clause is obligatory.

3.3.4.2 Licensing in possibility modal contexts

The ability of free choice to appear in the scope of possibility modals differs substantially from the case of necessity modals and non-modal contexts. Possibility modals are not downward entailing, and yet a subtrigging relative clause is not necessary to license free choice items in this environment. Examples are repeated in (84).

(84) a. You may pick any flower.
b. Any pilot could be flying this plane. Dayal 1998: 435 (4-5)

Given the preceding discussion, these examples are quite surprising. These sentences do not seem to be generic, so a widened generic indefinite analysis is inappropriate. But they are not subtrigged either, and so far the destroyed specific analysis of free choice indefinites has corresponded to the near obligatory presence of such a subtrigging clause. This raises the unpleasant possibility that free choice items in the context of possibility modals are something else entirely.

Although I do not have a satisfactory answer for why a subtrigging clause is not necessary, I would like to maintain that these free choice items are destroyed specifics. One possible account of why the subtrigging clause is unnecessary is that these examples have an easily recoverable covert restriction. For instance, in many cases, such as (84)a with a deontic modals, a restriction such as "that you want" seems to be understood. An explanation along these lines is perhaps supported by the crosslinguistic tendency of free choice items to incorporate verbal or clausal material meaning "want to" (Haspelmath 1997). I am not totally convinced this is a defensible position though, since such a restriction does not fit cases of free choice items with epistemic modals like (84)b.

Nonetheless, I will hereafter adopt the destroyed specific analysis of free choice items in possibility modal contexts. Once again, I will discuss a concrete case to illustrate my analysis.

The scenario for the following discourse is of a flower seller who is giving a free flower away to a child who is browsing. Imagine there are three flowers set out – a daisy, a lily and an orchid, comprising the set {d, l, o}. Here, both utterances are made by the flower seller.

(85) a. Do you like my flowers? Well, go on, then. You may pick a flower. [the child chooses a dull and wilted daisy]
b. You don't have to be so polite. You may pick any flower! Perhaps this beautiful orchid?

The flower seller suspects the child selected the least remarkable flower because he has interpreted the indefinite "You may pick a flower" specifically. On this construal, the indefinite *a flower* is contextually restricted such that its domain contains one flower, the daisy. For instance, the resource domain variable might have the following value: $[[C_1]] = \{d\}$. If the child understood the underlined sentence in (85)a as containing a specific indefinite, then this sentence has the semantic value in (86).[26]

(86) Child may pick a_{C1} flower
$= \exists w'[[\ [w'Rw \wedge C_1 \cap \{x \mid x \text{ is a flower}\}] \cap \{x \mid \text{child picks } x\}] \neq \varnothing \text{ in } w']$
where $[[C_1]] = \{d\}$

After the little boy chooses the least remarkable flower and the flower seller suspects that she was misunderstood, she then widens the domain by using free choice *any*. The underlined sentence in (85)b has the normal semantic value in (87)i and the focus semantic value in (87)ii.

(87) You may pick ANY_{C3} flower
i. $[[\text{You may pick } ANY_{C3} \text{ flower}]]^{\circ}$
$= \exists w'[[\ [w'Rw \wedge C_3 \cap \{x \mid x \text{ is a flower}\}] \cap \{x \mid \text{child picks } x\}]] \neq \varnothing \text{ in } w']$
ii. $[[\text{You may pick } ANY_{C3} \text{ flower}]]^{f}$
$= \{\exists w'[[\ [w'Rw \wedge X \cap \{x \mid x \text{ is a flower}\}] \cap \{x \mid \text{child picks } x\} \neq \varnothing] \text{ in } w'] \mid X \in D_{<e,t>}\}$
$=$ { Child may pick a_{C3} flower, Child may pick a_{C2} flower …}
where $C_3 = \{d, l, o\}$

The two salient focal alternatives correspond to the normal semantic value of each sentence. These are given in (88).

(88) $[[C^{FOC}]] =$ {Child may pick a_{C3} flower, Child may pick a_{C1} flower}

Since this is not a downward entailing environment, it is not the case that the widened indefinite is stronger on a monotonic scale. In fact, the alternative proposition containing the narrower indefinite is stronger, schematized by the scale in (89) and illustrated by the entailment patterns in (90) and (91).

(89) < Child may pick a_{C1} flower, Child may pick a_{C3} flower >
$= <\exists w'[w'Rw \wedge \{d\} \cap \{x \mid \text{child picks } x\} \neq \varnothing \text{ in } w'],$
$\exists w'[w'Rw \wedge \{d,l,o\} \cap \{x \mid \text{child picks } x\} \neq \varnothing \text{ in } w']>$

[26] Note that I translate the addressee as "child".

(90) $\exists w'[w'Rw \wedge \{d\} \cap \{x \mid \text{child picks } x\} \neq \varnothing \text{ in } w']$
$\Rightarrow \quad \exists w'[w'Rw \wedge \{d,l,o\} \cap \{x \mid \text{child picks } x\} \neq \varnothing \text{ in } w']$

(91) $\exists w'[w'Rw \wedge \{d,l,o\} \cap \{x \mid \text{child picks } x\} \neq \varnothing \text{ in } w']$
$\not\Rightarrow \quad \exists w'[w'Rw \wedge \{d\} \cap \{x \mid \text{child picks } x\} \neq \varnothing \text{ in } w']$

However, another way to look at the specific indefinite is to understand it as being an assertion made about an individual – namely the daisy. This is because specifics are referential and so the sentence in (86) communicates (92).

(92) Child may pick d.
$= \exists w'[w'Rw \wedge \text{pick(child, d) in } w']$

In a context in which there is a very salient set of other individuals, as in this example at the flower kiosk, it is possible that this sentence will give rise to a scalar implicature that for other $x \neq$ d the child may not pick them. This can be formalized as a scalar implicature. In this particular example, we can imagine that the alternative flowers form a fully ordered scale ranked in terms of expense/beauty. This scale is presented in (93).

(93) < o, l, d >

By selecting the lowest member from the scale of individuals, a scalar implicature as schematized in (94) may be generated.

(94) < ~~Child may pick o, Child may pick l~~, Child may pick d >

The widened free choice indefinite in (87) is not interchangeable with an individual, but rather conveys (95).

(95) Child may pick some $x \in \{d, l, o\}$.

It is impossible to generate or support the unwanted scalar implicature in this example. Therefore the scalar implicature on the scale of alternative propositions varying for the value of the individual is cancelled.

(96) < Child may pick o, Child may pick l, Child may pick d >

Interestingly, because the scale of individuals is fully ordered, it is not the case that each individual on the scale will give rise to a scalar implicature. For instance, if the child had chosen the orchid instead of the daisy, then the implicature in (94) could not have possibly arisen because the strongest proposition of the scale would be assumed to be true. The prediction that follows is that free choice should not be licensed in this case, since widening in this case will not lead to implicature cancellation. In fact, this prediction is confirmed. If rather than the context in (85) we instead consider the context (97), the use of a free choice item is infelicitous.

(97) a. Do you like my flowers? Well, go on, then. You may pick a flower.
[the child chooses a bright and supple ORCHID]
b. #You may pick any flower!

The child chose the most remarkable flower, there is no scalar implicature to cancel, and as predicted a free choice item here is infelicitous.

In the previous sections I have presented my analysis of free choice in subtrigged and modal environments, and shown how these free choice items have a special relation to specific indefinites. In the remaining sections of 3.3 I address a number of further predictions of my analysis of non-generic free choice.

3.3.5 The distributivity implicature

So far I have not discussed how this analysis of free choice manages to capture the universal flavour of these items in episodic subtrigged and possibility modal contexts. As discussed by Kratzer and Shimoyama (2002), this effect can be regarded as a conversational implicature of distributivity.[27]

This distributivity effect is demonstrated in (98) and (99). The sentence in (98) with a free choice item licenses the inference that each of the sentences in (99) are true. That is, the property expressed by the matrix predicate distributes down to the individual members in the set denoted by the indefinite's restriction.

(98) John talked to any woman that came up to him.
where [[woman that came up to him]] = {a, b, c}

(99) a. John talked to c.
b. John talked to b.
c. John talked to a.

Kratzer and Shimoyama argue that this distributivity inference has the status of a conversational implicature.

Adjusting their arguments to fit my analysis, the reasoning goes as follows: The scalar implicature arising from the specific indefinite on the scale in (57) introduces the inference in (100).

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[27] Kratzer and Shimoyama present a picture of free choice widening which is quite different from my own, but has some key elements in common that I have not noted elsewhere in the literature. On the one hand, they discuss a case of widening from a singleton individual in the sense of Schwarzschild. However, they discuss this as a limiting case rather than as the crucial case as in my approach. Another similarity between Kratzer and Shimoyama's discussion and my own is that they cite the avoidance of false exhaustivity implicatures as a possible motivation for widening. The central thesis of this dissertation is that widening is done to cancel a possible scalar implicature, which is a type of exhaustivity inference.

However, Kratzer and Shimoyama also suggest widening may be done to effect strengthening and weakening. This view is at odds with my own. First of all, within my conception of widening there is no reason why it would be done to achieve weakening. In my work widening is simply a use of non-contradictory focus to cancel a scalar implicature. Weakening creates a contradiction among the alternatives. As for strengthening, I treat this as indistinct from the use of widening to cancel scalar implicatures. Hence, strengthening has no independent status.

(100) a. ¬[John talked to c]
b. ¬[John talked to b]

The widened free choice item in (98) cancels the scalar implicature in (57). This means that each of the inferences in (100) is cancelled. If the speaker cancels the inferences in (100)a and (100)b, then it is most likely that this was done because they are false. The inferences were originally generated because insufficient information was known. Cancelling a scalar implicature is done when more sufficient information is known. Cancellation can be modelled as a negation of these inferences (101).

(101) a. ¬¬[John talked to c] = John talked to c
b. ¬¬[John talked to b] = John talked to b

These propositions are truth conditionally equivalent to the original alternatives in (99)a-b.

As for the proposition in (99)c, this was true even when the scalar implicature in (57) was present. In fact, this is the proposition that generated the scalar implicature in the first place. The speaker then uses a widened free choice item and cancels this scalar implicature. This is done by using non-contradictory focus. Since it is non-contradictory, and the speaker is not otherwise choosing to indicate the falsity of (99)c, then it is most likely the case that (99)c is true. Thus, the truth of each of the propositions in (99) is implicated.

Although the scalar implicature arising from the specific indefinite would be cancelled if only one other alternative on the scale were asserted to be true, widening with *any* is too coarse-grained to achieve this result. Widening with *any* is completely indeterminate with respect to which of the alternatives are true, and so they are all implicated to be true by the procedure discussed just above.

If the inference in (101) is a conversational implicature, one would expect that it be defeasible. Kratzer and Shimoyama (2002) present some direct evidence from German of this cancellability.

However, their arguments do not really provide support for my analysis. First, there appear to be empirical differences between English and German, discussed below in (102) and (103). Second, some of their assumptions about when an implicature might arise also clash with my own, as discussed in relation to (104).

In German it is apparently possible to directly cancel the distributivity inference derived from the free choice item *irgendein*, as in (102) (Kratzer and Shimoyama 2001: 14 (11)).

(102) Du musst **irgendeinen** Arzt heiraten, und das darf niemand
you must irgend-one doctor marry and that may nobody
anders sein als Dr. Heintz.
else be than Dr. Heintz
'You must marry some doctor or other, and it can't be anybody but Dr. Heintz.'

Irgendein cannot be exactly like English free choice *any* because the English version of (102) is deviant, as seen in (103).[28] This is also reflected in the avoidance of free choice *any* in Kratzer and Shimoyama's English gloss in (102).

(103) #You must marry any doctor (that works in the clinic), and it can't be anybody but Dr. Heintz.

This sentence is unacceptable. Insomuch as it means anything, this sentence has the air of a joke. It is only understandable if the Dr. Heintz is the lone doctor that works in the clinic, and so he is "any doctor" that works there. If this is the case, I am not sure that it is a distributivity implicature that is being cancelled by the second clause, rather than the implicature that the set is a non-singleton. Every member of this set is marriageable, and so it is hard to say distributivity is actually cancelled.

The reason this sounds like a joke is because, within my analysis free choice is used to cancel an implicature arising from a specific indefinite. This cancellation is only informative if at least one other alternative among the individuals under consideration also makes the proposition true. Otherwise, widening would truly be uninformative. The final clause in (103) prevents the possibility that more than one individual satisfies the predicate, and so cancelling the scalar implicature by using *any* in the first clause is completely unjustifiable.

Kratzer and Shimoyama (2002: 14 (12-14)) also present some data showing that the distributivity inference disappears in negative contexts, just as an implicature is predicted to do. They show that a special focus particle or emphatic stress is necessary to maintain it, as in (104)c.

(104) a. Niemand musste **irgendjemand** einladen.
nobody had to irgend-one invite
'Nobody had to invite anybody.'

b. Ich bezweifle, dass sie je **irgendjemand** einladen durfte.
I doubt that she ever irgend-one invite could
'I doubt that she was ever allowed to invite anybody.'

c. Sie darf nie einfach nur **IRGENDjemand** einladen.
she may never just only irgend-one invite
'She is never allowed to invite just ANYbody.'

Given my assumptions, this data does not actually provide very good evidence that an implicature has been cancelled. The distributivity inference is contingent on the cancellation of a scalar implicature on a scale of propositions varying for the value of an individual. This original scalar implicature will not even arise in a downward entailing context (see Section

[28] I suspect the difference is that German *irgendein* can be merely non-specific, whereas subtrigged free choice *any* must be a destroyed specific. That is, English *any* must be interpreted against a specific focal alternative whereas the German *irgendein* need not be.

2.2.3.2) and so there is no need to cancel it. As a result the derivative distributivity implicature will not arise. So, I believe there are independent reasons why the distributivity implicature should not arise in this scenario. As for examples like (104)c, see Section 3.5 for further discussion of free choice within the scope of negation.

In fact, I do not really think that the distributivity implicature found with free choice is cancellable. This tarnishes the conversational implicature analysis of this distributivity inference, since cancellability is the hallmark feature of this class of inferences.

However, I think that a reasonable explanation can be given for this non-defeasibility. Usually, when conversational implicatures are discussed, the only pragmatic effect of the assertion under consideration is the implicature itself. In the current case, the distributivity inference itself does not directly arise from the proposition asserted, in which an indefinite has a wider domain. Rather, the distributivity implicature is generated as a result of another pragmatic process – cancellation of a scalar implicature. The distributivity implicature arises only after pragmatic hoops have been jumped through. I believe that because this implicature is at the end of a multi-stepped pragmatic process, it is not as accessible to cancellation.[29]

This is partially due to the fact that for the act of scalar implicature cancellation itself to be justified, it must be the case that at least one other alternative on the scale of individual propositions be true, as mentioned above. That is, if the narrow alternative (99)c is true, cancelling a scalar implicature by widening is only justified if one of either (99)a or (99)b is true. This much must be satisfied. But which of these other propositions is true is completely underdetermined by using a free choice item.

I will finish this section by discussing a potentially confusing issue regarding informativity. In particular, there might be some confusion in how widened free choice items produce more informative statements. Acknowledging that widening results in a distributivity implicature, it might seem that this distributivity inference itself is the goal of widening. This seems somewhat plausible, given that once the distributivity inference is taken into account, the proposition with the widened free choice item implicates or pragmatically entails the truth of the narrower proposition with a specific indefinite. In this sense, the widened indefinite produces a more informative proposition. This is schematized in (105).

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[29] This inability to keep on cancelling implicatures might also explain why domain widening cannot be repeated. In the following dialogue, Speaker B has domain widened once by (id). However, it seems infelicitous for Speaker A to keep on using *even* to see if Speaker B will keep on domain widening yet more.

(i).	a.	A:		Did you eat supper?
	b.	B:		No, I didn't eat anything today.
	c.	A:		Not even lunch?
	d.	B:		No, I didn't eat ANYthing.
	e.	A:	#	Not even breakfast?
	f	B:	#	No, I didn't eat ANYthing.
	g.	A:	#	Not even a snack?
				...

Adopting the premise that pragmatic hoops cannot be jumped through ad nauseam, as proposed in the text above, then the inability for continual domain widening (and questioning about domain widening) can be explained if one says that implicatures cannot be continually cancelled in direct succession.

(105) John talked to any woman that came up to him {a, b, c}.[30]
≈> John talked to a woman that came up to him {a}.

However, I am reluctant to adopt this position. The problem I see with pinning the informativity of a free choice item on the distributivity implicature is that the road to informativity would be a multi-step pragmatic process. First, the original scalar implicature arising from the specific indefinite is cancelled. Next, a new distributivity inference is generated. Once this distributivity implicature is generated the proposition with a free choice item can be considered more informative than the alternative with a specific indefinite. I am highly suspicious of this roundabout route to informativity because the cancellation of the initial implicature must be informative in and of itself. I will briefly return to the question of how free choice is informative at the end of Section 4.2.2.

In the next section I turn to an issue that is linked to the distributive nature of these sentences. This is the requirement that the predicate in sentences involving free choice items be iterative.

3.3.6 The iterativity requirement

This treatment of free choice successfully predicts a restriction on free choice items discussed by Dayal (1995, 1998). Free choice items cannot be used with once-only predicates. While the indefinite in (106)a is acceptable when the main verb is a once-only predicate *kill himself*, the free choice item in (106)b is unacceptable.

(106) a. John killed himself after talking to a woman who came up to him.
b. # John killed himself after talking to any woman who came up to him.

Suicide cannot be committed multiple times, and the use of free choice item appears to be prohibited.

Similarly, when the event is restricted to a specific time, this blocks iteration of the event and results in the ungrammaticality of a free choice item (cf. Dayal 1998: 71).[31]

(107) # At 4 p.m., John talked to any woman that came up to him.

This iterativity requirement falls out of my conception of free choice indefinites as being widened specifics, which are singletons. Since the narrower alternative of a subtrigged free choice item is a singleton indefinite, a one-to-one mapping of events to individuals is established. This enables the alternative propositions on the scale of propositions to be truth conditionally distinct from each other since they involve distinct events. This one-to-one mapping is preserved when the domain is widened, which derives the iterativity requirement on subtrigged free choice items.

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[30] Note that I am using the free choice indefinite here because a normal indefinite does not carry such a distributivity inference.

[31] I have replaced Dayal's * judgement with # to correspond to my pragmatic explanation of the unacceptability of this example.

To take an example, the sentence in (108)a involving a singleton indefinite is about an event of talking, which is mapped onto the single individual in the domain. The informal notation in (108)b is meant to show that the event e_1 is mapped onto the individual a, which is a member of the set {a} denoted by the indefinite.

(108) a. John talked to a woman that came up to him.
b. $e_1 \leftrightarrow a \qquad a \in \{a\}$

The individual a is only one of the individuals under consideration. We can assume that the individuals b and c are also present in discourse. If this is the case, then the scale of individuals given in (109) may be salient.

(109) $\left\{\begin{array}{lll} \text{talk.to(j, a)}, & \text{talk.to(j, b)}, & \text{talk.to(j, c)} \\ \text{talk.to(j, a} \oplus \text{b)}, & \text{talk.to(j, a} \oplus \text{c)}, & \text{talk.to(j, b} \oplus \text{ c)} \\ & \text{talk.to(j, a} \oplus \text{b} \oplus \text{c)} & \end{array}\right\}$

Each of the individuals may potentially satisfy the predicate [λx.talk.to(j,x)]. Since the event e_1 is already known to map onto a, for each of the propositions on the top row of this scale to be truth conditionally distinct and to each potentially stand alone, it must be the case that each proposition involves a discrete event of John talking to somebody.

The effect of widening the domain is to basically accept all of the propositions on the scale as being true, as discussed in the previous section. If each of the propositions on the top row of this scale are true, and they each involve distinct events, the effect is iterativity. This is shown in (110), where e_1, e_2, e_3 are discrete events.

(110) a. John talked to ANY woman that came up to him.
b. $e_1 \leftrightarrow a \qquad a \in \{a, b, c\}$
$e_2 \leftrightarrow b \qquad b \in \{a, b, c\}$
$e_3 \leftrightarrow c \qquad c \in \{a, b, c\}$

It is not the case that the original event is simply matched to all the newly introduced individuals, as schematized in (111).

(111) a. John talked to ANY woman that came up to him.
b. $e_1 \leftrightarrow a \qquad a \in \{a, b, c\}$
$e_1 \leftrightarrow b \qquad b \in \{a, b, c\}$
$e_1 \leftrightarrow c \qquad c \in \{a, b, c\}$

While I believe that one must also say there is a macro-event of John talking to all the women, which is the event which maps onto the individual a ⊕ b ⊕ c on the bottom row of (109), it is also the case that the narrower alternative in (108) stands alone as an independent proposition. This is obscured in (111). Multiplication of events is needed alongside the introduction of new individuals in order to be able to interpret each alternative as an independent proposition, which means that each involves a discrete event involving a different individual.

This matching effect between events and individuals is only plausible if the domain was a singleton in the narrower alternative since only singletons pseudo-referentially refer to an individual. For instance, had the narrower alternative been non-specific (in which case no scalar implicature would have arisen, but this is not the current point) then the match-up between events and individuals would be as in (112). That is, the event is not mapped one-to-one to an individual.

(112) a. John talked to a woman.

b. $e_1 \leftrightarrow \left\{ \begin{matrix} a \\ b \end{matrix} \right\}$ $\quad a \in \{a, b\}$, $b \in \{a, b\}$

The effect of widening the domain of individuals would not motivate the multiplication of events, because there was no one-to-one matching between events and individuals in the first place. Therefore, no more events would be introduced (113).

(113) a. # John talked to ANY woman.

b. $e \leftrightarrow \left\{ \begin{matrix} a \\ b \\ c \\ d \end{matrix} \right\}$ $\quad a \in \{a, b, c, d\}$, $b \in \{a, b, c, d\}$, $c \in \{a, b, c, d\}$, $d \in \{a, b, c, d\}$

Because there are not multiple events upon which multiple alternative propositions can be founded, widening the domain in this case cannot support the creation of a scale of alternatives.

The point is that by forcing specificity, you establish a one-to-one matching of events to individuals, and widening the domain motivates multiplication of subevents in order to maintain this one-to-one matching from events to individuals. The result is that once-only predicates like *kill himself* cannot be used with free choice because they do not support multiple subevents. Likewise, when events are restricted to specific times, which makes iteration unlikely, then the use of free choice is blocked as in (107).

3.3.7 Further discussion of non-generic free choice as destroyed specifics

The core idea of the analysis presented above is that a free choice item in a non-generic environment is licensed only if its narrower alternative is understood as a specific indefinite. Only if it is specific will an indefinite be able to evoke a scale of propositions that vary in the value of the individuals involved rather than the sets involved. Since non-generic environments are not downward entailing, this is the only way in which widening the domain of the indefinite can achieve a more informative proposition because in this way a speaker indirectly makes a statement about more than a single individual.

It is important to realize that the subtrigging clause does not directly license the free choice item. Its presence merely facilitates the narrow alternative being interpreted as a specific indefinite. Since this is a pragmatic theory, there is no grammatical reason that the subtrigging clause needs to be present. And, as we have seen in examples of supplemental free choice in (42) and other examples in which free choice seems to be licensed by an easily

reconstructed contextual restriction in (44), there are reasons for preferring a non-grammatical account since in these cases a subtrigging clause is not even necessary.

Non-generic free choice items are destroyed specifics. Although they themselves are non-specific, we expect to find that free choice items have a very similar distribution to specific indefinites, given that the propositional focal alternatives differ only in the value of the focussed constituent. Generally speaking, specific indefinites cannot occur in *there*-insertion contexts. The indefinites in (114) cannot be understood as specific indefinites. Rather, the *there*-insertion construction here is being used merely to indicate non-emptiness of the set (adapted from Fodor and Sag 1982: 360 (17-18)).

(114) a. There are black swans.
b. There is someone smoking behind the woodshed.

Using richer descriptive content within the DP to coerce a specific reading sounds strange (Fodor and Sag 1982: 361 (19)).

(115) ?? There's a man that Kim used to go to school with in the late sixties in Arkansas smoking behind the woodshed.[32]

Free choice items, although non-specific, pattern with specific indefinites in not being licensed in *there*-insertion contexts.

(116) a. * There are any peaches that I picked in the cupboard.
b. * There is any ghost in the pantry.

It follows from my analysis that free choice is blocked in a structural context where specific indefinites are banned.[33]

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[32] The judgement ?? is my own. Fodor and Sag do not prefix this example with any notation of grammaticality, but in the text they call this example "somewhat odd".

[33] Fodor and Sag observe that specific indefinites are odd in purely existential *there*-insertion contexts. However, they note that in other cases of *there*-insertion specific indefinites can be acceptable. This is only the case if, rather than being used to convey non-emptiness of a set, the *there*-insertion construction is construed as being "about" a specific individual. Fodor and Sag (1982: 361 (29)-(21)) provide the following example.

(i) There's a girl in our syntax class who cheated on the exam.

Fodor and Sag claim this is a distinct *there*-insertion construction. They provide the following support. First, non-demonstrative *this* can be used in examples like (i) (as in *There's this girl in our syntax class who cheated on the exam*). Non-demonstrative *this* sounds much worse in existential examples like (114). Second, it sounds quite bizarre to deny a *there*-insertion sentence like (i) by using a negative existential (as in *No there isn't)*, while this sounds okay as a denial of the sentences in (114).

It turns out that free choice is not acceptable in this type of non-existential there construction, which is not expected if free choice patterns with specifics.

(ii) *There's any girl in our syntax class who cheated on the exam.

I have not got a firm idea of how to account for this, although I do have a speculation. My intuition is that this sort of *there*-insertion is used at the beginning of a narrative. A possible account would be to treat this type of *there*-insertion context as a specialized device to introduce discourse referents which are going to be further

Another interesting prediction of this analysis has to do with the number-marking of free choice items. One under-reported difference between negative polarity and free choice *any* pointed out by Carlson (1981), which I have not seen addressed in the literature, is that the two seem to have different preferences when it comes to the number-marking of a following noun. Carlson observes that while free choice *any* readily combines with a singular count noun, in such environments negative polarity any "is either strange or smacks of a strange 'twang'" which Carlson could not further characterize (1981: 9).[34] Examples are shown below.

(117) John talked to any woman that came up to him.

(118) %I didn't see any man.[35]

Within the current framework, this contrast receives a very natural explanation. Free choice items are widened specific indefinites, emphatic negative polarity items are not. The notion of specificity relevant here is one of extreme contextual restriction, such that a specific indefinite is a singleton set with one member in its domain. Singletons are naturally reflected by singular number-marking. Since free choice items are widened specifics, it is to be expected that they too would receive singular number-marking.

A further expectation is that using a singular with a negative polarity item is abnormal because it suggests some connection to specificity. And indeed, I believe this accounts for the twang remarked upon by Carlson. Given the proper discourse context in which a negative polarity item is used contrastively with a specific indefinite, using singular number-marking is very natural. The example in (119) illustrates.

(119) A: I saw a woman with a red scarf smash the window!
B: I didn't see any woman with a red scarf.

Here, the indefinite in (119)A is specific since Speaker A has some particular individual in mind. Speaker B responds by using a singular count noun after *any*. This use of the singular is tied to the use of a specific by Speaker A.[36]

Another nice consequence of this approach is that it tidily derives the speaker-ignorance effect of subtrigged free choice items by relating it to a question of non-specificity. A specific indefinite is used when the identity of the sole member in the denotation of the singleton set is known to at least one of the interlocutors, at least by description. Actively destroying this specificity by widening the set conveys that the speaker either does not know or care about the identity of those involved.

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commented on. Domain widening with free choice *any* is arguably blocked because it is not an opportune moment in the discourse in which to interrupt the narrative. The cancellation of a scalar implicature takes a back seat to learning more about this referent.

The fact that (115) does not seem to be as marginal as the examples in (116) might reflect that speakers are still able to understand the former example presentationally.

[34] NPI indefinite pronouns like *anyone, anybody* and *anything*, which are all singular, are exceptions to this generalization.

[35] The % is used to indicate acceptable but giving rise to a marked interpretation (the twang Carlson speaks of).

[36] So if *any* were emphatic here, the narrower alternative would be a specific indefinite, as with free choice, which is atypical for NPIs.

Finally, a few words about what subtrigged free choice and generic free choice items have in common. Although both types are widened indefinites, I have not yet attempted to unify them beyond this. The common core becomes much clearer when we consider what their narrow alternatives share. Both generic indefinites and specific indefinites are "strong" indefinites, and furthermore are often considered topical (Diesing 1992). While exploring the exact nature of this strength is beyond the scope of this work, it is reassuring that my view of free choice squarely lines up with previously defined borders among indefinite nominals. Free choice items are widened strong indefinites.

This concludes my discussion of non-generic free choice items. In the next section I compare my account to one by Giannakidou (2001). Her analysis is of interest because she also advocates an indefinite analysis of free choice, and yet she is able to build an analysis that accounts for subtrigging cases. But as we will see below, she does this by avoiding a domain widening analysis. After presenting her analysis, I will point out some cracks and suggest that my analysis is preferable.

3.4 Giannakidou (2001)

In this section I will compare my theory of free choice in subtrigging and modal environments to that of Giannakidou (2001). After presenting her core assumptions in this section, I work through an example in 3.4.1.

Giannakidou defends an indefinite treatment of free choice items from the criticisms of Dayal (1998). However, she does not attempt to develop a widening analysis for these environments and in this respect leaves Dayal's critique of Kadmon and Landman (1993) unchallenged.

Giannakidou's approach to free choice is to treat it as a subtype of *polarity item* (Giannakidou 1998, 1999). A polarity item for her is an expression whose distribution is restricted by (non)veridicality.

(120) Polarity item

A linguistic expression α is a polarity item iff:

(i) The distribution of α is limited by sensitivity to some semantic property β of the context of appearance; and

(ii) β is (non)veridicality, or a subproperty thereof:
$\beta \in$ {veridicality, nonveridicality, antiveridicality, modality, intensionality, extensionality, episodicity, downward entailingness}

Giannakidou 2001: 669 (18)

Veridicality and nonveridicality are defined as in (121).

(121) Relativized (non)veridicality for propositional operators

Let c be a context which contains a set M of models relative to an individual x.

(i) A propositional operator *Op* is *veridical* iff $[[\text{Op p}]]_c = 1 \rightarrow [[\text{p}]] = 1$ in some epistemic model M_E (x) $\in c$; otherwise *Op* is nonveridical.

(ii) A nonveridical operator *Op* is *anti*veridical iff $[[\text{Op p}]]_c = 1 \rightarrow [[\text{p}]] = 0$ in some epistemic model M_E (x) $\in c$.

Giannakidou 2001: 671 (21), from Giannakidou 1999: 388

Negative polarity items and free choice items are thus subtypes of polarity items. Free choice items in particular have the specific licensing condition in (122).

(122) Licensing condition on FCIs
A FCI α is grammatical in a sentence S iff:
(i) α is in the scope of a nonveridical operator β; and
(ii) S is not episodic. Giannakidou 2001: 684 (60)

A free choice determiner is a type-shifter of type <<e,t>,<s,<e,t>>> which shifts an NP into an intensionalized property (123).

(123) $[[DET_{FC}]] = \lambda P_{<e,t>}.\lambda w.\lambda x[P(x)(w)]$ Giannakidou 2001: 704 (121)

A free choice item is thus an intensional indefinite. Giannakidou further adopts the notion of i-alternatives from Dayal (1997). She claims that variation (that a variable must be assigned different values in different worlds/situations) is an important aspect of the meaning of free choice (124).

(124) i-*alternatives*
A world w_1 is an i-alternative wrt α iff there exists some w_2 such that $[[\alpha]]^{w1} \neq [[\alpha]]^{w2}$. Giannakidou 2001: 705 (123)

i-alternatives are therefore different worlds in which a variable is assigned different values. The fact that the value must vary from world to world is what separates a free choice variable from a normal variable, which may but need not receive different values in different worlds. Giannakidou suggests this exhaustive variation can be captured as a presupposition of free choice items (125).

(125) *Free choice item*
Let W_1 be a non-empty set of possible worlds. A sentence with a free choice item [[OP DET_{FC} (P, Q)]] is true in w_0 with respect to W_1 iff:
(where OP is a nonveridical operator; P is the descriptive content of the FC-phrase; Q is the nucleus of the tripartite structure; w_0 is the actual world):
(a) Presupposition: $\forall w_1,w_2 \in W_1$: $[[\alpha]]^{w1} \neq [[\alpha]]^{w2}$ where α is the free choice phrase.
(b) Assertion: [[OP w, x [P(x, w); Q(x, w)]]] = 1 where x, w are the variables contributed by α. Giannakidou 2001: 706-7 (127)

Although Giannakidou does not try to develop a widening analysis, she does note that scalarity can be worked into this treatment by further requiring that all i-alternatives, no matter how far they are from normal, be taken into account. This notion of scalarity does not play a very important role in her analysis, however.

3.4.1 Giannakidou on modal contexts

Giannakidou discusses the modal sentence in (126), which contains the epistemic modal *can* (= *may*).

(126) The committee can offer the job to any candidate.

The modal in this sentence binds both the world variable and the indefinite, similar to the generic operator discussed in Section 3.2. This sentence receives the interpretation in (127), and is judged true if the conditions in (128) are met.

(127) $\exists w, x\ [[w \in K_{epistemic} \wedge$ **candidate** $(x, w)] \wedge$ **offer-the-job** (the committee, x, w)]

(128) i. [[The committee can offer the job to any candidate]]$^{w0, g, K} = 1$ iff
$\exists w' \in K$, where K is the extended epistemic or permissive modal base, such that [[The committee offers the job to a candidate]]$^{w', g} = 1$

ii. [[The committee offers the job to a candidate]]$^{w', g} = 1$ iff there is at least one individual $d \in D$ such that
[[**candidate** (x)] $\wedge$ **offer-the-job** (the committee, x]]$^{w', g[d/x]} = 1$

In order for this example to be true, there must be at least one world w′ in the modal base in which a true sentence results by assigning the indefinite variable a value from the domain of individuals. Since this is a free choice variable, it must be the case that in each world in the modal base the assignment function assigns a different value to this variable, thereby satisfying the presupposition in (125)a. These worlds constitute the i-alternatives. In Giannakidou's discussion she considers the concrete situation in (129).

(129) Values in i-alternatives.

a. i-alt$_1$: g(x) = Ariadne
[[**candidate** (x)] $\wedge$ **offer-the-job** (the committee, x]]$^{w1, g} = 0$

b. i-alt$_2$: g(x) = Roxanne
[[**candidate** (x)] $\wedge$ **offer-the-job** (the committee, x]]$^{w2, g} = 0$

c. i-alt$_3$: g(x) = Frank
[[**candidate** (x)] $\wedge$ **offer-the-job** (the committee, x]]$^{w3, g} = 1$

Here, there are i-alternatives, w_1, w_2 and w_3. The variable x is assigned the value Ariadne in w_1, Roxanne in w_2 and Frank in w_3. Since in one of the i-alternative worlds the assignment results in a true proposition, namely the assignment in w_3, the truth conditions for the modal are satisfied and so the sentence in (126) is true.

3.4.2 Giannakidou on subtrigging

In order to account for cases of subtrigging, Giannakidou draws upon Quer (1998, 2000) and argues that subtrigging relative clauses encode concealed conditionals, and that the free choice item is licensed by occurring in the antecedent of these conditionals.

(130) John talked to any woman who came up to him.
= If a woman came up to John, he talked to her (on Quer/Giannakidou account)

(131) $\forall w, x$ [[**woman** $(x, w) \wedge$ **came-up** (x, j, w)] $\rightarrow$ **talk-to** (j, x, w)]

Giannakidou argues that the conditional structure can only be supported if the sentence provides possible worlds which may function as i-alternatives. In non-generic/non-habitual/non-imperfective sentences such as (130), these worlds must come from the iterativity of the predicates involved, especially the matrix one. Giannakidou thus utilizes Dayal's (1998) insight that subtrigging licenses free choice with iterative predicates but not once-only predicates like *die*, since these do not provide possible worlds (or situations) which may function as i-alternatives.

3.4.3 Evaluation of Giannakidou

The theory of Giannakidou is an interesting extension of the generic free choice analysis of Kadmon and Landman (1993). Although Giannakidou does not follow up the domain widening idea found in this earlier paper, she does develop the treatment of FCIs as Heimian indefinites which receive their quantificational force from external operators. For instance, the modal in (126) binds both a world variable and individual variable on the indefinite, and likewise with the concealed conditional in the subtrigging case in (130). In this respect Giannakidou's treatment of free choice items in modal and subtrigging contexts is more in line with the analysis of free choice items in generic environments presented in Section 3.2. While I too adopt a variation of Kadmon and Landman's (1993) analysis of generic free choice items as indefinites bound by a generic quantifier, in the modal and subtrigging environments I treat free choice items as indefinite generalized quantifiers, except in the case of necessity modals, and I develop an independent analysis of non-specificity.

There are various reasons why I think my own analysis is preferable to the one presented in Giannakidou (2001). First of all, one aspect of concern is the reliance on the concept of i-alternative. In an obvious way, i-alternatives function as intensionalized focal alternatives. However, an i-alternative is not an individual, but a world, and I think this causes a conceptual problem for the analysis.

The problem is that the variation presupposition forces the i-alternatives to vary in what value the assignment function gives to the free choice variable in each world. Therefore, if there are only three individuals under consideration, as in (129), then there are at most three i-alternative worlds. To take one i-alternative, w_3, the free choice variable is assigned the value Frank in this world. Now, possible worlds in principle can differ in very many ways. Therefore, in (126), whether the job committee chairperson capped her pen or not is enough to distinguish two different possible worlds which are otherwise identical. However, by Giannakidou's analysis, there is only one world in which the free choice

variable is assigned the value of Frank, namely w_3. Since it is only one world, there is only one conceivable set of all circumstances in which Frank gets the job. Therefore, in w_3, it is either the case that the chairperson capped her pen or did not. This amounts to claiming that the totality of everything can only be in one possible configuration for Frank to have been offered the job, which seems counterintuitive. I don't think it should matter whether the chairperson capped her pen, which leads me to suspect that there must be more than one possible world in which Frank is offered the job, which means that Giannakidou's proposed variation presupposition and utilization of i-alternatives cannot be completely right.

A second difficulty I see with Giannakidou's analysis has to do with her treatment of subtrigging relative clauses as concealed conditionals. This is not a general property of relative clauses, and so this is somewhat stipulative. It is not clear to me what in Giannakidou's analysis prevents an example containing a plain indefinite like (132) from being analyzed as a concealed conditional. Plain indefinites can also be found in the antecedent of conditionals and be bound by a conditional operator, so in principle there is nothing blocking (132) from having the interpretation in (133), which it clearly lacks.[37]

(132) John talked to a woman who came up to him.

(133) $\forall w, x$ [[**woman** $(x, w) \wedge$ **came-up** (x, j, w)] $\rightarrow$ **talk-to** (j, x, w)]

By contrast, my analysis of subtrigging integrates the actual interpretation of plain indefinites like in (132) as specific indefinites.

A further problem with Giannakidou's subtrigging analysis is that a sentence like (130) must be true if no women came up to John. This is because the indefinite is in the restriction of the conditional, and if this antecedent is false then the entire sentence is true. However, this does not match my intuition. If no woman came up to John, I do not think I would judge the sentence as true. Rather, I believe this is more like a presupposition failure.

This is especially clear if one compares an example of subtrigged non-modal free choice as in (130) to an example which I have analyzed as containing a universal operator, such as the necessity modal in (134).

(134) John must pick any flower he sees.

If there are no flowers for John to pick, or which he sees, then (134) can still be true despite the fact he picked no flowers. Contrast this with (130), where, if in fact no women came up to John, I think something very deceptive would have been said.

However, I am not sure that I would judge (130) to be false in this case either. As I said above, in the event that no woman actually came up to John, I would be inclined to judge this as something more like a presupposition failure.

Does my analysis predict this? Example (130) has the truth conditions in (135) under my analysis.

---

[37] One might think there is an inconsistency in my analysis here. After all, did I not claim that the presence of a relative clause is enough to force an indefinite to be interpreted within the restriction of a necessity modal in (71)? The difference, of course, is that in (71) the conditional structure is provided by the modal, whereas on Giannakidou's account one would expect the relative clause itself would provide the conditional structure in an example like (132), which is not the case.

(135) $[C \cap \{x \mid x \text{ is a woman that came up to John}\}] \cap \{x \mid j \text{ talk to } x\} \neq \varnothing$

Since there is no individual who is both a woman that came up to John and one who he talked to, my existential quantifier analysis of this example predicts this sentence to be false. This is not good news for me if in fact this sentence actually results in a presupposition failure in this instance.

However, my analysis also predicts that this sentence has a presupposition failure too. Although it has been in the background for most of this chapter, my analysis of widening still maintains that it is only possible where the presuppositions of *even* are satisfied. We can say that such sentences therefore contain an inherent *even*. As an additive particle, *even* has an existential presupposition that there be a true alternative proposition apart from the asserted proposition. Now, if it is not the case that any woman came up to John, my analysis actually predicts that (130) would suffer an existential presupposition failure. This in turn would mean that the sentence cannot have a truth value. The intuition that in the event no woman came up to John, (130) is not exactly true or false can thus be explained by this existential presupposition failure within my analysis.

Yet another problem I see for Giannakidou's analysis of subtrigging is that subtrigging relative clauses improve the acceptability of free choice items in necessity modal contexts. This is unexpected on her account, since the necessity modal already has a conditional structure. Therefore, a subtrigging clause should not be necessary to provide a conditional structure in whose restriction the free choice indefinite may be interpreted.

Finally, I will comment on a somewhat subtle difference between Giannakidou's analysis and my own. Although the non-specificity of free choice items does not dominate Giannakidou's discussion, her analysis clearly captures this aspect of their meaning. Because they are intensional indefinites which are always bound by some intensional operator, free choice items will always receive a *de dicto* interpretation, which is a traditional analysis of non-specificity. In my analysis non-specificity is captured by actually destroying specificity, formalized as extreme contextual restriction, through widening the domain of the indefinite.

Both analyses therefore capture the non-specificity of free choice items. The subtle difference between the two analyses, however, is that in my widening treatment there is an actual moving away from specificity as the discourse progresses. Therefore, the fact that a free choice item is non-specific is very salient in discourse. As revealed in Section 3.3.1, this intuition that free choice items are extra non-specific is very prevalent in the literature and it seems to me that the widening analysis does a better job of highlighting this aspect of the meaning of free choice.

So far in this chapter I have presented my take on generic free choice indefinites and then spent time developing and defending a domain widening analysis of subtrigged free choice. Questions about the relation of free choice to emphatic negative polarity items and the role of the focus particle *even* have been somewhat backgrounded. The next section closes the chapter by addressing these issues through an exploration of free choice *any* in negative environments in the *not just any* construction.

3.5 The free choice use of *just*

I have presented a domain widening analysis of both emphatic NPIs and FCIs. Both types of indefinites sometimes appear in the same context and a need to disambiguate them may arise. In many cases, free choice *any* can be disambiguated from negative polarity *any* by employing the focus particle *just*. In this section I develop an analysis of free choice items as they occur in negative polarity environments and of the disambiguating role of *just*. I present an original analysis of the *not just any* collocation which draws on the major themes of this work, namely scalar implicature cancellation and altering the size of a quantificational domain, but in a unique way that directly addresses the special properties of this construction. But before delivering my take on this issue, I introduce some data and consider an analysis outlined by Horn (2000a).

Typical contexts where the need for disambiguation arises are in the protasis of conditionals and in the scope of negation. In the following minimal pairs, free choice *any* is distinguished from negative polarity *any* by the use of distinctive rise-fall-rise intonation (indicated by ˇ) and the use of *just* (Horn 2000a, 2000b).[38] Example (136) contains an emphatic negative polarity item in the antecedent clause of a conditional, and (137) contains a free choice item in the same position.

(136) If John talked to ANYbody at the party, then he must have been in a good mood.

(137) If John talked to just ˇANYbody at the party, then he better check his wallet.

Example (138) contains an emphatic NPI in the scope of negation, and (139) is an example of a free choice item in the same position.

(138) John didn't talk to ANYbody at the party. He's so shy!

(139) John didn't talk to just ˇANYbody at the party. He's not a moron.

The free choice items must receive some different analysis from negative polarity in these examples.

Concentrating the discussion on the latter pair of sentences, Horn (2000a) claims that the distinction between the negative polarity and free choice readings of the indefinite in these types of examples is tied to the different readings of *even* in such examples. These different readings have been analyzed in terms of what scope *even* takes with respect to negation (Karttunen and Peters 1979, Wilkinson1996).[39]

The example in (140) sees *even* associate with a focus which is ranked low on a scale. *Even* is able to associate with this low-ranking focus since, under a scopal analysis,

[38] I will not discuss the distinctive intonation contour below.

[39] Rooth (1985) and Rullmann (1997) have argued that there are two distinct lexical items, a normal *even* and a polarity item $even_{NPI}$. This is an alternative to the scope theory since $even_{NPI}$ has reversed presuppositions from *even*. When used below negation $even_{NPI}$ replicates normal *even* with wide scope. This debate is not relevant here. All that matters is that *even* can behave in two different ways in negative sentences. I hereafter adopt the scope theory.

even takes scope over negation and hence the scale is reversed. This renders *his sister* high on the scale.

(140) John didn't even talk to HIS SISTER at the party. He was so grumpy all night.

In (141), which exhibits the distinctive rise-fall-rise intonation of (139), *even* is associated with a focus which is ranked high on a scale. The additive particle arguably takes scope below negation, and no scale reversal is necessary to explain its ability to associate with this high-ranking focus.

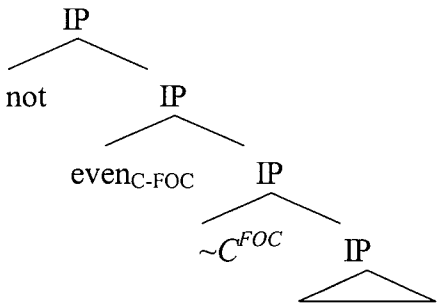
(141) John didn't even talk to ˇTHE EMPRESS at the party. He's not that self-confident.

At first blush Horn's analysis appears to fit in very nicely with my own. Since emphatic negative polarity and free choice clearly mean different things in examples like (138) and (139), it is natural to pin the difference on the presuppositions of *even*, and how they may vary in sentences containing negation.

But there are reasons to doubt this analysis. A variable-scope-of-*even* account does not really address why *just* is favoured in the free choice example. In some ways, *just* and *even* are on opposite ends of the spectrum of focus particle meanings. *Even* is a scalar additive particle which does not affect the truth conditions of a sentence, but which carries an existential presupposition and a scalar presupposition. *Just* is arguably a scalar exclusive particle which truth conditionally excludes all alternative propositions ranked higher than the asserted proposition on some scale of alternatives. How is it that *just* can be used with FCIs which have an inherent *even*, but apparently not with emphatic NPIs?

Even aside from the question of *just*, Horn's variable-scope-of-*even* account is incompatible with my analysis of free choice widening. I demonstrate why this is so below. Let's take (139) as an example. This sentence clearly is not a generic, and so the destroyed specific analysis seems to be in order. Disregarding *just* for the time being, the LF of (139) will look something like (142) under my analysis.

(142)



John talked to $[\text{ANY}_{C5}]_F$-body at the party.

At the IP level at which the focus operator is interpreted, this sentence has the normal semantic value in (143)i and the focus semantic value in (143)ii. It is important to note that negation is not incorporated into these values because negation has wider scope than the ~ operator. The value assigned to the resource domain variable C_5 is a non-singleton set. For instance, $[[C_5]] = \{b, c, d, e, f\}$.

(143) John talked to ANY_F-body at the party

i. [[John talked to ANY_{C5}-body at the party]]°
$= [[C_5 \cap \{x \mid x \text{ is a person}\}] \cap \{x \mid j \text{ talked to } x\} \neq \varnothing]$

ii. [[John talked to ANY_{C5}-body at the party]]^f
$= \{ [[X \cap \{x \mid x \text{ is a person}\}] \cap \{x \mid j \text{ talked to } x\} \neq \varnothing] \mid X \in D_{<e,t>}\}$
$=$ {John talked to a_{C5} person at the party,
John talked to a_{C1} person at the party,... }

The additive particle *even* adds nothing to the truth conditions of the sentence, but rather indicates that two presuppositions must be satisfied. Its existential presupposition ensures that there is at least one true alternative among the salient alternative propositions, and its scalar presupposition ensures that these are all less informative than the asserted proposition. This sentence asserts (144)a and presupposes (144)b and (144)c. Note that the assertion is eventually negated. However, the presuppositions are not negated because negation is a presupposition hole, allowing presuppositions within its scope to project unaffected (Karttunen 1973).

(144) a. As: [[not[John talked to ˇANY_{C5}-body at the party.]]]°
$= \lambda p.\neg p([[C_5 \cap \{x \mid x \text{ is a person}\}] \cap \{x \mid j \text{ talked to } x\} \neq \varnothing])$
$= \neg[[C_5 \cap \{x \mid x \text{ is a person}\}] \cap \{x \mid j \text{ talked to } x\} \neq \varnothing]$
$= [C_5 \cap \{x \mid x \text{ is a person}\}] \cap \{x \mid j \text{ talked to } x\} = \varnothing$

b. Ps: $\exists q[q \in C^{FOC} \wedge q \neq [[C_5 \cap \{x \mid x \text{ is a person}\}] \cap \{x \mid j \text{ talked to } x\} \neq \varnothing]$
$\wedge q = 1]$

c. Ps: $\forall q[[q \in C^{FOC} \wedge q \neq [[C_5 \cap \{x \mid x \text{ is a person}\}] \cap \{x \mid j \text{ talked to } x\} \neq \varnothing]$
$\rightarrow q <_{\text{informative}} [[C_5 \cap \{x \mid x \text{ is a person}\}] \cap \{x \mid j \text{ talked to } x\} \neq \varnothing]]$

According to the assertion in (144)a, John did not talk to anybody in the set {b, c, d, e, f}. The existential presupposition in (144)b says that there is a true proposition in the set of alternatives, that does not equal "John talked to somebody in the set {b, c, d, e, f}". Because the focal alternatives vary for the value of the domain variable, this true presupposed proposition is that "John talked to somebody in the set Z", where Z is some subset of {b, c, d, e, f}.

There is a problem here because this presupposition contradicts the assertion. If all of the alternative propositions contain resource domain variables which are assigned narrower domains as values, then the asserted proposition actually entails the negation of all the alternatives. However, according to the presuppositions in (144)b, the truth of a non-negated alternative is presupposed. Furthermore, the actual intuitive meaning of this sentence is such that this presupposition should be satisfied. The sentence does communicate that John talked to somebody, which makes this even more perplexing. I conclude that, within my analysis of free choice, the difference between the free choice and emphatic NPI readings of *any* in examples (136)/(137) and (138)/(139) cannot be reduced to the scope of *even*.

The previous paragraphs have demonstrated the difficulty in adopting a variable-scope-of-*even* account to distinguish between emphatic negative polarity and free choice in examples like (136)-(139) for my domain widening analysis. Since my agenda is to preserve

my domain widening analysis I must abandon the variable-scope-of-*even* account of these sentences.[40]

My proposal to account for these examples is very different from the variable-scope-of-*even* approach. Rather than trying to explain these sentences in terms of a difference of scope, I propose to treat the problem as a difference between the *descriptive* versus *metalinguistic* use of negation.

My account of free choice in putative negative polarity environments relies on the idea that negation in these examples is not descriptive, i.e., truth conditional, but is rather an instance of metalinguistic negation (Horn 1985, 1989).[41] Metalinguistic negation differs from descriptive negation in that the latter is used to truth conditionally negate a proposition, whereas the former is used to voice an objection about some feature of the linguistic expression. Metalinguistic negation can be used to object to any number of aspects of an utterance, from choice of wording to pronunciation. For current purposes, it is the ability of metalinguistic negation to cancel scalar implicatures which is relevant. For instance, according to the hypothesis that numerals truth conditionally have an "at least" interpretation, negating a low numeral should entail the negation of a higher numeral. And yet, one routinely finds examples like (145).

(145) Bill didn't eat one hot dog. He ate two.

According to Horn (1989), this is an example of metalinguistic negation because what is being negated here is not the truth conditional content of the sentence, but rather the scalar implicature "not more than one" arising from using the numeral *one*. Metalinguistic negation is thus a device sometimes used to cancel scalar implicatures.

To take another example, (146) is a case of scalar implicature cancellation via metalinguistic negation. Here the objectionable phrase is in scare quotes.

(146) John is not "a valuable member of the team", he's our star player.

This involves a metalinguistic objection to using an insufficiently weak description of John's position on the team. Obviously if John is our star player, he is also a valuable member of the team, but not vice versa. Therefore, negating "a valuable member of the team" cannot be descriptive, but rather must be metalinguistic.

Turning back to the question of free choice indefinites in apparently negative environments, if this were descriptive negation then negating an indefinite with a very wide domain would entail the negation of the same indefinite with a narrower domain. But this describes emphatic negative polarity, not free choice. Instead, I propose that in examples like (139) negation is being used metalinguistically.[42] This is exactly parallel to the case of negating a lower numeral like *one*, which entails the negation of a higher numeral. Just as metalinguistic negation is able to cancel a scalar implicature arising from the lower numeral, it is arguably the case that metalinguistic negation can also be used to object to an

[40] In fact, the semantics of *even* do not even play a role in my account of *not just any*.

[41] Horn (1989) argues that any logical operator may be used metalinguistically, so I assume that a similar analysis can be given to examples of free choice in the protasis of a conditional as well.

[42] This is assuming that the role of *just* is ignored. If *just* is used, then negation is descriptive, as will be seen later in this section.

inappropriately wide domain by cancelling some scalar implicature arising from using a very wide domain.

Importantly, this scalar implicature is not the one on a scale of individuals, but rather the one arising on the non-negated monotonic scale in which a wider domain corresponds to a weaker alternative. For instance, imagine that the scalar implicature in (147) has been generated.

(147) $<$ ~~[{b, c} ∩ {x | j talked to x} ≠ ∅]~~, [{b, c, d, e, f, g} ∩ {x | j talked to x} ≠ ∅]>

This implicature can be used by metalinguistically negating a free choice item, as in (148). The effect of this cancellation is schematized in (149). Note that the role of *just* is ignored for the time being.

(148) John didn't talk to just ˇANYbody (at the party. He's not a moron.)

(149) $<$ [{b, c} ∩ {x | j talked to x} ≠ ∅], [{b, c, d, e, f, g} ∩ {x | j talked to x} ≠ ∅]>

The result of cancelling the scalar implicature with metalinguistic negation is that the stronger alternative with a *narrower* domain is taken to be true. Since smaller domains lead toward specificity, cancelling this scalar implicature can thus be understood as a rejection of utter non-specificity. I believe this captures an important aspect of the meaning of a sentence like (139).[43]

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[43] It is important that there be a substantial difference in size between the wide and narrow sets in question. If the narrow set were {b, c, d, e, f} and the wide one {b, c, d, e, f, g}, then the scalar implicature would be as in (i).

(i) $<$ ~~[{b, c, d, e, f} ∩ {x | j talked to x} ≠ ∅]~~, [{b, c, d, e, f, g} ∩ {x | j talked to x} ≠ ∅]>

This is a problem. The content of this inference is given in (ii).

(ii) ¬[{b, c, d, e, f} ∩ {x | j talked to x} ≠ ∅]

Now, if (ii) holds, and the lower proposition on the scale in (i) is true as well, then it must be the case that (iii) is true because {b, c, d, e, f, g} – {b, c, d, e, f} = {g}.

(iii) {g} ∩ {x | j talked to x} ≠ ∅

But of course, this is more specific. Since I am trying to show that it is only by cancelling the scalar implicature that an indefinite can be made more specific, then the facts in (i) and (ii) seem to contradict my goals!

The problem does not arise if there is a substantial difference in the size of the sets involved. The scalar implicature used in the text, (147), given as (iv).

(iv) ¬[{b, c} ∩ {x | j talked to x} ≠ ∅]

Since the wider set is substantially bigger, we don't have the same problem because {b, c, d, e, f, g} – {b, c} = {d, e, f, g}. The lower-ranked proposition with the wider domain is true, given the scalar implicature in (147), only if (v) is true.

(v) {d, e, f, g} ∩ {x | j talked to x} ≠ ∅

It is perhaps surprising that the non-generic free choice analysis is relying on cancelling a scalar implicature arising on the monotonic scale rather than the scale of individuals that was so prominent in the discussion in Section 3.2. The scale of individuals discussed in Section 3.2 only becomes prevalent when a truly specific indefinite is involved, since it is a singleton and is hence the only type of indefinite that is interchangeable with an individual in some sense. In those cases, the use of a free choice item was an attempt to move away from a specific to a non-specific. In the present example, it is the other way around. Metalinguistically negating a free choice item is an attempt to move away from a non-specific to a specific. The specific indefinite is not the "starting point" of inference. Therefore, the scale of individuals will not be salient and no implicatures on it will be generated or need to be cancelled.

Since it is the monotonic scale that is relevant, the indefinite with the widest domain is actually low ranked. It is not surprising that *just* is used here since this focus particle associates with low ranked items on non-reversed scales. More than simply associating with a low ranked alternative, *just* also facilitates the use of descriptive negation to carry the same effect as metalinguistic negation. In other words, truth conditional negation plus *just* plays the same role as metalinguistic negation in cancelling a scalar implicature.[44] This is why *just* is used in these examples.

To understand how this comes to be, it is important to know that *just* truth conditionally excludes alternatives ranked higher than the asserted proposition on the scale of alternatives.

(150) [[just]](C^{FOC})(p) is defined iff
(i) As: $\neg\exists q[q \in C^{FOC} \wedge q = 1 \wedge p < q]$
(ii) Ps: $p = 1$

Because the exclusion of higher alternatives is truth conditional, descriptive negation can be used in a sentence containing *just* to truth conditionally *include* those higher ranking alternatives. The example in (151) has the LF shown here.

(151) Bill didn't eat just ONE hot dog.
= LF: [$_{IP1}$ not[$_{IP2}$ just [$_{IP3}$ Bill eat ONE hot dog]]]

Just has scope below sentential negation. The meaning of IP2 is given in (152).

(152) [[Bill ate just ONE hot dog]]
$= \neg\exists q[q \in C^{FOC} \wedge q = 1 \wedge [|[\{x \mid x \text{ is a hotdog}\} \cap \{x \mid b \text{ ate } x\}]| \geq 1] < q]$

Happily, the indefinite in this case is less specific than as in (iii), which is important for the point I am making. Now it makes sense to say that by cancelling this implicature, as in (149), that a proposition with a more specific indefinite is being asserted.

[44] Recall Footnote 39 in Chapter Two. There I proposed that a core part of the "meaning" of exclusive particles like *just* was to turn possible scalar implicatures found with unassociated focus into entailments. Now, I am considering the converse situation. Truth conditionally negating *just* is a way to truth conditionally negate an implicature and to circumvent the use of metalinguistic negation.

Negation takes higher scope, so that the proposition expressed in IP1 is given in (153). Note that this results in double negation.

(153) [[not [Bill ate just ONE hot dog]]]
$= \neg\neg\exists q[q \in C^{FOC} \wedge q = 1 \wedge [\,|[\{x \mid x \text{ is a hotdog}\} \cap \{x \mid b \text{ ate } x\}]| \geq 1] < q]$
$= \exists q[q \in C^{FOC} \wedge q = 1 \wedge [\,|[\{x \mid x \text{ is a hotdog}\} \cap \{x \mid b \text{ ate } x\}]| \geq 1] < q]$

This says that another alternative ranked higher is true. These higher ranked alternatives have substitutions of higher numerals in the place of *one*. Because sentences involving descriptive negation and *just* entail the truth of higher ranked alternatives, such sentences achieve the same effect as metalinguistic negation in cancelling a scalar implicature, albeit in the semantics since they rely on truth conditional descriptive negation.

The use of descriptive negation and *just* is a truth conditional alternative to scalar implicature cancellation by means of metalinguistic negation. Truth conditional negation + *just* is arguably expressively stronger, and thus a substitute for metalinguistic negation. In sentences like (146), its use is very natural, as seen in (154).

(154) John is not just a valuable member of the team, he's our star player.

I have claimed above that in examples like (139) metalinguistic negation is being used with a free choice item to cancel the scalar implicature on a monotonic scale in (147). At the time, I ignored the contribution of *just*. But now it should be clear that *just* in (139) is actually being used with descriptive negation in order to achieve the same effect as scalar implicature cancelling metalinguistic negation. This is demonstrated in (155).

(155) As: [[John didn't talk to just ˇANY$_{D5}$-body at the party]]^o
$= \neg\neg\exists q[q \in C^{FOC} \wedge q = 1 \wedge [[C_5 \cap \{x \mid x \text{ is a person}\}] \cap \{x \mid j \text{ talked to } x\} \neq \varnothing] < q]$
$= \exists q[q \in C^{FOC} \wedge q = 1 \wedge [[C_5 \cap \{x \mid x \text{ is a person}\}] \cap \{x \mid j \text{ talked to } x\}] \neq \varnothing] < q]$

Since the alternatives which are asserted to be true involve narrower domains for the indefinite, this sentence is used to convey that utter non-specificity is inappropriate. Not only is it true that John talked to somebody, it is also true that he was not completely indiscriminate in who he talked to. The rejection of an extremely non-specific indefinite is thus a way to confirm that John used some criteria in talking to people. Because of this important layer of meaning of *not just any*, Horn (2000b) has called this construction the anti-indiscriminative.

The purpose of this section has been to explore how free choice and emphatic negative polarity differ in apparently negative environments, and why *just* is frequently used rather than *even*. I have shown that in fact, if *just* is not used, free choice does not occur in the presence of descriptive negation, but rather the apparent negation is metalinguistic. It is not the indefinite itself which is being metalinguistically negated in such cases, but a scalar implicature. Furthermore, the use of *just* is used to achieve the same effect truth conditionally with descriptive negation.

CHAPTER FOUR: DOMAIN WIDENING OF UNIVERSAL AND DISTRIBUTIVE QUANTIFIERS

4 Introduction

In the previous chapters I explored the use of scalar focus with both emphatic negative polarity items and free choice items. My account led to a novel treatment of the use of focus on these indefinites as a device to cancel (indirect) scalar implicatures. Thus, it introduced a new conception of why additive particles are so commonly used with negative polarity items, drawing upon their natural function as quantity implicature cancellers.

As a domain of quantification effect, one might suppose domain widening occurs with other types of quantifiers besides negative polarity and free choice indefinites. However, any such proposal would challenge Kadmon and Landman's position; they argued that the phenomenon of widening is intimately bound to *any* licensing, which they called strengthening. In this chapter I will demonstrate that widening is a general phenomenon found with restricted quantification.

In Section 4.1 I discuss emphatic universal quantifiers in English, which involve focal stress on *EVERY*. I demonstrate that domain widening is possible in these cases, and is completely parallel to the use of emphatic *EVERY* in which the universal is substituted for another weaker lexical determiner. In this section I also review and counter arguments voiced by Kadmon and Landman that domain widening is not possible with genuinely universal quantifiers. In Section 4.2 I take a look at a wider ranger of determiners, and find that those quantifiers that do not express universal generalizations, such as *some* and *most*, cannot be domain-widened. I propose the *Difference Set Hypothesis* to account for this restriction, and relate it to similar observations and analysis by von Fintel (1993) concerning restrictions on which quantifiers may take *but*-exceptives. I also show how the Difference Set Hypothesis is useful in explaining why domain narrowing is not possible. Section 4.3 departs from determiners. In this section I adapt recent work by Brisson (1998, 2003) on the interaction of *all* and distributive quantification of definite plurals. Brisson argues a phenomenon called non-maximality arises due to the choice of contextual variable in a covert distributive operator, and *all* is a modifier used to stamp out such readings. I adopt her analysis of non-maximality as arising from the properties of contextual restriction, but give an original analysis of floated *all* from a domain widening perspective. I argue that *all* is the overt reflex of a focussed and normally covert distributive operator. The distributive operator is focussed to achieve domain widening. I extend this analysis of *all* in Section 4.4 to the Cantonese distributivity operator *dōu*. *Dōu* is remarkable in that it may co-occur with nominal quantifiers, and furthermore in that it is phonologically identical to the additive particle *dōu* "also/even" discussed in Chapter Two. I argue this homophony is not accidental and that the distribution of *dōu* can be largely related to the instances in which domain widening is expected to occur. I close the chapter with 4.5, where I reflect further on the relation of additive particles and distributivity markers.

4.1 Emphatic universals in English

Two key properties which I built into my analysis of negative polarity and free choice were focus and scalarity. Generally, the issue of scalarity is rarely touched upon in the study of universal quantifiers. Focus is primarily discussed only in relation to how it affects mapping to the nuclear scope of adverbial quantifiers. The goal of this section is to reveal how the properties of focus and scalarity are relevant in the study of what might be called *emphatic universals*.

4.1.1 Substitution for the lexical value of the determiner

I begin the discussion with an example in which the focal alternatives are lexical determiners which can be ordered on a scale. In the following discourse, two summer camp counsellors are discussing a recent field trip led by their colleague Jill.

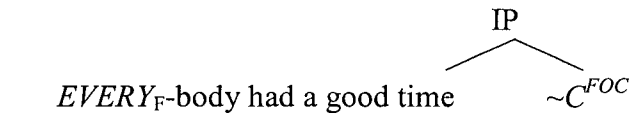
(1) A: I hear Jill's canoe trip was a success. Initial reports are that most people had a good time.
B: From what I've heard, EVERYbody had a good time. The kids are raving about it.

The determiners *every* and *most* are both members of the same Horn scale, <every, most> (Horn 1989). In a positive context, a proposition containing *every* is informationally stronger than an identical proposition containing a lower ranking determiner like *most*. Immediately after (1)A is uttered, it is very likely that a scalar implicature would arise which negates stronger alternative propositions. This scalar implicature is schematized in (2).

(2) <~~Everybody had a good time~~, Most people had a good time>

Speaker B immediately cancels this scalar implicature in (1)B by asserting that everybody had a good time. In order to do this, B utilizes focus on the determiner *every*. Consequently, the sentence with stressed *EVERY* in (1)B has a nontrivial focus semantic value. Within the theory of Rooth (1992), the focus anaphor $\sim C^{FOC}$ is adjoined to the sentence and is constrained by the Focus Interpretation Principle to be a subset of the focus semantic value.

(3)



The ordinary semantic value of the sentence is as in (4)i, and the focus semantic value as in (4)ii.

(4) $EVERY_F$-body had a good time

i. [[$EVERY_F$-body had a good time]]°
= every({x | x is a person})({x | x had a good time})

ii. [[$EVERY_F$-body had a good time]]^f
= {$\boldsymbol{X}$({x | x is a person})({x | x had a good time})| $\boldsymbol{X} \in D_{<<e,t>,<<e,t>,t>>}$}
= {everybody had a good time, most people had a good time, some people had a good time...}

In this context, Speaker B is using focus to contrast the determiner *every* with the determiner *most* which Speaker A has just used. The focus anaphor C^{FOC} contains these salient alternative propositions. This set is a subset of the focus semantic value.

(5) [[C^{FOC}]] = {Everybody had a good time, Most people had a good time}

The effect of asserting the stronger alternative, after the scalar implicature in (2) has already arisen, is scalar implicature cancellation. The stronger alternative which Speaker B is asserting here does not contradict the assertion of Speaker A, it merely cancels the upper-bounding quantity implicature.

(6) <Everybody had a good time, Most people had a good time>

There is not much more to say about this example. In one respect the analysis of emphatic universals is more straightforward than the analysis of emphatic NPIs because the conversational scalar implicature which is cancelled is not the indirect variety which occurs in downward entailing environments. Rather, it is the direct sort which is generated on positive scales.

4.1.2 Substitution for the value of the resource domain index

The more interesting type of example involves alternative contextual variables. An example is given below. This discourse takes place between two high school teachers who are discussing a recent school dance.

(7)
a. A: I hear that the school dance was a success.
b. B: Yeah, everybody had a good time.
c. A: I just hope that the parent chaperones were able to relax and enjoy themselves a little. The grade 10 class can be a handful.
d. B: Oh, don't worry about it – EVERYbody had a good time. The bad seeds in that class didn't bother showing up and nobody snuck in anything illegal.

In this example, Teacher B uses the emphatic form *EVERYbody* in response to Speaker A's concern about the chaperones. Intuitively, Teacher B is letting Teacher A know that the chaperones are included in those that had a good time. Although B originally had a resource domain in mind that included both students and chaperones when he uttered (7)b, it is clear

from A's anxiety in (7)c that A did not understand that B was also including the chaperones among those that had a good time. This is reasonable in this situation, since the subject is a school dance held for the benefit of students. We can characterize this by saying that the two teachers chatting in this dialogue were thinking of different resource domain indexings.[1]

(8) Teacher A is thinking of C_1: $[[C_1]] = \{x \mid x \text{ is a student}\}$
Teacher B is thinking of C_2: $[[C_2]] = \{x \mid x \text{ is a student, a chaperone}\}$
note that $[[C_1]] \subseteq [[C_2]]$

These alternative domain indices on *every* are the root of B's use of focus on *EVERY* in (7)d. The sentence under discussion has the ordinary semantic value in (9)i and the focus semantic value in (9)ii.

(9) $EVERY_{C2}$-body had a good time
i. $[[EVERY_{C2}\text{-body had a good time}]]^{\circ}$
$= (\text{every}_{C2}(\{x \mid x \text{ is a person}\})(\{x \mid x \text{ had a good time}\})$
ii. $[[EVERY_{C2}\text{-body had a good time}]]^{f}$
$= \{(\boldsymbol{X}(\{x \mid x \text{ is a person}\})(\{x \mid x \text{ had a good time}\}) \mid \boldsymbol{X} \in D_{<<e,t>,<<e,t>,t>>}\}$
$= \{$ every$_{C1}$-body had a good time, every$_{C2}$-body had a good time,
every$_{C3}$-body had a good time$\ldots\}$

Speaker B is trying to specifically contrast the resource domain indexing which he has in mind, C_2, with the one he can tell Speaker A has in mind, C_1. Therefore the set of salient alternatives in the focus anaphor will be just that subset of the focus semantic value that contains propositions with these different indices on the determiners.

(10) $[[C^{FOC}]] =$ {every$_{C1}$-body had a good time, every$_{C2}$-body had a good time}

Until B repeated that everybody had a good time, but this time with focus, there was no salient scale present in this discourse context. However, once Teacher B evoked these alternatives a scale does become salient. This is because the asserted proposition is informationally stronger than the alternative involving the narrow resource domain indexing. In (7)d, B asserts the stronger alternative.

(11) < every$_{C2}$-body had a good time, every$_{C1}$-body had a good time >

Using focus simultaneously highlights the salient scale and cancels a scalar implicature. Speaker A will understand that Speaker B is trying to set him straight and that there has been some misunderstanding. He understands that the individuals who had a good time are under discussion and that he has revealed in (7)c that he understood B's earlier generalization as not extending to parent chaperones. At this point, A will understand that there are two different ways in which context may restrict *every*, and that he had previously accepted the truth of only the weaker alternative. By now accepting that the stronger

[1] Note that the other quantifier Speaker B uses in (7)d, *nobody*, is indexed to a smaller domain containing just students. This sentence is an example where the speaker shifts contextual variables between different quantifiers. See Westerståhl (1984) for more discussion.

alternative is true, Speaker A will shed the inference he had originally made that only the students had a good time. Discarding this inference and accepting the stronger alternative is tantamount to cancelling a scalar implicature.

Of course, Speaker B could have avoided all of the confusion by being explicit about the extent of his generalization in the first place. He could have done this by using *even* to pick out the most noteworthy of the individuals in the domain. This shorter and less vague discourse is given in (12).

(12) a. A: I hear that the school dance was a success.
b. B: Yeah, everybody had a good time – even the chaperones.

Here, Speaker B forestalls the need to widen the domain later, since he points out the extent of his generalization overtly by naming *the chaperones*. See Section 2.2.3.4 for more discussion of this use of *even*.[2]

4.1.3 Kadmon and Landman's (1993) take on widening universals

I have sketched how I think focus is used to widen the domain of universal quantifiers. My analysis of this phenomenon is completely parallel to the analysis I gave to emphatic NPIs in Chapter Two. Furthermore, it is consonant with my view that domain widening has no independent status from the normal mechanisms of inference and negotiation we expect to find with restricted quantification.

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[2] Kai Von Fintel (p.c.) has noted that in certain cases focus is used on a universal determiner when no negotiation over the contextual domain is obviously taking place, but rather the appropriateness of a universal claim seems to be in question.

(i) a. A: I have spoken to everybody.
b. B: Really, did you speak to your mother?
c. A: Yes, I spoke to EVERYbody.

He wonders how this can be distinguished from domain widening and furthermore suggests one might want to analyze this from a "radical pragmatics" viewpoint. Rather than involving domain widening, where (ia) involves a true claim involving a smaller domain, (ia) could be treated as involving a possibly not-quite-true universal claim which Speaker B might have charitably treated as true. In the example above, the not-quite-true universal claim in (ia) is being challenged by speaker B in (ib), and then subsequently asserted to be categorically true by Speaker A in (ic).

My opinion is that a "radical pragmatics" treatment of this data is unworkable, because in the subsequent use of a focussed determiner in (ic) Speaker A would never be able to categorically assert the truth. This would only be possible if the quantificational generalization were true of absolutely every individual in the universe, which it is obviously not the case here since it is unlikely Speaker A spoke to every such individual. So in (ic), even A's putative assertion of categorical truth cannot be regarded as categorically true. This means that from a "radical pragmatics" perspective, both (ia) and (ic) are false.

Although it is less clear that domain negotiation is taking place here, I would still analyze this sort of example as a case of domain widening. Although B's use of *really* suggests that he is actually questioning the truth of A's early assertion in (ia), Speaker A could very easily have tagged on *even my mother* to (ic), as in "Yes, I spoke to EVERYbody – even my mother." Following Barker (1991), I believe *even* can be regarded in such cases as a device used to stake out the extent of quantificational generalizations, i.e. domain size. See Footnote 34 in Chapter Two for further discussion of this use of *even*.

It is significant that in their original treatment Kadmon and Landman (1993) did not intend the descriptive phenomenon of widening to include any other quantifier than polarity and free choice *any*. In fact, they explicitly discuss and reject the possibility that stressed universals be considered widened. In this section I will review each of their arguments and provide an alternative view of the data suggesting there is no evidence that universal quantifiers cannot be widened.

Kadmon and Landman discuss a number of examples which they argue provide evidence that universal quantifiers cannot be widened. First they contrast the following two dialogues.

(13) A: And then all the owls go on a mice hunt.
B: The healthy ones go, that is?
A: No, no – EVE-RY owl participates in the hunt.
(*every* emphatically lengthened, with each syllable stressed separately)[3]
Kadmon and Landman 1993: 363 (36)

(14) A: An owl hunts mice.
B: A healthy one, that is?
A: No, ANY owl. Kadmon and Landman 1993: 364 (38)

They suggest that the use of stress on the determiner is fundamentally different in these two examples. They argue that in (14), Speaker A uses *ANY* to indicate a shift in what counts as an owl, relative to what might have been as pointed out by B. In (13), while Speaker A clarifies that sick owls count by using *EVERY*, A does so indirectly and does not shift what counts as an owl. Speaker A is responding to B's previous statement, which was not intended to address what counts as an owl but rather meant to contradict A and offer a correction. So when A uses *EVERY* in response he is not rejecting the possibility that only healthy owls hunt, but is simply repeating himself using the same domain he had in the first place.

I will begin my comments with Kadmon and Landman's intuition that in (14) *ANY* is used to address what counts as an owl but *EVERY* in (13) is not. Although Kadmon and Landman maintain that this difference between the two examples is not linked to genericity, I think they are mistaken. The contrast they are discussing hinges on the dialogue in (14) being about what an owl is. The dialogue in (13) is not about what an owl is, but about events involving a certain group of owls.

Cohen (2001) discusses the properties of the generic use of indefinite singulars, as in (15). His major finding is that indefinite singular generics are *definitional*, in a way that even generic bare plurals are not. Therefore, (15)a, which expresses an essential property of madrigals (polyphonicity), is acceptable, but (15)b, which expresses a non-essential property of madrigals (popularity), is unacceptable. The contrast does not hold for bare plurals (16).

(15) a. A madrigal is polyphonic.
b. * A madrigal is popular.

[3] I do not really think this is the most natural way *every* would be articulated in this example. It is perfectly acceptable to stress it normally like any other focussed item. Consequently I do not take the unusual stress pattern Kadmon and Landman cite into consideration when I counter their arguments.

(16) a. Madrigals are polyphonic.
b. Madrigals are popular.

Returning to (14), the subject in A's first utterance is an indefinite singular generic. Consequently, this sentence is definitional in some sense and what counts as an owl is under discussion. Example (13) is quite different. This discourse merely sounds like an excerpt from a story involving owls and is not a discussion about what owls are. Therefore emphatic *EVERY* in A's last utterance is not intended to clarify what counts as an owl but merely which of the owls fall under the generalization he is making. I conclude that the difference between *EVERY* in (13) and *ANY* in (14), with respect to the question of whether the determiner is used to clarify what counts as an owl, is related to genericity.

A separate comment I have about this pair of examples has to do with Kadmon and Landman's intuition that (14) involves a "shift" taking place in the interpretation of the common noun phrase which is lacking in (13). From how I understand their discussion, part of why there is no shift in (13) is because Speaker A has the same domain of quantification in mind that he originally had and is merely repeating himself. So unlike *ANY* in (14), stress on *EVERY* in (13) is meant to reject B's correction rather than to shift the interpretation.

My objection is that I believe in both (13) and (14) Speaker A has the same domain of quantification in mind throughout the discourse fragment. Kadmon and Landman seem to think that this is only the case in the example involving the universal quantifier. But, as I discussed in Chapter Two, it is possible for the same speaker to move from unstressed to stressed *ANY* in polarity environments with the same domain in mind. The only difference is that the stressed version indicates that there is an alternative under consideration which was not originally taken into account. Therefore, I do not think there is a "shift" taking place with *ANY* which is absent from *EVERY*.

The next pair of examples Kadmon and Landman consider are given in (17) and (18).

(17) A: If you take a dry match and strike it, it lights.
B: ANY match I strike lights!
(major stress on *any* and *I*) Kadmon and Landman 1993: 364 (39)

(18) A: If you take a dry match and strike it, it lights.
B: EVERY match I strike lights!
(major stress on *every* and *I*) Kadmon and Landman 1993: 365 (40)

Kadmon and Landman report that (17)B with stressed *ANY* involves "real" widening but that (18)B with stressed *EVERY* does not. *ANY* in (17) seems to mean "even wet matches", and so the domain is widened to include both dry and wet matches. *EVERY* in (18) does not communicate this type of widening. As I understand it, they suggest that *EVERY* here is rather used to communicate enthusiastic affirmation of what Speaker A said. There is no real widening because Speaker B has the same domain of quantification in mind as Speaker A, one which does not include wet matches.

Again, my view of the data is somewhat different. Although (18) is somewhat less felicitous, it is a perfectly sensible way to communicate widening. I suspect any problem Kadmon and Landman have with (18) once again stems from genericity – it is just not the

norm to use *every* in generic statements (Partee 1995). A different example which is more felicitous is given in (19).[4]

(19) A: If you see an ant with wings, you should kill it.
B: I kill EVERY ant I see!

It is very clear that in (19), stressed *EVERY* indicates that the domain includes wingless ants. This contradicts Kadmon and Landman's contention that stressed *EVERY* cannot induce "real" widening.

A final pair of examples which Kadmon and Landman discuss is given in (20) and (21). These examples are supposed to demonstrate that, since *ANY* but not *EVERY* can encode widening, in a negative context *ANY* but not *EVERY* can indicate that widening is not necessary.

(20) Every match I strike lights – Not ANY match, of course, a wet one doesn't.
Kadmon and Landman 1993: 365 (41)

(21) # Every match I strike lights – Not EVERY match, of course, a wet one doesn't.
Kadmon and Landman 1993: 365 (42)

ANY in (20) indicates that the domain of matches was not so wide as to include wet ones. The second *EVERY* in (21) cannot indicate that the domain of matches does not include wet matches, but rather produces a contradictory statement. They argue that this shows that *ANY* but not *EVERY* is used for widening.

This argument is not persuasive because the pair of examples which they discuss are not parallel. In (20) the speaker initially starts with *every* and then moves on to *ANY* in her clarification. In (21) the speaker initially starts with *every* and then moves on to *EVERY* in her clarification. The examples differ in that the deviant example in (21) has a speaker using the same quantifier twice. A fully parallel example to (21) is given in (22).

(22) # Any match I strike lights – Not ANY match, of course, a wet one doesn't.[5]

As can be seen, when the speaker starts with *any* and then clarifies with *ANY*, the sentence is just as deviant as one with two *every*'s. These sentences do not show that *ANY* but not *EVERY* can induce widening, but rather that when a speaker uses a quantifier and then immediately enthusiastically negates it, the result is unnatural.

My analysis correctly predicts that once there is some distance in the discourse between two occurrences of *every*, it is possible to negate an *every* to prevent an inappropriately wide domain. This can be seen in (23).

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[4] I do not understand why (19) is more felicitous than (18) on the generic reading, although Henry Davis (p.c.) suggests it may have something to do with *every* occurring in object position in (19).

[5] As discussed in Chapter Three, free choice *any* is always somewhat stressed, so in (22) both *any*'s are probably stressed. This makes this example somewhat less parallel to (21), where stressing the first *every* is not necessary. Nonetheless, I believe it is clear that both examples are odd due to the unnaturalness of a speaker repeating himself like this. Therefore I believe (21) and (22) are more parallel than (20) and (21).

(23) a. A: Every match I strike lights.
b. B: Even wet ones?
c. A: Okay, okay smarty pants. Not EVERY match I strike lights.

Speaker A starts off by making a statement about matches. She has a domain in mind which does not include wet matches. Speaker B asks Speaker A to clarify the point. In (23)c Speaker A acknowledges the potentially confusing nature of her previous utterance and asserts that it is not the case that *EVERY* match she strikes light. She is not backing away from the proposition she previously intended, that every (dry) match she strikes lights. Rather, in her later utterance with focussed *EVERY* she has widened the domain of matches to now include wet ones. Therefore, just as Kadmon and Landman show that *not ANY* can be used to avoid misunderstanding by blocking an inappropriately wide domain from being used, so too can *not EVERY*. See Section 3.5 for related discussion.

4.2 Exceptions to domain widening

In the previous section I refuted Kadmon and Landman's claim that widening is confined to NPIs and FCIs. I do not share their view that domain widening is a lexical primitive, but rather believe it is just a particular use of focus to cancel a scalar implicature which arises due to contextual restriction. However, in this section I take some time to consider how strong my refutation should be. After some discussion, I will show that Kadmon and Landman (1993) are partially correct in that domain widening is not a completely general process.

The quantifier *most* is a member of a Horn scale with other quantifiers: <every, most, some>. When a lower member of this scale is used, *most* may be used to cancel a scalar implicature.

(24) A: I hear that Bill's canoe trip was pretty scary. Vera said that some kids started crying at the rapids.
B: From what I heard, MOST kids started crying at the rapids.

After Speaker A makes a quantificational generalization with *some*, it is very likely that the scalar implicature schematized in (25) may arise.

(25) <~~Most kids started crying at the rapids~~, Some kids started crying at the rapids >

In this discourse, Speaker B immediately responds by using stressed *MOST*. As is familiar by now, this can be analyzed as an act of scalar implicature cancellation, schematized in (26)

(26) <Most kids started crying at the rapids, Some kids started crying at the rapids >

This is a non-contradictory use of focus. Focus here is used to signal that the currently asserted utterance is stronger than the previous assertion, and a scalar implicature is cancelled. Although *even* is not used overtly in such cases, its presuppositions are satisfied, since there is a true alternative proposition (the weaker one) and the asserted proposition is

the most informative of the alternatives. This is not an act of domain widening, but an instance of non-contradictory focus to choose a stronger lexical determiner.

I also analyze domain widening as a type of non-contradictory focus in which a scalar implicature is cancelled. If a scalar implicature can be cancelled when *most* replaces other lexical determiners on a Horn scale, the question now arising is whether a scalar implicature can be cancelled when a *most* whose contextual variable is assigned to a wide resource domain replaces *most* whose contextual variable is assigned to a narrower resource domain. The empirical evidence suggests the answer is no.

Let's now consider the following discourse, in which one can imagine domain widening would occur. This discourse is based on (7), which takes place between two high school teachers discussing a recent school dance.

(27) a. A: I hear that the school dance was pretty successful.
b. B: Yeah, most people had a good time.
c. A: I just hope that the parent chaperones were able to relax and enjoy themselves a little. The grade 10 class can be a handful.
d. B: # Oh, don't worry about it – MOST people had a good time. The bad seeds in that class didn't bother showing up and nobody snuck in anything illegal.

I predict widening would occur here if the stressed determiner *MOST* in (27)d were felicitous, which it is not.[6]

A similar point can be demonstrated with *some*.

(28) a. A: I hear that the school dance was a disaster.
b. B: Yeah, some people snuck in liquor.
c. A: I wonder if the parent chaperones noticed anything was amiss.
d. B: # SOME people snuck in liquor – including parents.

---

[6] Apparently there is some speaker variation here. While most speakers balk at such sentences, not all do. Andrew Irvine (p.c.) suggests that widening with *most* is not so bad in the following sort of example, which I have marked (#) to reflect the speaker variation.

(i) a. A: Most students voted for Mr. X.
b. B: No, we didn't!
c. A: (#) No, MOST STUDENTS voted for Mr. X – in general.

In Section 4.2.2 I propose the Difference Set Hypothesis, which is meant to rule out such examples. For those speakers that do accept such cases of widening of *most*, then no appeal to the Difference Set Hypothesis need be made. For these speakers, such an example could then be more simply analyzed along similar lines to the "faux-widening" I discuss in (40). Although widening the contextual restriction in (ic) may not lead to a logically stronger proposition, some speakers might still take it as a pragmatically stronger one, and thereby admit it as satisfying the presuppositions of *even*.

Note also that this type of example seems a little more improved if focus lands not only on the determiner, but on the NP as well, as indicated by the capitalization in the example above. If this is the case, then this could be a rare example of domain widening which supports Stanley's (2002) view that contextual restriction resides in the nominal rather than the determiner. See Footnote 19 in Chapter Two for more discussion.

This example is meant to show the type of discourse that would facilitate domain widening with the quantifier *some*. In (28)b, Speaker B asserts that some people snuck liquor into the dance. Speaker A misinterprets this, and takes it that parent chaperones were not in the domain of the quantifier *some*. This is demonstrated by her question in (28)c, which is only cooperative if she takes it that the parent chaperones were not included in the previous quantificational generalization. One might suppose that Speaker B could at this point focus *SOME* to widen the domain of the existential quantifier to include parents as well as students. This is given in (28)d. However, unlike examples of widening by focussing the quantifier *EVERY* like in (7)d, focussing *SOME* here is completely infelicitous and no widening effect is produced at all. The strong intuition is that domain widening simply cannot be done with *some*.

These examples suggest that Kadmon and Landman are partially correct when they excluded all quantifiers besides negative polarity and free choice indefinites from domain widening. Although I have shown that their generalization cannot stand given the acceptability of widening the domain of a universal quantifier, within my account nothing so far would account for the unacceptability of widening the domains of *most* and *some*.

The class of quantifiers with which widening is acceptable are all used to make universal-type generalizations – NPI *any*, FC *any*[7] and universal quantifiers. To this list, we should also add the negative existential *no*. The following variation of the school dance example demonstrates that widening is possible by stressing *NO*.

(29) a. A: I've heard the principal's new rules for the dance were so strict that they really put a damper on the thing.
b. B: That's right. Nobody had a good time.
c. A: What about the parent chaperones? They were probably relieved that the kids weren't all out of control.
d. B: No, NObody had a good time. Not even the chaperones. The new rules were ridiculously strict and the chaperones were quite disappointed at the lack of enthusiasm among the kids.

In the following sections I will attempt to give a principled account of the restriction of domain widening to universal-type quantifiers, and even show how the same account can be used to explain why domain narrowing is impossible.

4.2.1 An unworkable solution: informativity and anti-persistence

In this section I will discuss a simple account of which quantifiers may be widened, and show it is wrong.

Widening the domain of an existential quantifier in a non-downward entailing environment does not lead to a stronger proposition. This point is demonstrated in (30) and (31).

[7] I am of course not retracting my analysis of free choice items as indefinites. For the time being I will indiscriminately lump them in with "universal-type quantifiers", and return to their status at the end of section 4.2.2.

(30) A bird ate the seeds; [[bird]]= {a, b, c}
⇒ A bird ate the seeds; [[bird]] = {a, b, c, d, e, f}

(31) A bird ate the seeds; [[bird]] = {a, b, c, d, e, f}
≠⇒ A bird ate the seeds; [[bird]] = {a, b, c}

In fact, widening the domain of an existential quantifier in non-downward entailing contexts leads to a weaker proposition. The reason for this is that existential determiners are persistent (Barwise and Cooper 1981), or left upward monotone.

Persistent determiners license inferences from subsets to supersets in their first argument. Barwise and Cooper (1981: 193) give the following definition.

(32) **Persistent determiner**
A determiner D is persistent if for all M = <E, [[ ]]>, and all A ⊆ B ⊆ E, if X ∈ [[D]](A) then X ∈[[D]](B).

Because persistent determiners license inferences from subsets to supersets, it follows that using a narrow domain always entails the equivalent proposition with a wider domain. The small domain is a subset of the wide domain. Because of this unidirectional entailment pattern, narrow domains are more informative than wide ones with persistent determiners.

It seems reasonable, then, to construct an analysis of the restriction on widening to universal-type quantifiers by linking it to anti-persistence, or left downward monotonicity. Barwise and Cooper (1981: 193) give the following definition for anti-persistence.

(33) **Anti-persistent determiner**
A determiner D is anti-persistent if for all M = <E, [[ ]]>, and all A ⊆ B ⊆ E, if X ∈ [[D]](B) then X ∈[[D]](A).

Every and *no* are both anti-persistent. As the converse of persistent determiners, widening an anti-persistent determiner should produce a more informative proposition. Perhaps, then, it is the property of anti-persistence which determines which quantifiers may be widened.

Under this hypothesis, widening persistent quantifiers will be disallowed because it will lead to a less informative proposition (34). Widening anti-persistent quantifiers will be allowed because it will lead to a more informative proposition (35). And what about determiners that are not monotonic in their left argument, such as *most*? Well, in this case, widening will not lead to either a stronger or weaker proposition (36). Since widening must satisfy the presuppositions of *even* and lead to a more informative proposition, widening should not be permissible with this class of determiners either.

(34) **Persistent (left upward monotone) determiners**
Several girls ate ice cream. ⇒ Several children ate ice cream.

(35) **Anti-persistent (left downward monotone) determiners**
Every girl ate ice cream. ⇐ Every child ate ice cream.

(36) **Left non-monotone determiners**

Most girls ate ice cream. $\Leftarrow\neq\Rightarrow$ Most children ate ice cream.

This would be a very elegant solution to the question of which quantifiers may be widened. But in fact there are more data to consider which greatly complicate the matter.

First of all, it is not the case that all anti-persistent determiners allow widening. Specifically, non-universal anti-persistent determiners do not allow it. The determiners *at most n* and *finitely many* are both anti-persistent. This is shown in (37) and (38) below, where the sentences on the left hand side of the implication arrow involve nouns which are subsets of those on the right side of the arrow.

(37) a. At most 3 girls ate ice cream $\neq\Rightarrow$ At most 3 children ate ice cream

b. At most 3 girls ate ice cream $\Leftarrow$ At most 3 children ate ice cream

(38) a. Finitely many humans are typing. $\neq\Rightarrow$ Finitely many primates are typing.

b. Finitely many humans are typing. $\Leftarrow$ Finitely many primates are typing.

However, neither *at most n* or *finitely many* may be widened. This can be seen in the following discourse in which widening *at most 3* is unacceptable.

(39) a. A: I hear that the school dance was less disastrous than in previous years.

b. B: Yeah, at most 3 people were arrested.

c. A: Well I guess the parent chaperones must have been relieved. The kids can be such hooligans.

d. B: #AT MOST 3 people were arrested – including parents. Mr. McAdoo and Mr. Alston got into a fist fight over which of their kids is smarter!

A second problem for the anti-persistence analysis of widening has to do with quantifiers like *most*. Although widening the domain of the determiner *most* does not lead to a logically stronger proposition, as seen in (36), I think in most cases it would lead to a pragmatically more informative statement. I have been assuming that the more stringent requirement of logical informativity does not regulate the use of *even*. Therefore, cases of widening that achieve pragmatic informativity should satisfy the presuppositions of *even* and should be allowed. This can be demonstrated by the following discourse involving "faux-widening".[8] That is, a wider domain is asserted by using focal stress on the NP restriction rather than on the determiner.

(40) A: I think we are in for trouble today. Most (of the) girls ate ice cream for breakfast, so they're going to be hyper.

B: It's worse than that. Most (of the) CHILDREN ate ice cream for breakfast.

Here, $\{x \mid x \text{ is a girl}\} \subseteq \{x \mid x \text{ is a child}\}$, and I believe the use of non-contradictory focus here is quite acceptable. The presuppositions of *even* are therefore satisfied. Of course,

[8] Recall that I am using the term *domain widening* in a very restricted sense to refer to cases in which a quantifier is focussed in order to widen the contextual domain.

Speaker B's assertion is not logically more informative than Speaker A's because the use of a wider domain does not logically entail the same proposition with a narrower domain. Nonetheless, Speaker B's assertion is pragmatically more informative, since the generalization presumably covers more individuals, and so the preconditions for domain widening are met. Therefore, it is not really the case that left non-monotonic quantifiers cannot meet the preconditions of widening, and so one cannot exclude such quantifiers from real domain widening (involving the context variable) just because they are not anti-persistent.

I conclude that the anti-persistent account of the restricted distribution of widening fails. In the next section I will develop a very different account of this restriction.

4.2.2 The role of the difference set

Let us begin by reflecting on why domain widening is necessary in the first place. This comes down to the question of why a speaker chose to use a quantifier with a narrower domain than the one that eventually will be asserted through domain widening.[9]

The reason why a speaker originally used a smaller contextual domain (C_1) was because she was trying to avoid making a false claim by using a larger one (C_2). Given a universal determiner D, the speaker asserted $D(A \cap C_1)(B)$ instead of $D(A \cap C_2)(B)$ because it was not clear whether $(A \cap C_2) - (A \cap C_1) \subseteq B$. That is, the speaker was confident about a certain subset of $A \cap C_2$, and made a claim about this subset. This is $A \cap C_1$. However, the speaker was not confident about another subset of $A \cap C_2$, namely the complement set of $A \cap C_1$ within $A \cap C_2$. In other words, this set $(A \cap C_2) - (A \cap C_1)$ is "disputable territory". We can call this disputable territory the *difference set*. By making a weaker claim by using C_1, the speaker is therefore avoiding the question of what status the disputable territory has within her quantificational generalization.

So far I have merely been contrasting the weak and strong propositions involved in domain widening in terms of their informational strength as propositions. Now I would like to add a slight nuance. The act of asserting a stronger proposition $D(A \cap C_2)(B)$ with a wider contextual domain not only makes a more informative statement, but it also makes a specific claim about the disputable territory, $(A \cap C_2) - (A \cap C_1)$. The specific claim is this: not only does the domain involved in the weaker proposition $A \cap C_1$ fall within the quantificational generalization, but also the complement set of $A \cap C_1$ within $A \cap C_2$ (or equally the difference set $(A \cap C_2) - (A \cap C_1)$) also falls squarely within the quantificational generalization. By hypothesis, this disputable territory plays a key role in verifying the truth of the stronger proposition in domain widening. This is captured in the *Difference Set Hypothesis* given in (41).

[9] Throughout the exposition of this section I will consistently say things like "the speaker chose to use a quantifier with a narrower domain". My discussion is couched in terms of a speaker's perspective solely for expository purposes. As is hopefully clear by this point, often it is not the speaker who is using a too-narrow resource domain, but rather a hearer who misinterprets a wide domain as too-narrow.

(41) The Difference Set Hypothesis (Preliminary)
In evaluating the truth of $D(A \cap C_2)(B)$, when the truth of $D(A \cap C_1)(B)$ is presupposed and $C_1 \subseteq C_2$:
(i) truth is determined by checking the truth of $D((A \cap C_2) - (A \cap C_1))(B)$
(ii) the truth value of $D((A \cap C_2) - (A \cap C_1))(B)$ must match that of $D(A \cap C_2)(B)$

I am proposing that in evaluating the truth of a stronger proposition, when the weaker proposition is known to be true and the context set of the determiner in the weaker proposition is a subset of the context set of a stronger proposition, what is checked is the truth of the proposition with the difference set $(A \cap C_2) - (A \cap C_1)$ acting as the quantifier's restriction. That is, the truth of the sentence involving the difference set must be verified.[10]

One way to think of this hypothesis is that once the truth of a weaker proposition has been verified using a set α, this same α must be used when determining the truth of a strengthened proposition. In order to maintain the same set α, the set β used to verify the truth of the stronger propositions must be a superset of α, (i.e., $\alpha \subseteq \beta$). Therefore, in order to guarantee the truth of the weaker proposition while making a stronger proposition, the original set α is maintained. The easiest way to do this is to set propositions involving the set α aside, and only assess propositions involving the new set γ, where $\alpha \cup \gamma = \beta$.

Now we can finally tackle the question of why domain widening is limited to universal-type quantifiers. With universals, the truth of the *difference proposition* $D((A \cap C_2) - (A \cap C_1))(B)$ uniquely determines the truth of the stronger proposition. If the difference proposition is false, the stronger proposition is false. If the difference proposition is true, the stronger proposition is true. This is because universal-type quantification is all-or-nothing.

With a non-universal such as *most*, the status of the difference set does not uniquely determine the truth of the stronger proposition. The speaker chose a weaker domain by asserting $D(A \cap C_1)(B)$ instead of $D(A \cap C_2)(B)$ in order to avoid making a false claim. However, the false claim would not have arisen simply because it was unclear whether $(A \cap C_2) - (A \cap C_1) \subseteq B$. Rather, the problem created by the disputable territory is somewhat more convoluted. What prevented the assertion of the strong proposition $D(A \cap C_2)(B)$ was doubt about whether the cardinality of $((A \cap C_2) - (A \cap C_1)) \cap B$ added to the cardinality of $(A \cap C_1) \cap B$ was sufficiently large. It is not even necessary that the difference proposition $D((A \cap C_2) - (A \cap C_1))$ B be true. In other words, it does not matter whether most members of the difference set $(A \cap C_2) - (A \cap C_1)$ are members of B – only that most members of $(A \cap C_2)$ are member of B. Therefore, the difference proposition derived from it does not uniquely determine the truth of the stronger proposition. Knowing whether the difference set $((A \cap C_2) - (A \cap C_1)) \cap B$ is empty does not automatically help in deciding whether the stronger proposition is true. This leads to situations which run afoul of the Difference Set Hypothesis.

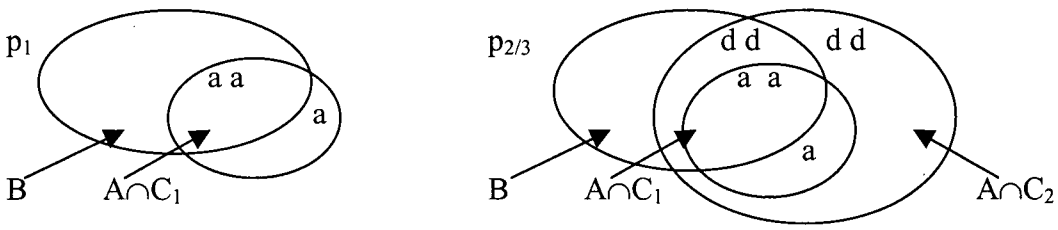
To take an example involving the determiner *most*, imagine the following truth conditions for a weaker proposition p_1 and a stronger proposition p_2. The intermediate p_3

[10] Note that this hypothesis is meant more as a psycholinguistic claim than something that needs to be built into the formal meaning of determiners. The validity of this claim remains to be tested.

Lest there be some confusion on the purpose of the Difference Set Hypothesis, it is also important to note that its role is to restrict domain widening to only certain quantifiers – namely, universal-type ones. It is not intended to enforce that domain widening always goes from subsets to supersets. This latter restriction follows if domain widening is scalar implicature cancelling rather than contradictory.

used in verification of the stronger proposition, as outlined in the Difference Set Hypothesis, is the difference proposition.

(42)



p_1: [[Most($A \cap C_1$)(B)]] = 1
p_2: [[Most($A \cap C_2$)(B)]] = 1
p_3: [[Most(($A \cap C_2$) – ($A \cap C_1$))(B)]] = 0

According to the state of affairs presented above, it is possible for p_1 to be true and for p_2 to also be true. Here, a major subpart of $A \cap C_1$ is a subset of B, and a major subset of $A \cap C_2$ is also a subset of B.

Following the Difference Set Hypothesis, the truth of the wider proposition is not verified by checking the truth of Most($A \cap C_2$)(B), but is rather verified by checking the truth of p_3, Most(($A \cap C_2$) – ($A \cap C_1$))(B). In the state of affairs depicted here, p_3 is false because it is not the case that a major subpart of ($A \cap C_2$) – ($A \cap C_1$) is a subset of B.

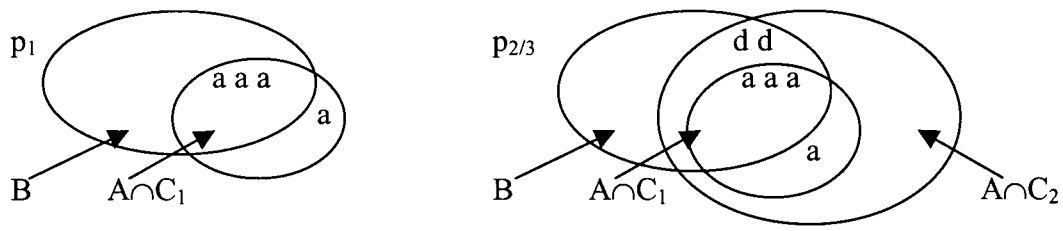
This leads to a somewhat strange situation. Both the weaker proposition p_1 and the stronger proposition p_2 are true, while the verifying proposition p_3 is false. By hypothesis, it is the truth of p_3 that is verified in order to evaluate the truth of p_2. Since this intermediate proposition is false, by the Difference Set Hypothesis the truth of the strong proposition cannot be verified as true, although it is in fact true.

This problem does not arise in the case of a universal quantifier. In presupposing the truth of the weaker proposition, the difference proposition can only have the same truth value as the stronger proposition. The strong proposition can only be true if both the weak proposition and the intermediate proposition are true. As a result, the truth conditions of the intermediate proposition uniquely determine the truth of the stronger proposition.

The non-universal quantifier *at most three* cannot be widened for similar reasons. Once again, the problem with this quantifier is that the difference proposition may have a different truth value than the strong proposition. This point is illustrated in (43).

The weak proposition p_1 is presupposed to be true. The strong proposotion p_2 is false, but the difference proposition p_3 which is verified is true.

(43)



p_1: [[At Most Three$(A \cap C_1)(B)$]] = 1
p_2: [[At Most Three $(A \cap C_2)(B)$]] = 0
p_3: [[At Most Three $((A \cap C_2) - (A \cap C_1))(B)$]] = 1

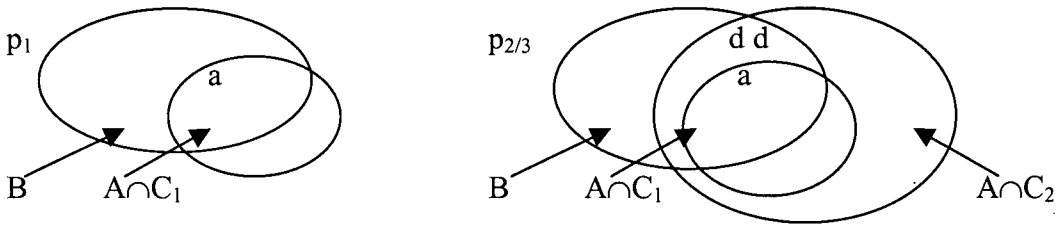
This situation is similar to the case of *most*. Once agian, the problem is that p_3 sometimes has a different truth value from the stronger proposition. This disconnect between the truth value of the difference proposition and the strong propositions interferes with widening in such cases.

Adopting the Difference Set Hypothesis, my proposal concerning the restriction on domain widening to universal-type quantifiers is based on the observation that only universal-type quantifiers are guaranteed to never give rise to the sort of situation as in (42) or (43). I propose there is a general ban in language blocking the use of unasserted intermediate propositions in determining the truth of another proposition if there is a possibility that they may render the incorrect truth value. This risk is always present in the case of non-universal-type quantifiers.

One puzzle I have not addressed yet is how free choice fits in. While free choice items are able to communicate universal-like generalizations, due to the sort of distributivity implicatures they generate discussed in Chapter Three, I have unequivocally analyzed free choice items as indefinites. I will not try to construct an argument with the goal of giving the distributivity implicature found with free choice *any* the same status as genuine universal quantification, because this would be off the mark. The Difference Set Hypothesis is meant to filter what can and cannot be widened. The unanswered question about free choice items is not how it is they can be widened. They are already widened. The question is why specific indefinites can be widened. That is, what special feature do they have that permits them to slip through to pattern like genuine universals.

I think it is fair to say that if widening serves any purposes at all in destroying a specific indefinite, then it is not the case that the difference proposition can be false. We can see this by considering the state of affairs in (44). Here, p_1 represents the weaker proposition involving a specific indefinite. It is true because $A \cap C_1 \cap B \neq \varnothing$. Since this is an indefinite, it is trivially true that the "stronger" proposition p_2 is also true since $A \cap C_2 \cap B \neq \varnothing$ and $C_1 \subseteq C_2$.

(44)



p_1: [[Some($A \cap C_1$)(B)]] = 1
p_2: [[ANY($A \cap C_2$)(B)]] = 1
p_3: [[Some(($A \cap C_2$) – ($A \cap C_1$))(B)]] = 1

According to the Difference Set Hypothesis, when widening is done it is not the truth of p_2 that is checked, but rather the truth of p_3, the difference proposition. Recall that the narrower alternative here is a specific indefinite which gives rise to individual oriented implicatures. The point of widening is to cancel these individual oriented implicatures. Since p_1 entails p_2, the only way that widening could be more informative in this case is if the speaker is actively trying to convey that p_3 is also true, because p_1 does not entail p_3. Consequently, the difference proposition plays a crucial role in licensing free choice, as it should since by the Difference Set Hypothesis it is the truth of the difference proposition that must be verified for widening to be successful.

The Difference Set Hypothesis therefore is not violated in the case of free choice. If anything, I believe the Difference Set Hypothesis helps clarify why free choice is informative at all – although the weaker proposition entails the truth of the stronger proposition, it does not entail the truth of the difference proposition. This is the locus of informativity.

While the Difference Set Hypothesis succeeds in ruling out widening for quantifiers like *most*, I have not yet addressed how it rules in sentences like (40), repeated here as (45), where the nominal restriction rather than the determiner is focussed.

(45) A: I think we are in for trouble today. Most girls ate ice cream for breakfast, so they're going to be hyper.
B: It's worse than that. Most (of the) CHILDREN ate ice cream for breakfast.

This example was used to show that something like widening, what I dubbed faux-widening, can occur with determiners like *most* that are not anti-persistent as long as it is the lexical nominal restriction that is focussed. If the Difference Set Hypothesis is correct, then there must be some reason why it does not apply to this type of example.

At this point my account of (45) is somewhat speculative, but I do think that the Difference Set Hypothesis is useful in explaining this sort of example. I would like to propose that the mode of verification described in the Difference Set Hypothesis need not be followed in sentences like (45) because of the presence of a completely new lexical item in the stronger proposition. Although the denotation of the lexical item *children* is a superset of the denotation of *girls*, by stressing the noun Speaker B is not only suggesting a stronger proposition can be expressed, she is also suggesting that a more apt lexical item may be used in forming this generalization. The use of a new lexical item is so prominent that the attention of the interlocutors becomes fixed on this strong proposition. That is, the use of a novel lexical item in the stronger proposition demands a sort of attention such that only the

truth of this stronger proposition need be checked. The intermediate proposition referred to in the Difference Set Hypothesis is just too backgrounded to be incorporated into the verification processes of such sentences.

In this section I have constructed an analysis of the restriction of domain widening to only universal-type quantifiers. In the next section I will present some data which I believe further support this approach. The *but*-exceptive construction is also restricted to universal-type quantifiers in an intriguing parallel to domain widening. As we shall see, something very much like the difference set which plays an important role in my Difference Set Hypothesis has also been identified by von Fintel (1993) in the restricted distribution of these *but*-exceptives.

4.2.3 The parallel with *but*-exceptives

Only universal-type quantifiers may undergo widening. This is highly reminiscent of the quantifiers identified by von Fintel (1993, 1994) which co-occur with the exceptive *but*. The following examples illustrate (Horn 1989: 346).

(46) Everybody but Mary — Nobody but John
Anyone but Carter — *Somebody but Kim
Anywhere but here — *Somewhere but here
{All/*Most/*Mary/*Three/*Some/None} of my friends but Chris.
Everything but the kitchen sink.
None but the brave deserves the fair. (Dryden)
No man but a blockhead ever wrote except for money. (Dr. Johnson)
I didn't see anybody but Bill. [added by SS]

The role of *but* here is to identify the following nominal as exempt from the quantificational generalization being made. Universals, NPI *any*, FC *any* and negative existentials *no/none* may all be used with *but*. Other non-universal quantifiers may not co-occur with *but*-exceptives. The parallel with *but*-exceptives is quite striking, and more than that I believe von Fintel's account of this restriction has much in common with my Difference Set Hypothesis.

But-exceptives are only one type of exceptive found in English. Other exceptive constructions have a much looser distribution, such as *except for*, *besides* and *other than*. These exceptives can be used with non-universal quantifiers, as seen in the following examples.

(47) a. Except for John, most cabinet members liked the proposal.
b. Except for John, few employees accepted the pay cut.
von Fintel 1993: 126 (33)

(48) Besides John, five other students attended the meeting — von Fintel 1993: 141 (42)

(49) Some student other than John solved the problem. — von Fintel 1994: 107 (23)

Von Fintel characterizes all exceptives as domain subtractors.[11] To take the case of *but*, the nominal expression which follows *but* denotes a set which is subtracted from the restriction of the quantifier. In the following example, where John is exempted from the set of students, John must denote the set {John} in order for this set operation to be acceptable.

(50) a. Every student but John attended the meeting.
b. D A [[but]] R B = True
$\Rightarrow$ B $\in$ D (A – R)
c. D = [[every]]
A = [[student]]
R = {[[John]]}
B = [[attended the meeting]]

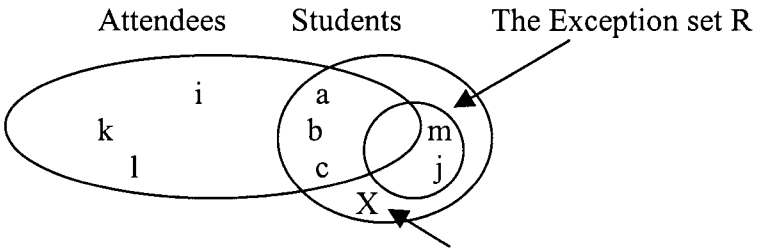
This domain subtraction is what all exceptives have in common, but something more needs to be said about *but*-exceptives to account for the restrictions noted in (46). Von Fintel develops an account by introducing the concept of an *exception set*.

(51) The set of exceptions to D(A)(B) is the smallest set R that D(A – R)(B)

This is the smallest set that needs to be subtracted from the domain of a quantifier in order to guarantee the truth of a quantificational sentence.

Universals (including negative existentials) differ in a fundamental way from non-universals. If they have an exception set at all, it is always unique. To take an example, the sentence in (52) has a unique exception set – {John, Mary}. The object *X* cannot exist for this sentence to be true if it is not explicitly declared as belonging to the exception set.

(52) Every student but John and Mary attended the meeting.

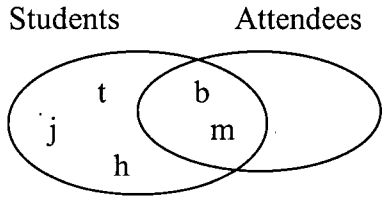


no such object exists *adapted from* von Fintel 1994: 108 (28)

It is perhaps easier to understand what it means for universal quantifiers to have unique exception sets by also considering non-universals, which do not have a unique exception set. Consider the following:

[11] See also Hoeksema (1987) for additional discussion.

(53) a. Most students attended the meeting.
b. Other than Tom and John, most students attended the meeting.
c. *Most students but Tom and John attended the meeting.



adapted from von Fintel 1994: 111 (32)

In this situation, the sentence in (53)a is false, but it becomes true as long as a sufficient number of students are identified as constituting an exception set. This is done in (53)b, and the sentence is both grammatical and sensible because of the three students remaining, {b, m, h}, most of these students are in the set of attendees: namely {b, m}. The exception set identified here is {j, t}. The crucial difference between *most* and *every* is that there is more than one possible exception set. For instance, if Tom and Harry had been identified as the exception set, or alternatively John and Harry, the sentence would still be true and sensible.

Von Fintel proposes that exceptive *but* is sensitive to the fact that only universal-type determiners have a unique exception set.[12] He proposes to build in a uniqueness clause into the truth conditions of *but* to guarantee that it only combines with quantifiers with a unique exception set.

(54) D A [[but]] R B $\Leftrightarrow D(A - R)(B) \;\&\; \forall S[D(A - S)(B) \Rightarrow R \subseteq S]$
$\Leftrightarrow D(A - R)(B) \;\&\; \forall X[X \subseteq A \;\&\; D(X)(B) \Rightarrow R \cap X = \varnothing]$
$\Leftrightarrow D(A - R)(B) \;\&\; \cap\{S \mid D(A - S)(B)\} = R$
$\Uparrow$ $\Uparrow$
Domain Subtraction Uniqueness Condition
adapted from von Fintel 1994: 108 (27)

These semantics guarantee falsity when exceptive *but* combines with a quantifier with a non-unique exception set, such as *most*. But as seen in (53)c, such a sentence is actually ungrammatical, not simply false. Von Fintel suggests that *but* has internally grammaticized the uniqueness condition so that it is grammatically sensitive to the distinction.

Von Fintel has identified an interesting semantic difference between universal-type and non-universal quantifiers which provides a very plausible foundation for the analysis of the restricted distribution of *but*-exceptives. The question that I would now like to address is why the very quantifiers that have unique exception sets are also those which may undergo domain widening. Recall that I derived the restriction of what quantifiers may undergo domain widening by proposing that in widening, what is verified is not the stronger proposition but the difference proposition. This is the proposition in which the determiner's restriction is formed from the difference between the wider domain and the narrower domain. I called this $(A \cap C_2) - (A \cap C_1)$ the difference set.

[12] The unique exception set R for *every*(A)(B) is as follows: $B^- \cap A = R$. The unique exception set for *no*(A)(B) is as follows: $B \cap A = R$. There is no unique exception set for *most*(A)(B): $B^- \cap A \neq R$ and $B \cap A \neq R$. Note that if not declared as an exception set, $B^- \cap A$ for *every* and $B \cap A$ for *no* must be $\varnothing$. With *most*, if not declared it is still not the case that $B^- \cap A$ or $B \cap A$ must be $\varnothing$.

There is a direct correlation between the difference set and von Fintel's exception set. Widening is necessary when a speaker makes a too-weak claim by using a too-narrow contextual restriction. The reason a speaker chose to make a weaker claim by asserting $D(A \cap C_1)(B)$ instead of $D(A \cap C_2)(B)$ was in order to avoid making a false claim. What was unclear for this speaker was the status of $(A \cap C_2) - (A \cap C_1)$.

This difference set can be conceptualized as a potential exception set whose status a speaker must first decide upon before asserting the stronger proposition $D(A \cap C_2)(B)$. If a speaker did assert $D(A \cap C_2)(B)$ they would have run the risk of expressing a falsity because $(A \cap C_2) - (A \cap C_1)$ might then have been an undeclared exception set. With universals, the exception set must either be $\varnothing$ or it must be explicitly declared. The act of widening by asserting the stronger proposition $D(A \cap C_2)(B)$ is a claim about this disputable territory – that it does not constitute an exception set.

The uniqueness of the exception set plays an important role in von Fintel's account of *but*-exceptives, just as the uniqueness of the difference set plays an important role in deriving the restrictions on domain widening from the Difference Set Hypothesis. In the case of widened universals, given a certain truth value for the difference proposition, there is only one truth value a stronger proposition can have – the very same truth value. This is a consequence of the fact that there is a single exception set whose status in the quantificational generalization can only be one way in order for the stronger proposition to be true.

The parallel constraints on *but*-exceptives and domain widening therefore have a well-motivated shared source – the exception/difference set. It is noteworthy that von Fintel (1994) himself foresaw the need to explore the connections between exceptives and Kadmon and Landman's domain widening analysis in further research. Domain widening is used to signal that a quantificational generalization is exceptionless.

The convergence we see between *but*-exceptives and domain widening is perhaps the sort of thing we would expect to find in language since fundamentally widening and exception are opposite operations of each other. Domain widening adds things to sets. Exception subtracts things from sets. However, the two operations are actually far from symmetrical.

Not all exceptives are sensitive to whether a quantifier has a unique exception set. Only *but*-exceptives seem to be sensitive in English. Furthermore, some languages lack a direct correlate of *but*-exceptives and have only the less constrained type which is not sensitive to a unique exception set, as is the case of *ektos-apo* in Greek. As discussed by Giannakidou (2001: 690 (81a)), *ektos-apo* may occur with non-universal quantifiers, as in (55).

(55) Milisa me tus perissoterus fitites ektos-apo to Jani.
?'I talked to most (of the) students but/except John.'

A possible domain widening counterpart to these less restricted exceptives might be the supplemental use of *even* or *including* to define the extent of a quantificational

generalization. This was discussed in Section 2.2.3.4. The example in (56) is arguably an instance where *including* widens the domain of *most people* to include teachers.[13]

(56) Most people had a good time, including the teachers.

If this is the proper account of (56), then *including* here is perhaps a domain-widening tool more parallel to exceptives like *except* and *other than* in being able to appear with quantifiers with a non-unique exception set.

A second difference between exceptives and domain widening is that the exceptives are grammatical morphemes which have a truth conditional effect on a sentence and are subject to grammatical constraints. Focus plays no role, and alternative propositions need not be considered. Domain widening is very different. Domain widening crucially relies on focus to evoke a scale of alternative propositions differing in informational strength. Furthermore, the effects of domain widening are essentially pragmatic – the cancellation of a scalar implicature.

In the next section I depart from exceptives and return the discussion briefly to the Difference Set Hypothesis. I show that this hypothesis is not only useful in explaining why not all quantifiers can be widened, but is also useful in explaining why domain narrowing is impossible.

4.2.4 Domain narrowing and the Difference Set Hypothesis

The Difference Set Hypothesis was introduced in an earlier section in order to explain the restriction of domain widening to universal-type quantifiers. In this section I demonstrate that the Difference Set Hypothesis is also useful in solving another puzzle about which I have so far been silent– namely why domain *narrowing* is impossible.

I have claimed that domain widening results from the non-contradictory use of focus on a determiner to cancel a scalar implicature. If contradictory focus were used instead, then one would expect domain narrowing to be possible. That is, one would expect focussed determiners could be used to indicate that the contextual restriction is narrower than previously thought. In such a case the presuppositions of *even* would no longer be satisfied. Since I have claimed that domain widening is just a particular use of focus on a determiner, there is nothing in the structure of my theory that predicts that domain narrowing should be disallowed.

However, domain narrowing is in fact impossible. The relevant data is given below, and once again contains a conversation fragment between two teachers discussing a recent school dance.

[13] Adding the supplemental "including the teachers" seems to suggest that most of the teachers has a good time. This is perhaps unexpected, because if all "including the teachers" were doing here was adding the teachers to the set of people being quantified over, then it is of course possible that only a few of the teachers had a good time, if the teachers make up a small enough portion of the domain. This may be due to some relevance implicature.

(57) a. A: I hear that the school dance was a success.
b. B: Yeah, everybody had a good time.
c. A: Well that's good. In the past the parent chaperones have been pretty grumpy.
d. B: # EVERYbody had a good time. The chaperones were complaining about the kids' antics all night and the strobe lights made some of them dizzy.

The use of emphatic *EVERY*body in (57)d is an attempt to produce narrowing via focus on the determiner. As can be seen, the use of focus here sounds strange and in fact does not produce any narrowing. This example is completely parallel to similar examples in which widening is possible.[14]

To briefly explain how this example is meant to work should narrowing have been permissible, Teacher B uses the emphatic form *EVERYbody* in response to Speaker A's suggestion that the chaperones were not grumpy. What this dialogue is trying to demonstrate is a situation in which Teacher B is letting Teacher A know that the chaperones are not included in those that had a good time. Although B originally had a resource domain in mind that included students but excluded chaperones when he uttered (57)b, it is clear from A's comments in (57)c that A did not understand that B was not including the chaperones among those that had a good time. The use of focus in (57)d is meant to contrast the narrow domain Teacher B is assuming with the wider one that Teacher A has understood. We can characterize this by saying that the two teachers chatting in this dialogue were thinking of different resource domain indexings.

(58) Teacher A is thinking of C_2: $[[C_2]] = \{x \mid x \text{ is a student, a chaperone}\}$
Teacher B is thinking of C_1: $[[C_1]] = \{x \mid x \text{ is a student}\}$
note that $[[C_1]] \subseteq [[C_2]]$

Given that I have tried to show that domain widening simply reduces to cases in which a particular sort of focus is used, namely when the asserted proposition does not contradict its alternatives, it is unclear why domain narrowing should be disallowed. Within the theory advocated here, this would be a different but otherwise unremarkable use of focus in which the asserted proposition contradicted its alternatives. Ideally, the inability to achieve narrowing in a parallel fashion to widening via focus should fall out without having to make any further stipulations.

The Difference Set Hypothesis is once again useful in explaining this restriction. The essence of the Difference Set Hypothesis is that sometimes widening is not possible because

[14] Although domain narrowing does not seem to be possible, it is still acceptable to use focus on a determiner to contrast it with a stronger determiner.

(i) A: Did Lily talk to everybody?
B: Well, she talked to MOST/SOME people.

Here, the relevant scale is the Horn scale <every, most, some>. The determiners *most* and *some* are ranked lower than *every*. They are therefore being used in (iB) to contradict the proposition being questioned by A, "Lily talked to everybody". The use of focus on a determiner to cancel a scalar implicature arising on the scale of determiners was discussed in Section 2.2.2.1.

the asserted proposition may have a different truth value then the intermediate difference proposition, which incorporates the difference set, during verification. A similar analysis can be given to the ban on domain narrowing. In the process of domain narrowing, a weak proposition is be asserted. This weak proposition is true. But the purpose of domain narrowing is not in fact to express that the weak proposition is true. Had domain narrowing not occurred, and the inaccurately strong proposition not been challenged, then the truth of the weak proposition would still be entailed.

The real purpose of domain narrowing is not to claim that weak proposition is true, but rather to claim that the strong proposition is false. The reason it is false is because the difference proposition is false. Domain narrowing is therefore a very specific claim about a "sub-proposition" of the strong proposition. The claim is that the difference proposition is false.

This can be captured if the Difference Set Hypothesis is altered slightly to take into account the procedure that would be used in narrowing cases.[15]

(59) The Difference Set Hypothesis (Revised)

In a (widening) situation where $D(A \cap C_2)(B)$ is asserted and contrasted with the salient alternative $D(A \cap C_1)(B)$ where $C_1 \subseteq C_2$:

(i) truth is determined by checking the truth of $D((A \cap C_2) - (A \cap C_1))(B)$

(ii) the truth value of $D((A \cap C_2) - (A \cap C_1))(B)$ must match that of the asserted strong proposition $D(A \cap C_2)(B)$

In a (narrowing) situation where $D(A \cap C_1)(B)$ is asserted and contrasted with the salient alternative $D(A \cap C_2)(B)$ where $C_1 \subseteq C_2$:

(i) truth is determined by checking the truth of $D((A \cap C_2) - (A \cap C_1))(B)$

(ii) the truth value of $D((A \cap C_2) - (A \cap C_1))(B)$ must match that of the asserted weak proposition $D(A \cap C_1)(B)$

Narrowing is impossible because of the Difference Set Hypothesis. As said, the purpose of domain narrowing is not to make a positive claim about a weak proposition but rather to make a negative claim about the difference proposition. Just as in the unacceptable cases of domain widening discussed above involving *most* and *at most n*, there is a problem due to conflicting truth values. The truth value of the asserted weak proposition is true and conflicts with the truth value of the difference proposition, which is actually verified and which must be false.

This state of affairs is illustrated below.[16]

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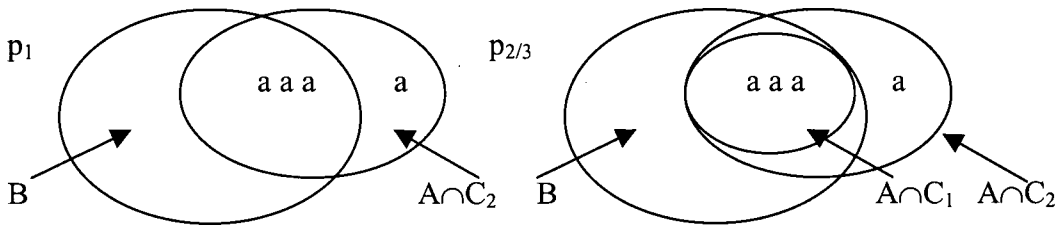
[15] Note that I have changed the wording since the truth of an alternative cannot be presupposed in the case of narrowing, but merely contrasted. Apart from this small change, the Difference Set Hypothesis is essentially unaltered.

[16] In the examples discussed involving widening, p_1 was weak and p_2 strong. In the current example which involves narrowing, p_1 is strong and p_2 weak. But note that $C_1 \subseteq C_2$ is still the case.

(60)



p_1: [[Every($A \cap C_2$)(B)]] = 0
p_2: [[Every ($A \cap C_1$)(B)]] = 1
p_3: [[Every (($A \cap C_2$) – ($A \cap C_1$))(B)]] = 0

The Difference Set Hypothesis can be used to regulate domain narrowing as well as domain widening, and effectively accounts for why domain narrowing is never possible.

I began this chapter by arguing that domain widening is not restricted to negative polarity and free choice indefinites, as originally proposed by Kadmon and Landman (1993). In Section 4.1 I demonstrated that the universal determiner *every* can also be widened. In Section 4.2 I began to consider other determiner quantifiers, and explored why non-universal determiners cannot undergo widening. In the following sections I will once again expand the empirical horizon by exploring the nature of domain widening with a completely different class of universal quantifiers, verbal distributive operators.

4.3 Distributivity and domain widening in English

One type of universal quantifier not yet discussed are distributivity (D) operators. In this section I present an analysis of *all* as a focussed D-operator used to achieve domain widening. The analysis is built directly on work by Brisson (1998, 2003), who built on Schwarzschild (1996). After extensively reviewing their insights in 4.3.1, I present my domain widening analysis in 4.3.2. Section 4.3.3 discusses some potential pitfalls presented by collective predicates and 4.3.4 ends the discussion of English with some final thoughts.

Distributivity operators have been posited by Link (1983), Landman (1989), Lasersohn (1995), Schwarzschild (1996), Brisson (1998, 2003), among others, to account for sentences in which definite plurals are easily paraphrased by a universal quantifier.[17] For instance, (61)a seems to basically mean the same thing as (61)b.

(61) a. The girls jumped in the lake.
b. Every girl jumped in the lake.

[17] The subject of this section is domain widening and distributive quantifiers rather than definites. I have not explored the possibility of domain widening definites.

Martina Wiltschko (p.c.) suggests stressed *THE* might be profitably analyzed from a domain widening perspective. Stressed *THE* in English gives rise to a marked superlative reading of the definite.

(i) John is THE source for tickets.

Wiltschko proposes that the distinctive superlative interpretation may be due to the fact that the domain has been widened, and the referent of the definite still denotes a certain unique individual, even from a larger set of individuals. This is an interesting idea, but the technical details remain to be worked out.

A common mechanism to capture this equivalence is to posit some covert distributivity operator in the sentence which has universal quantificational force and whose restriction is supplied by the definite plural. An example from Brisson (2003: 129 (3-4)) is given in (62), in which the D-operator has been attached to the VP.[18]

(62) a. The girls $^{D}[_{VP}$ jumped in the lake]
b. ^{D}jumped.in.the.lake(the.girls)
c. $\forall x[x \in [[\text{the.girls}]] \rightarrow x \in [[\text{jumped.in.the.lake}]]]$

This accounts for the similarity between definite plurals and universal quantifiers in (61). However, in other cases the parallel between definite plurals and universal quantifiers is not perfect, which suggests a more subtle treatment must be given. First of all, definite plurals can be used with collective predicates, as in (63)a, whereas a quantifier containing *every* with the same collective predicate results in ungrammaticality (63)b.

(63) a. The girls met.
b. * Every girl met.

A second difference between definite plurals and universal quantifiers is that definite plurals usually permit a non-maximal or non-exhaustive reading. For instance, the sentence in (61)a is true in a situation containing ten familiar girls, of whom only nine actually jumped in the lake while the tenth sat on the dock. This contrasts with a normal universal quantifier. (61)b only has a reading in which all ten girls jumped into the water. This non-maximality effect will be discussed extensively below.

The floated quantifier *all* is interesting in light of the previous paradigms. *All* with the definite plural, (64), gives rise to a similar interpretation as (61)a-b.

(64) The girls all jumped in the lake.

This raises the question of whether a definite plural in combination with floated *all* behaves more like a plain plural definite or like a DP introduced by *every* when it comes to the ability to co-occur with collective predicates and the possibility of a non-maximal construal. The answer is that *all* displays mixed behaviour. As seen in (65), floated *all* is perfectly acceptable with a collective predicate. In this respect, *all* patterns more like a simple plain plural definite than with the quantificational determiner *every*.

(65) The girls all met.

But when it comes to non-maximality, *all* patterns more with *every*. The sentences in (64)-(65) do not permit an interpretation in which some girls did not participate in the action encoded in the main predicate.

[18] Following Schwarzschild (1996) and Brisson (1998, 2003) I will assume that definite plurals denote sets. Since my goal is to build on the work of these earlier authors, this assumption has been made to keep my exposition close to theirs. See Footnote 22 for further discussion.

Brisson (1998, 2003) has argued that the role of *all* is to affect the domain of quantification of a covert distributivity operator present in sentences containing definite plurals. She proposes that *all* is used to stamp out non-maximal readings. Her analysis bears some relation to my domain widening account, and in the following sections I will compare the two analyses.

I first discuss the nature of non-maximality and review some of the peculiar facts about *all* that led Brisson to this analysis. Then I recount Brisson's solution to this puzzle and proceed to tie the behaviour of *all* and distributivity operators into my domain widening account.

4.3.1 The nature of non-maximality

Brisson catalogues several characteristics of non-maximality discussed in the literature that lead her to develop two desiderata for a theory of plurality and non-maximality. Since non-maximality is not a heavily studied phenomenon, some discussion of these characteristics might be appropriate.

To start off, drawing on a discussion by Yoon (1996), Brisson shows that the lexical meaning of a predicate can affect how easily it gives rise to a non-maximal reading of a definite plural. The following pair of examples demonstrate (Brisson 1998: 45).

(66) a. The children (who ate pizza here last night) got food-poisoned.
b. The children (who are playing in the garden) are eight years old.

These examples differ in how easily they give rise to a non-maximal understanding of the plural definite. There is a weaker requirement that every single child got food-poisoned in (66)a than the more robust requirement that every single child in the garden is eight years old in (66)b.

A second factor Brisson cites that affects non-maximality is the total size of the plurality denoted by the subject DP. The larger the plurality, the greater the tolerance for exceptions. Brisson draws this lesson from Fiengo and Lasnik's (1973) discussion of reciprocals.

(67) The men are hitting each other. Brisson (1998: 37)

In a situation in which four men are engaged in some kind of fight, it is hard not to understand this sentence as meaning each man is hitting some other. However, if a larger brawl has broken out, in which a large plurality of men is involved, it is easier to allow weaker truth conditions for this sentence. For example, (67) can still be true even if two men out of forty are not hitting anyone at all.

A third feature of non-maximality is that it occurs with both collective and distributive predicates. The following sentence is illustrative.

(68) The boys ate a sandwich. Brisson (1998: 48)

This sentence can either be understood with a collective reading, under which there is a total of one sandwich that a plurality of boys share, or a distributive reading under which the boys

are better fed and each eats a sandwich. Interestingly, whether taken collectively or distributively, this sentence is independently ambiguous with respect to non-maximality. That is, non-maximal readings of the plural definite are possible with either the collective or distributive reading of the predicate here.

A further observation by Brisson is that non-maximal readings are much easier to get with a plural definite than with a conjunction of proper names.

(69) a. The girls ate a sandwich.
b. Alice, Betty, Carmen, and Diane ate a sandwich. Brisson (1998: 50)

Brisson notes that the effect of naming the individuals in the conjunction seriously discourages understanding a plural subject non-maximally. Even so, given a rich enough context, even a conjunction of two proper names can be understood non-maximally. Brisson cites the following example and context from Lasersohn (1990: 47):

> Imagine a competition in which teams are required to attempt various stunts, including lifting a piano. John and Mary form one team, Bill and Susan form another. During the competition, John lifts the piano; meanwhile, Mary performs one of the other stunts, say shooting herself out of a cannon. When Bill and Sue's turn arrives, they succeed in doing almost all the stunts that John and Mary did, but fail at lifting the piano, and therefore lose the competition. In this sort of situation, it seems fair to say that John and Mary won the competition because THEY lifted the piano, while Bill and Sue didn't. This is despite the fact that Mary played no role in the actual lifting.

(70) John and Mary lifted the piano. Brisson (1998: 51)

Within the scenario imagined by Lasersohn, the sentence in (70) is judged true despite the fact that the atoms of the conjunct are all named. This is so because the fact that John and Mary form a team is so salient.

Finally, Brisson discusses the interaction of non-maximality with *all*. *All* is incompatible with non-maximal understandings of plural definites. Brisson suggests that the totalizing effect of *all* is perhaps better understood as non-maximality-cancellation. This can be seen by comparing the definite plurals in (61)a and (63)a which allow a non-maximal interpretation, with the parallel examples with *all* in (64) and (65) which do not allow a non-maximal interpretation.

Based on the preceding observations, Brisson (1998: 52) posits two desiderata for a theory of plurality and non-maximality.

(71) **Desiderata for a theory of plurality and non-maximality:**
a The theory should make use of a quantificational operator.[19]
b. The theory should make room for both lexical and pragmatic factors.

[19] Brisson's conclusion that a theory of non-maximality should make use of a quantificational operator may not seem to directly follow from the data presented just above. From her discussion, it seems the conclusion one might reach instead, based on data like (68), is that non-maximality must be able to arise even in quantificational environments.

These desiderata form the basis of her analysis of the phenomenon which I present in the next section.

4.3.1.1 Brisson's analysis of non-maximality

As Brisson finds that non-maximality is a phenomenon linked to quantification, she develops an analysis that draws on the semantics of the covert D-operator.[20] She does this by slightly adapting the work of Schwarzschild (1996). Schwarzschild's analysis of the D-operator, or Part operator as he calls it, is distinctive because it relies on a covert contextual variable in the restriction. Since a proper appreciation of the underlying motivation and nature of this context variable is crucial to an understanding of Brisson's claims and my adaptation, I will spend a number of paragraphs reviewing its properties.

Recall that the D-operator is essentially a universal quantifier that takes the set denoted by the plural definite subject as its restriction, and distributes the property denoted by the VP down to the atoms within the restriction. This was demonstrated in (62), repeated here in (72).

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[20] Brisson discusses an alternative to her approach to non-maximality, the groups approach proposed by Landman (1996). Landman argues for a non-quantificational analysis of collectives as predication of a group-denoting subject, a group being a plural individual (sum) with an opaque part structure, and hence essentially an atomic individual (see also Link 1983). Landman argues, by assuming a groups analysis of collectives, one can capture non-maximality. For instance, take the following pair of sentences.

(i) John touched the ceiling.
(ii) The boys touched the ceiling.

Just as (i) is true even if only John's hand touches the ceiling (his whole body need not touch), so too is (ii) true even if only the topmost boy in a human pyramid touches the ceiling (every body need not touch). So, just as part of John touching the ceiling is sufficient to verify (i), part of the boys group touching the ceiling is sufficient to verify (ii). Landman argues these are exactly parallel phenomena, and non-maximality in this guise is predicted to occur if groups are a type of atomic individual.

Brisson points out some problems with this approach, which I will only mention here. First, non-maximality can arise with definite plurals when it is not possible with parallel singular atomic individuals.

(iii) Polly graded the exam.
(iv) Polly graded the exams.

Non-maximality can arise in (iv), but it does not seem possibly for Polly not to have graded the entire exam in (iii).

A second problem is that the groups approach cannot capture cases where an existential quantifier has low scope, as in (v).

(v) The boys ate a sandwich.

It is possible to understand (v) both distributively (one sandwich per boy) and non-maximally (one boy didn't eat). This is impossible on a groups approach since groups are used in Landman's system to capture collective readings without quantification. Therefore, distributivity and non-maximality are predicted to be mutually exclusive.

A similar point is that the groups approach does not address the apparent maximizing effect of *all* with both collective and distributive predicates. See Brisson (1998) for more extensive discussion.

(72) a. The girls $^{D}[_{VP}$ jumped in the lake]
b. ^{D}jumped.in.the.lake(the.girls)
c. $\forall x[x \in [[\text{the.girls}]] \rightarrow x \in [[\text{jumped.in.the.lake}]]]$

Schwarzschild argues that augmenting the semantics of the D-operator by positing a covert context-dependent variable within the restriction is desirable, and would allow for a more uniform treatment of them with other quantifiers that have been argued to have covert restrictions (Westerståhl 1985, von Fintel 1994). The form of the covert variable which Schwarzschild posits, Cov, is a cover variable that covers the universe of discourse. The definition he provides is given in (73), where P stands for plurality.[21]

(73) C is a cover of P if and only if:
a. C is a set of subsets of P
b. Every member of P belongs to some set of C
c. Ø is not in C. Schwarzschild 1996:64 (152)

As a context-dependent variable which gets its value via variable assignment, the cover variable carries an index like any variable. With this indexed variable within its restriction, the semantics of the D-operator in (72) are revised to (74). Note that Brisson treats plural individuals set-theoretically.[22]

(74) a. The girls $^{D}[_{VP}$ jumped in the lake]
b. ^{D}jumped.in.the.lake'(the.girls)
c. $\forall x[x \in \text{Cov}_i \wedge x \subseteq [[\text{the.girls}]] \rightarrow x \in [[\text{jumped.in.the.lake}]]]$

Just as Westerståhl showed that every quantifier in a sentence potentially has a different covert restriction, so too can each D-operator in a sentence carry a differently indexed cover variable.

The Cov variable analysis correctly generates predictions that the D-operator analysis in (72) cannot capture. Schwarzschild uses this to account for context sensitive intermediate readings of definite plurals. Intermediate readings are neither fully distributive nor fully collective, and seem to be highly influenced by pragmatic factors. Schwarzschild discusses the following example (1996: 67).

(75) Context: Two merchants are attempting to price some vegetables piled in several baskets. The vegetables must be weighed to be priced, but the

[21] Higginbotham (1981) and Gillon (1987) both precede Schwarzschild in utilizing plurality covers in the analysis of plurals.

[22] In this she follows Landman (1989), who showed that modelling plural individuals as sets, rather than as lattices as Link (1983) had, was more perspicuous. Landman argued only a subset of the class of lattices can be used to model plurals and this is the set of lattices that can be mapped onto a set-theoretic equivalent.

The verbal predicate and the cover variable are both treated as second order sets within this system. Note, however, that the plural definite remains of type e and the one-place predicate as type <e,t>.

The few times I mentioned plural individuals in earlier chapters I used a Linkian lattice notation. Since my own discussion in this chapter will build directly from Brisson's work, I will hereafter adopt her set theoretic assumptions for plural individuals in order to keep the analyses as consistent as possible.

merchants lack the appropriate scale. Their grey scale is too fine, and meant to handle only a few vegetables at a time. Their black scale is not fine enough, and meant to handle small truckloads.

a. The vegetables are too heavy for the grey scale and too light for the black scale.

The sentence in (75)a is true in this context. Neither full distributivity nor full collectivity can account for this. A full distributive reading is false with respect to the first adjective phrase since the individual vegetables are not too heavy for the grey scale. A fully collective reading is false with respect to the second adjective phrase since all the vegetables together are not too light for the black scale. So neither the distributive nor collective reading is successful.

In this context, the physical arrangement of the vegetables in baskets is key to understanding the sentence. The baskets of vegetables are individually too heavy for the grey scale and too light for the black scale. Schwarzschild argues that this arrangement of the vegetables plays a role in interpretation since a value for the cover variable in which the subsets of [[vegetables]] are grouped together in "cells" corresponding to basketfuls will be salient. For instance, if each basket has 20 vegetables in it, a value for the cover such as the following might be chosen, each cell matching a basket.

(76) $[[\text{Cov}]] = \{\{v_1, v_2 \ldots v_{20}\}, \{v_{21}, v_{22} \ldots v_{40}\}, \{v_{41}, v_{42} \ldots v_{60}\} \ldots\}$

Schwarzschild also argues that the domain the cover variable ranges over must be expanded from simply the set denoted by the plural subject to the entire universe of discourse. He gives an argument from VP ellipsis as evidence (Schwarzschild 1996:76).

(77) Context: Apparently, in the last five years, an unsavoury Mr. Slime has made several purchases from a computer store: 4 computers and 1 cartonful of diskettes. These purchases were made over the course of a few years and each time, Mr. Slime paid an initial amount in counterfeit currency and the remainder he paid for with a valid credit card. The following remark is entered in the police report.

a. The computers were paid for in two instalments and the diskettes were too.

In this example, the second conjunct contains an instance of VP ellipsis. The elided VP must contain an identical copy of the first VP. The D-operator is attached to the VP, and due to the identity requirement, it must be the case that the covert variable in its restriction is identical in the two instantiations of the D-operator on each VP. This cover variable must contain singleton cells corresponding to each of the four computers, along with a non-singleton cell corresponding to the diskettes. If the cover variable were not a cover of the entire domain of discourse it would be difficult to see how these cells could come to occupy the cover.

Having introduced Schwarzschild's conception of the cover variable, we can now turn to how Brisson employs this innovation. Brisson's analysis of non-maximality turns on

this treatment of the covert variable covering the universe of discourse. Depending on the cover chosen, she argues, non-maximality may occur. Returning to the example sentence in (74), repeated as (78), one can imagine a universe of discourse and alternative covers as in (79).

(78) a. The girls $^{D}[_{VP}$ jumped in the lake]
b. ^{D}jumped.in.the.lake(the.girls)
c. $\forall x[x \in Cov_i \wedge x \subseteq [[the.girls]] \rightarrow x \in [[jumped.in.the.lake]]]$

(79) $U = \{a, b, c, s, t, \{a, b\}, \{a, c\}, \{a, t\}, \{a, s, t\}\ldots\}$
$[[the.girls]] = \{a, b, c\}$
$[[Cov_j]] = \{\{a\}, \{b\}, \{c\}, \{s, t\}\}$
$[[Cov_k]] = \{\{a\}, \{c\}, \{b, s, t\}\}$ Brisson 2003: 135 (27)

On the maximal reading in which every girl in the set denoted by the plural definite, namely {a, b, c}, jumped in the lake, the cover assigned as the value of the variable is Cov_j. Since every individual girl in the set of girls also occupies a singleton cell of the cover, it is the case that the subject DP is fully covered, and therefore there are no girls which do not find themselves in the restriction of the D-operator.

Brisson's new insight is that sometimes the value assigned to the cover variable will be something like that given for Cov_k. This is what Brisson calls an "ill-fitting" cover with respect to the plural DP because the cover is "oddly shaped". In particular, the girl Betty, b, does not occupy her own cell, but rather is part of a larger cell containing two non-girls, s and t. This is the cell {b, s, t}. Brisson argues that if such an ill-fitting cover as Cov_k is chosen, the non-maximality effect arises. Although the subsets {a} and {c} of {a, b, c} are members of Cov_k, {b} is not. That is, since the cell containing Betty, {b, s, t}, is not a subset of {a, b, c}, Betty does not get into the restriction of the D-operator. Therefore, the sentence comes out true regardless of whether Betty jumped in the lake. This analysis is possible only because the cover variable ranges over the entire universe of discourse and so there is a cell of mostly non-girls that Betty may be a member of.

Lasersohn (1995) criticized Schwarzschild's cover analysis precisely because he recognized the possibility of ill-fitting covers, which Lasersohn saw as a weakness. For instance, if ill-fitting covers are permitted, the sentence *John and Mary left* would be true in a situation in which only Mary left. This would be the case if John were in a cell with some other person. Schwarzschild (1996) defended his use of a cover variable that ranges over the entire universe of discourse by saying that a speaker that chose such a cover in this situation would be extremely uncooperative. As a general constraint such pathological values for covert domains of quantification should be ruled out for pragmatic reasons.

Brisson (2003: 138) differs from both Lasersohn and Schwarzschild in embracing ill-fitting covers. The ill-fitting cover is at the heart of her novel analysis of non-maximality.

4.3.1.2 Brisson's analysis of *all*

Brisson's analysis of *all* grows directly out of her proposal of non-maximality. As mentioned above, *all* is incompatible with non-maximally interpreted definite plurals. However, *all* is not synonymous with the universal quantifier *every* because it may co-occur with collective

predicates. Previously, Link (1983) has proposed that *all* has a "totality effect" on definite plurals, and similarly Dowty (1987) has proposed that *all* has a "maximizing effect".

Brisson proposes a semantics for *all* that makes direct reference to her cover based account of non-maximality. *All* simply disallows an ill-fitting cover with respect to the plural definite – it requires that a cover be a good-fit. The good-fit relation is defined as follows.

(80) **Good-fit:** For some cover of the universe of discourse Cov and some DP denotation X, Cov is a good-fit with respect to X iff:
$\forall y\,[y \in X \rightarrow \exists Z\,[\,Z \in Cov\ \&\ y \in Z\ \&\ Z \subseteq X]]$ Brisson 2003: 141 (39)

That is, a cover is a good-fit if there are no elements in the set denoted by the plural definite subject that are in a cell of the cover along with elements that are non-members of the plural definite.

All does not affect the truth conditions of the sentence it occurs in, but rather it has a "domain-adjusting meaning". Brisson suggests a domain-adjusting meaning is something computed in tandem with the ordinary semantic value of a sentence similar to how a focus denotation is computed in the structured meanings approach to focus. She is noncommittal on whether this good-fit requirement should be considered a presupposition.

Brisson treats floated *all* as a VP adverb. When a VP is adjoined by *all*, it continues to have the same argument structure it did beforehand. Brisson (1998: 210 (76-77)) gives the following mode of composition rule for *all*.

(81) ***all*-VP rule:**
Where α is an expression of type $\langle e,\tau\rangle$ (where τ is any type ending in t) whose ordinary translation is α', then:
$[[\text{all}'\ \alpha']] = \lambda z.\alpha'(z), \lceil \lambda z[\lambda x[gf(Cov_n)(x)](z)] \rceil$
where *n* is the index on the sister node to *all*.

There are a number of things to note here. First, the domain adjusting meaning is given in the distinctive brackets $\lceil\ \rceil$.[23] Material within these brackets is not to be evaluated as part of truth conditions. In the *all*-VP rule above, the non-truth conditional domain adjusting meaning is $\lceil \lambda z[\lambda x[gf(Cov_n)(x)](z)] \rceil$. The good-fit function gf at the heart of this lambda expression ensures that its first argument Cov_n is a good-fitting cover of the second argument *x*. This second argument will eventually be supplied by the plural subject DP. A second notable feature of the *all*-VP rule is that the Cov_n argument of gf gets the index *n* of the VP sister of *all*. Brisson proposes that the D-operator is inserted into the VP and so the VP bears the index of the D-operator. This index is actually the index on the Cov variable in the restriction of the D-operator. The rule above therefore ensures that the good-fit gf function takes as its first argument the very same cover Cov_n that is in the restriction of the D-operator on the VP.

Just like the VP in the normal truth conditional dimension of meaning, the gf function in the domain-adjusting dimension of meaning has an argument position to be saturated. The argument is provided by the subject DP. Brisson gives the following composition rule to ensure that both VP and $\lambda x[gf(Cov_n)(x)]$ will be saturated.

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[23] I follow Brisson (2003) in employing $\lceil\ \rceil$ in my discussion. Brisson (1998) used a slightly different notational convention, the brackets $\langle\!|\ |\!\rangle$.

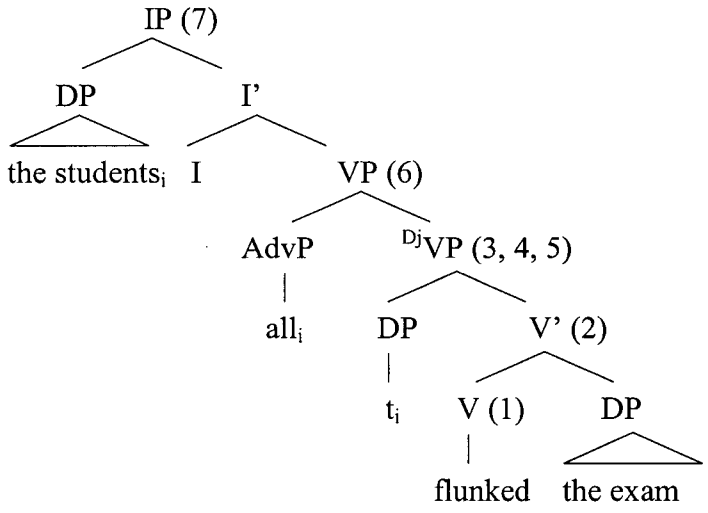
(82) **composition rule for domain-adjusting meaning:**
Where α is an expression of type <e,τ> (where τ is any type ending in t) with a two-part translation **α′** whose parts consist of an ordinary translation α′ and a domain-adjusting meaning δ; and β is an expression of type e with an ordinary translation β′, then:
$[[\boldsymbol{\alpha'}\ \beta]] = [[\alpha']]([[\beta]]), \ulcorner\delta\urcorner([[\beta]])$

The effect is that the DP argument of the VP will also serve as an argument of the domain-adjusting gf function. This guarantees the cover variable will be assigned a cover Cov_n that is good-fitting with respect to this DP.

Brisson (1998: 214) provides the following example derivation.

(83) a. The students all flunked the exam.

b.



Line-by-line translation:

1. $\lambda x \lambda y[\text{flunked}'(x)(y)]$
2. $\lambda y[\text{flunked}'(\text{the.exam}')(y)]$
3. $\text{flunked}'(\text{the.exam}')(x_i)$
4. $\lambda x_i[\text{flunked}'(\text{the.exam}')(x_i)]$
5. $^{Dj}\lambda x_i[\text{flunked}'(\text{the.exam}')(x_i)]$
6. $\lambda z[^{Dj}\lambda x_i[\text{flunked}'(\text{the.exam}')(x_i)]](z), \ulcorner\lambda z[\lambda x[gf(Cov_j)(x)](z)\urcorner$
6′. $\lambda z[^{Dj}[\text{flunked}'(\text{the.exam}')(z)]], \ulcorner\lambda z[gf(Cov_j)(z)]\urcorner$
7. $^{Dj}[\text{flunked}'(\text{the.exam}')(\text{the.students}'), \ulcorner[gf(Cov_j)(\text{the.students})]\urcorner$
7′. $\forall x[x \subseteq [[\text{the.students}]] \wedge x \in Cov_j \rightarrow \text{flunked}'(\text{the.exam}')(x)],$
$\ulcorner[gf(Cov_j)(\text{the.students})]\urcorner$

The notable feature of the derivation occurs at line 6 where the *all*-VP rule has applied. The Cov variable which acts as the first argument of the gf function receives the index of the D-operator which has been inserted on the VP sister of *all*. After the subject is introduced, by line 7 both the VP and the gf function have had their remaining argument saturated. It is here

that we now see that gf ensures that Cov_j is a good-fitting cover of the DP *the students*. Since Cov_j is also the same cover in the restriction of the D-operator, non-maximality will be blocked.

4.3.1.3 Evaluation of Brisson

Brisson presents an interesting analysis of non-maximality and the contribution of *all*. Her analysis draws upon similar themes present throughout this thesis, such as the variable effects produced by choice of contextual restriction. The non-maximality/maximality distinction corresponds in an obvious way to the non-widened/widened distinction. In both cases, what is at issue is the number of individuals that the contextual variable makes available for the restriction of some quantifier. Covers are simply a higher order of contextual variable with more complex internal structure than the resource domains that I have so far considered, which are simply sets of individuals.

Schwarzschild (1996) has shown that cover variables must be able to range over the entire universe of discourse rather than just the value of the plural definite. This is especially clear in VP ellipsis contexts as discussed in (77). Within Brisson's analysis, non-maximality arises when members of the plural definite find themselves in a cell of the cover with non-members of the definite. Brisson calls this cell of non-participants the "junkpile". This is the cell containing all members of the universe of discourse not under consideration.

I find Brisson's analysis of non-maximality very appealing. Furthermore, the spirit of her analysis of *all* is in some ways quite similar to domain widening. Essentially, the good-fitting mechanism ensures more individuals in the plural definite get into the restriction of the distributive operator. That is, *all* makes the domain of quantification bigger. This appears to be a form of domain widening, and in fact Brisson (1998: 101) acknowledges the kinship that her analysis shares with Kadmon and Landman's analysis of *any*.

However, the specific proposal Brisson gives for *all*, and the extra domain-adjusting dimension of meaning it introduces, is not very similar to the conception of domain widening I have pursued throughout this dissertation. Domain-adjusting meanings are a completely novel dimension of meaning which are composed alongside ordinary truth conditional meanings. Brisson refrains from analyzing this domain-adjusting as a presupposition since it does not seem to have the same projection properties as presuppositions.

This contrasts with my analysis in which the process of domain widening has no independent status. It is merely a use of focus which satisfies the presuppositions of *even*, thereby not resulting in contradiction but instead scalar implicature cancellation.

I believe that the maximizing effect of *all* can be accommodated within my analysis of domain widening. I am not convinced of the need for a new domain-adjusting dimension of meaning. Therefore, for the sake of a simpler semantic theory of natural language, I will not adopt Brisson's analysis of *all*, but rather pursue a domain-widening analysis drawing on the insights discussed throughout the previous chapters. I present an original analysis of *all* as a focussed D-operator in the next section.

4.3.2 A new analysis of *all*

I will adopt Brisson's analysis of non-maximality, but will propose a new analysis for *all* that fits into the picture of domain widening developed so far. I will assume that the D-operator has the interpretation in (84) and is of type <<e,t>,<e,t>>.

(84) $[[\,^{D}\,]] = \lambda P \lambda y \forall x[x \in Cov \wedge x \subseteq y \rightarrow x \in P]$

I propose that *all* is used (in a way to be specified below) in sentences in which the D-operator is focussed. The asserted proposition is interpreted against a set of background alternatives containing the D-operator indexed to narrower (i.e., ill-fitting) covers. For instance, (85) has the ordinary semantic value in (85)i and the focus semantic value in (85)ii. Note I have placed *all* in brackets for the time being since I am not yet ready to discuss its contribution.

(85) The girls (all) $^{D\text{-}Cov1\text{-}F}[_{VP}$ jumped in the lake]

i. $[[\text{The girls } ^{D\text{-}Cov1}[_{VP} \text{ jumped in the lake}]]^{\circ}$
$= {}^{D\text{-}Cov1}\text{jumped.in.the.lake(the.girls)}$

ii. $[[\text{The girls } ^{DF}[_{VP} \text{ jumped in the lake}]]^{f}$
$= \{ {}^{X}\text{jumped.in.the.lake(the.girls)} \mid X \in D_{<<e,t>,<e,t>>}\}$
$= \{$ The girls $^{D\text{-}Cov1}[_{VP}$ jumped in the lake],
The girls $^{D\text{-}Cov2}[_{VP}$ jumped in the lake],
The girls $^{D\text{-}Cov3}[_{VP}$ jumped in the lake],
The girls $^{D\text{-}Cov4}[_{VP}$ jumped in the lake],...$\}$

Let's say that the value of [[the.girls]] is the set {a, b, c}. The salient alternatives picked out by the focus anaphor $\sim C^{FOC}$ might be propositions containing the different D-operators D_{Cov1} and D_{Cov2} which have different indices on the cover variable. The value of these cover variables is given in (86).

(86) $[[Cov_1]] = \{\{a\}, \{b\}, \{c\}, \{s, t\}\}$
$[[Cov_2]] = \{\{a\}, \{c\}, \{b, s, t\}\}$
note that $[[Cov_2]] \cap \wp([[\text{the.girls}]]) \subseteq [[Cov_1]] \cap \wp([[\text{the.girls}]])$
(i.e., $\{\{a\}, \{c\}\} \subseteq \{\{a\}, \{b\}, \{c\}\}$)

Cov_1 corresponds to a good-fitting cover in Brisson's system, Cov_2 an ill-fitting cover. The salient alternative propositions in C^{FOC} are as in (87).

(87) $\{$ The girls $^{D\text{-}Cov1}[_{VP}$ jumped in the lake], The girls $^{D\text{-}Cov2}[_{VP}$ jumped in the lake]$\}$
$= \{\forall x[x \in Cov_1 \wedge x \subseteq [[\text{the.girls}]] \rightarrow x \in [[\text{jumped.in.the.lake}]]],$
$\forall x[x \in Cov_2 \wedge x \subseteq [[\text{the.girls}]] \rightarrow x \in [[\text{jumped.in.the.lake}]]]\}$

As the asserted proposition in (85) has a D-operator indexed to the widest domain, Cov_1, this proposition is the most informative of the alternative propositions, but does not contradict any of them. Therefore, the presuppositions of *even* are satisfied.

Now back to the contribution of *all*. Two analyses of *all* come to mind. First, it could be that *all* is a sort of specialized additive particle meaning *even* that is only used when its associate is the D-operator. A suggestive fact is that the additive particle *also* is historically derived from what became *all* and *so* in modern English.

The alternative is that *all* is the focussed D-operator itself. That is, the D-operator, which is normally phonologically covert, surfaces as *all* when it is stressed. This analysis would also account for why *all* is incompatible with narrow covers. I will adopt this latter hypothesis. This fits in well with the broader tendency in English to use stress on a quantifier alone, without an accompanying additive particle, to achieve domain widening.

This analysis accounts for why *all* only appears in sentences in which a D-operator is present. Brisson captured this by arguing that *all* was a modifier whose distribution was parasitic on the D-operator. My claim is that *all* is the D-operator. For the current work, I will confine my attention and claims to floated *all*.[24] I leave extending the analysis to prenominal *all* to future research.[25,26]

Although I am not aware of previous authors claiming that *all* was specifically the focussed and domain-widened D-operator, some have speculated on the relation of *all* and covert distributivity operators. Schwarzschild (1996) notes that the D-operator analysis is in part a generalization of Dowty and Brodie's (1984) treatment of floated quantifiers as VP modifiers, but expresses scepticism that D-operators should simply be regarded as covert floated quantifiers. He provides three arguments against treating distributivity operators as covert versions of floated quantifiers.

First, he presents some motivation arising from his analysis of reciprocals. Under Schwarzschild's analysis of reciprocals, a covert distributivity operator is needed on the VP, as in (88).

(88) They$_j$ D$_i$ [saw each other$_{j,i}$].

An understanding of the details of Schwarzschild's analysis of reciprocals is not important to appreciate the current point, so I leave it to the interested reader to see Schwarzschild for further discussion. Suffice it to say, Schwarzschild points out that if floated quantifiers were simply overt versions of covert D-operators then it is predicted that overt floated quantifiers should be able to co-occur with reciprocals. Schwarzschild claims this is false, and gives (89) as evidence.

(89) *They$_j$ each$_i$ [saw each other$_{j,i}$].

---

[24] I use the term floated in a neutral way to refer to *all* appearing between the subject and the main verb. I do not assume that *all* has floated to this position.

[25] Brisson shows that prenominal *all* (e.g. *all the girls*), like preverbal *all*, stamps out non-maximality. Brisson proposes that floated *all* is a VP modifier, whereas prenominal *all* is a degree/adjective that occupies [Spec, DP]. In both cases, *all* eventually modifies the cover variable of a D-operator adjoined to VP. Although in her analysis both *all*'s have the same effect of ensuring the cover is a good-fit of the plural definite, because of their different structural positions Brisson (1998) gives them a slightly different semantics, reflecting where they enter composition.

[26] Some of the issues this future research must address include the question whether positing a nominal D-operator in addition to the verbal D-operator is warranted, and if this is the case to motivate the need for a contextual variable in this nominal D-operator which can be widened via stress.

While I agree that (89) does not sound great, I believe that if the floated quantifier is changed to *all* the sentence sounds much less marginal. In fact, I find (90) totally fine.

(90) They$_j$ all$_i$ [saw each other$_{j,i}$].

Therefore, I do not take Schwarzschild's reciprocal argument as evidence against treating *all* as a D-operator.

A second argument Schwarzschild presents involves apparent floated quantifiers other than *each, all, both*. For instance, Quirk et al. (1985) cite examples of quantifiers with other-than-universal force that can float in some informal contexts (91).

(91) a. They are none of them very enthusiastic.
b. My sisters don't either of them eat enough.

Schwarzschild cites other examples from the OED, such as (92) from a story by Graham Greene.

(92) His ambition had been to be a playwright and now that the London theatres were **most of them** closed, he was no longer taunted by the sight of other men's success.

But as Schwarzschild points out himself, these examples each involve pronominal complements to the quantifier, and are thus more complex items than the D-operator. Although floated quantifiers generally seem to have variants that can be used pronominally, as in (93), it is atypical to use a pronominal complement on the floated quantifiers *all, each, both* (94).

(93) The frogs leapt off the lily pad. **Each** left a ring of wavelets on the surface of the lake.

(94) a. * The frogs all of them leapt off the lily pad.
b. * The frogs each of them leapt off the lily pad.
c. * The frogs both of them leapt off the lily pad.

Furthermore, unlike *all, each, both*, the putative floated quantifiers in (91)-(92) cannot be used without a pronominal complement.

(95) a. * They are none very enthusiastic.
b. * My sisters don't either eat enough.
c. * The London theatres were most closed.

I conclude that the other-than-universal floated quantifiers are sufficiently different from the traditionally analyzed floated quantifiers *all, each, both* that they may be set aside.

Finally, Schwarzschild argues that since overt floated quantifiers have different properties with respect to their domain of quantification, it cannot be the case that they are overt versions of D-operators which do not show such distinctions. For instance, *each* quantifies only over singularities, *both* requires there be exactly two members in its domain, and *all* can quantify over subparts of a singularity, as in (96).

(96) The room was all cleaned up.

I do not find this argument persuasive. Nothing in the theory of distributivity operators blocks there being more than one D-operator in a language with the nuanced meanings corresponding to *each*, *all*, and *both*. I do not see why D-operators could not exhibit equally fine grained meanings.

This concludes my discussion of Schwarzschild's doubts about treating floated quantifiers as overt versions of D-operators. In the next section I return to a potential problem concerning collective predicates and show that in fact the problem is illusory.

4.3.3 Collective predicates and *all*

All may appear with both collective and distributive predicates. On its distributive reading, the sentence in (97) means that of the boys, each one of them carried the piano. On its collective reading, it means that all the boys collectively carried the piano.

(97) The boys all carried the piano.

The ability to co-occur with collective predicates is a distinctive characteristic of *all* that distinguishes it from the universal quantifier *every*. When the subject is preceded by *every*, this same sentence only has a distributive reading.

(98) Every boy carried the piano.

If *all* really is dependent on the presence of the D-operator, either because it modifies the D-operator on Brisson's account or because it is the stressed D-operator on my account, then it must be the case that a sentence like (97) on its collective reading has a distributive operator. This would appear to be a problem for many analyses, in which the difference between collective versus distributive predicates is analyzed in terms of the absence versus presence of a D-operator.

Schwarzschild's analysis of the distributive/collective distinction is fully compatible with positing a D-operator in collective sentences. Schwarzschild characterizes the distributive/collective distinction as an indexical ambiguity in the choice of covers. Depending on the structure of the cover, various readings are generated. If the elements of the plural definite occupy distinct cells of the cover, then the sentence has a distributive reading. For example, if [[the boys]] = {a,b,c}, then a cover like that in (99) will guarantee that each of the members of the subject carries the piano.

(99) a. $[[Cov_3]] = \{\{a\},\{b\},\{c\},\{e, f\}\}$

b. $\forall x[x \in Cov_3 \wedge x \subseteq [[the.boys]] \rightarrow x \in [[carried\ the\ piano]]]$

Alternatively, a cover in which all the boys occupy a single cell of the cover will generate a collective reading. For instance, the cover Cov_1 will generate this reading, as seen in (100).

(100) a. $[[Cov_1]] = \{\{a,b,c\},\{e, f\}\}$
b. $\forall x[x \in Cov_1 \wedge x \subseteq [[the.boys]] \rightarrow x \in [[carried\ the\ piano]]]$

The distinction between collective and distributive is therefore completely derivative from the choice of the cover. That is, it is simply a matter of alternative values being assigned to the variable Cov. Structurally, distributive and collective sentences are identical, both involving a D-operator adjoined to VP. A Schwarzschildian analysis of collectivity is therefore compatible with *all* appearing in collective sentences.[27]

The picture is complicated by the fact that not all collective predicates do allow *all*, as observed by Dowty (1987). While the collective predicates in (101) are perfectly good with *all*, those in (102) are unacceptable.

(101) a. The girls all gathered in the hallway. Brisson 2003: 145 (57)
b. The campers all built a raft. Brisson 2003: 145 (58)

(102) a. * The teachers are all a group of four. Brisson 2003: 145 (59)
b. * The children are all a big group. Brisson 2003: 145 (60)

Dowty argued that those collective predicates that do admit *all* differ from those that do not in that the former have "distributive sub-entailments". A collective predicate like *gather* has distributive sub-entailments such as "come to be in the same place at the same time as a lot of other people". There is some entailment about each individual member of the group subject. For instance, in (101)a each girl must come into the hallway and stay for a period in which the other girls are also there. The collective predicate *be a big group*, on the other hand, is a "pure cardinality predicate" with no such sub-entailments. Dowty analyzed *all* as a universal quantifier that distributes the sub-entailments to each of the individuals in the group denoting argument.

Taub (1989) refined Dowty's classification of which collective predicates admit *all* by relating this property to the aktionsart class of the predicate. Brisson dubs Taub's finding *Taub's generalization*.

(103) **Taub's generalization**
The collective predicates that disallow *all* are the collective predicates denoting states and achievements. Brisson 2003: 146 (61)

The following examples demonstrating the generalization are based off examples from Brisson (2003: 146-7).

Collective states
(104) * The boys are all a big group.
(105) * The trees are all dense in the middle of the forest. *(no collective reading)*

[27] Recall the discussion of intermediate readings in examples like (75)/(76). The ability to have various cell-structures to account for such readings is in fact one of the primary motivations for even positing a context variable in D-operators. Consequently, Schwarzschild's proposal to capture collectivity by positing a single cell is a natural extension of his analysis.

Collective activities
(106) The boys all carried the piano around for an hour.

Collective accomplishments
(107) The students all gathered in the hallway.
(108) The girls all built a raft.

Collective achievements
(109) * The senators all passed the pay raise.
(110) * The students all elected a president.

An account of Taub's generalization therefore apparently demands that sub-cases of collective predicates interact with the D-operator in different ways. This is not captured by Schwarzschild's indexical ambiguity account of the collective/distributive split.

Brisson tackles this problem by developing a rather detailed analysis of how the event structure of a sentence influences the possible structural positions a D-operator may occupy, which has significant consequences on interpretation. Brisson extends her analysis of non-maximality and *all* within a neo-Davidsonian event semantics. I will not present her analysis in full, but will note that Brisson's proposal involves altering the semantics of the D-operator so that it distributes subevents down to the subparts of the plural definite.

Among the consequences of her new analysis is that Brisson is able to derive the distinction between collective and distributive readings as a structural ambiguity. She thus departs from Schwarzschild who dealt with this as an indexical ambiguity in the choice of cover variable.

First taking the case of activities and accomplishments, Brisson proposes that these predicates contain a bleached out activity predicate DO as part of their meaning (Mittwoch 1982).[28] Brisson proposes that fully distributive readings arise when the D-operator is inserted on the VP. The cover in this case is one in which all the individuals in the plural subject occupy individual singleton cells of the cover.[29] Collective readings arise when the D-operator is inserted on an aspectual DO head which is projected by activities and accomplishments. In this case, too, the cover is one in which all the individuals in the plural subject occupy singleton cells. However, due to the particular revised event-sensitive analysis Brisson gives to the D-operator, full distributivity is not derived. The subevents of the predicate are not distributed down to each singleton cell of the cover.[30] The crucial structures are given in (111).

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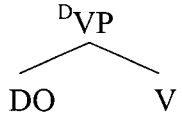
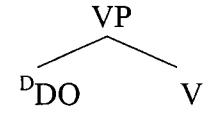
[28] Aside from Mittwoch, other researchers have proposed a similar component to the meaning of these verbs, variously called "activity", "process", "DO" (Dowty (1979), Pustejovsky (1991), Grimshaw and Vikner (1993), among others). This extra component of meaning is also how the external Agent theta role is introduced. Accomplishments and activities differ in that apart from DO, accomplishments contain a subcomponent of their meaning which is a state. For instance, the predicate *build a house* consists of a DO activity plus a state.

[29] More specifically, each cell is an agent in the DOing of some subevent of the main event. So, if (106) were understood distributively, each singleton cell containing an individual boy in the cover is an agent of a DOing subevent of some piano carrying event or other.

[30] More specifically, each cell is an agent of some DOing subevent of another single event, which is itself a subevent of some piano-carrying event. So, for (106) on its collective reading, each singleton cell containing an individual boy is an agent of a DOing subevent of some other event which is itself a subevent of a piano carrying event. The distributive case was different because all the cells are agents of DOing subevents of some event of piano carrying. There was no single subevent of carrying with which all the agents were affiliated.

(111) **Activities/Accomplishments**

Distributive	Collective
a. 	b. 
D-operator inserted on VP	D-operator inserted on aspectual DO predicate

States and achievements do not allow *all* on the collective reading. Brisson argues the crucial factor is that states and achievements do not involve an aspectual DO predicate. Therefore, it is unavailable as an insertion site for the D-operator. It follows that collective readings of definite plurals in sentences with states/achievement predicates cannot be derived quantificationally with a D-operator. Rather, direct group predication is responsible for collective readings in these sentences. This predicts that non-maximality should not be able to arise with collective states/achievements, which Brisson claims is correct. For instance, non-maximal readings, as signalled by an overt exceptive, are unacceptable with collective states (112) but fine with collective accomplishments (113).

(112) # The boys are a big group, except for Jason.

(113) The girls gathered in the hallway, except for Joanne.

Similarly, it sounds odd to reinforce maximality with a parenthetical in the case of a collective state (114), but much less odd to reinforce maximality of a collective accomplishment (115).

(114) # The boys – in fact, the entire lot of them - are a big group.[31]

(115) The girls – in fact, the entire lot of them - gathered in the hallway.

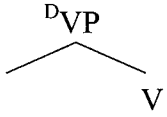
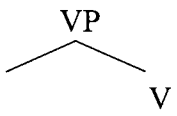
The relevant structures underlying Brisson's analysis of states/achievements are given in (116).

[31] Andrew Irvine (p.c.) has pointed out that this sentence sounds much better if the predicate is changed from *large* to *small*.

(i) The boys – in fact, the entire lot of them - are a small group.

I do not believe this necessarily constitutes a counterexample, in which maximality can be reinforced with a collective states. Insomuch as this is more acceptable than (114), I believe the parenthetical is mentioned here to emphasize the smallness of the group.

(116) **States/Achievements**

Distributive	Collective
a. 	b. 
D-operator inserted on VP	No D-operator inserted; rather, predication of group-denoting subject.

Since collective states and achievements do not involve a D-operator with a cover variable in its restriction, non-maximality cannot arise and furthermore *all*, which modifies the D-operator in Brisson's account, cannot be inserted. See Brisson (1998, 2003) for further details.

I do not think an analysis of Taub's generalization tailored to D-operator as Brisson gives is actually necessary, because it turns out that Taub's generalization is somewhat more general. Winter (2002) shows that in fact all plural quantifiers are incompatible with a subset of collective predicates.[32]

Collective states
(117) * No boys are a big group.
(118) * Many boys are a big group.
(119) * More than eleven boys are a big group. *(bad on episodic reading)*

Collective activities
(120) No boys carried the piano around for an hour.
(121) Many boys carried the piano around for an hour.
(122) More than eleven boys carried the piano around for an hour.

Collective accomplishments
(123) No students gathered in the hallway.
(124) Many students gathered in the hallway.
(125) More than eleven students gathered in the hallway.

Collective achievements
(126) * No students elected a president.
(127) * Many students elected a president.
(128) * More than eleven students elected a president.

In the preceding examples, we see that plural quantifiers are acceptable with collective activities and accomplishments, but ungrammatical with collective states and achievements. This fully mirrors Taub's generalization.

[32] Winter does not discuss the class of predicates which disallow quantificational subjects in terms of aktionsart class.

If it is a general fact that collective states and achievements are incompatible with plural quantificational subjects, then an account of this phenomenon should not be formulated with special reference to the D-operator.[33] So while Brisson is probably correct that D-operators simply cannot be inserted with collective states and achievements, more than this nothing special needs to be said.

I assume, then, that Schwarzschild's account of the distributive/collective distinction as an indexical ambiguity is correct for collective activities and accomplishments, but is due to the absence or presence of a D-operator in the case of a collective state or achievement.[34, 35] Since I assume non-maximality effects only arise when a D-operator is present, this analysis still captures Brisson's observation that non-maximality does not arise with collective states and achievements.

To sum up this section, I analyze collectivity in the case of activities and accomplishments as resulting from the shape of the cover. When all members of the definite plural occupy a single cell of the cover, the result is collectivity. Only predicates whose semantics do not conflict with collective plural quantificational subjects permit the insertion of the D-operator. In particular, for some reason collective states and achievements do not allow the insertion of the D-operator, which is part of a larger pattern where these predicates do not allow plural quantificational subjects.

4.3.4 Discussion of domain widening and distributives

I will close my analysis of the English D-operator by exploring a few issues not previously discussed. To briefly recapitulate, my analysis of *all* in English is that it is the focussed D-operator. The D-operator is normally phonologically covert, but when stressed it surfaces as *all*. Non-maximality is blocked by using *all* because the D-operator is being focussed and the asserted proposition is more informative than its alternatives, although it does not contradict them. The covert domain, the cover, has been widened and a scalar implicature cancelled.

The first issue I will explore is whether it is really accurate to say that *all* is emphatic. Or, to ask a related question, what psychological reality does implicature cancellation have when *all* is used. Although *all* can never be completely unstressed, it does not always bear full contrastive stress either.

We can start with the easy case, in which *all* is emphatically stressed (*ALL*). The more prominent the stress on *all* the more likely that the scalar implicature being cancelled has some psychological reality for the interlocutors.

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[33] Brisson's account of Taub's generalization would still be attractive if there were evidence that plural quantifiers always co-occur with covert distributivity operators. I know of no evidence supporting this radical proposal.

[34] More accurately, the collective/distributive distinction with activities and accomplishments has two possible sources: (i) due to the choice of cover for a D-operator; (ii) the presence or absence of a D-operator. Only the latter is a possible analysis of the distributive/collective distinction in the case of states and achievements.

[35] Although it might seem to be a virtue of Brisson's analysis that she is able to derive the collective/distributive split from a structural ambiguity rather than from an indexical one, I would argue the opposite. One of the primary motivations for introducing cover variables into the semantics of D-operators in the first place was to account for intermediate readings, as in (76). Covers allow one to create groupings of non-atoms, of cells of various cardinalities. As long as this is allowed, then there is no principled reason why a cover with a single cell should not be allowed, since such intermediate covers are already not fully distributive.

(129) The girls ALL built a raft.

But in other cases *all* is not very emphatic. In these cases, I acknowledge that *all* is probably not being used to cancel a previously generated scalar implicature. Yet, I think *all* is still playing essentially the same role. In these cases of not-very-emphatic *all* we can say that *all* is being used pre-emptively to block a scalar implicature from arising. A speaker might perceive that at a certain point in discourse her collocutor may choose a cover for the covert D-operator which will allow non-maximality to arise. Using a not-very-emphatic *all* in this case blocks possible non-maximality by blocking a possible scalar implicature.

Apart from a short discussion at the end of Section 4.3.2, my discussion so far has exclusively dealt with floated *all*. Brisson (1998) also proposes that *both* plays a similar role in preventing non-maximality. If this is correct, within my account we can analyze *both* as a specialized D-operator whose DP domain argument must contain two entities.

I think it is somewhat more typical to use *both* emphatically (130).

(130) a. The boys ate a sandwich.
b. The boys both ate a sandwich.

If the definite plural is known to denote a group of two boys, then it is very difficult to understand (130)a non-maximally. This is related to Brisson's observation that non-maximality effects are much easier to detect the greater the cardinality of the plural subject. So, if *both* here is a stressed D-operator used for widening then it is perhaps mysterious why it is even necessary at all.

The fact is that *both* in (130)b does not sound redundant. It must be playing some role. I believe that *both* is used in contexts in which a hearer is expecting to hear that only one of the group of entities expressed by the subject has been a subject of the VP. *Both* is useful in contexts which prime a hearer to believe that it is not the case that both entities performed the action. The hearer is not expecting to hear that both the boys ate a sandwich. The scalar implicature being blocked has a much greater chance of being generated and hence *both* is not redundant.[36]

The guiding principle behind my analysis of *all/both* is that maximizing is domain widening. One interesting difference between the case of the D-operator as opposed to the quantificational determiners discussed earlier is that the endpoint of widening the cover variable is predetermined. The scale of cover variables under consideration correlates to how many individuals in the group denoted by the definite plural are not in junkpile cells. Therefore, the endpoint of widening is known – widening will max out when all the individuals in this group find their way into the restriction of the D-operator. Widening other quantifiers is not usually quite this determinate. The scale of alternative context variables corresponds to those alternative values that are salient in discourse. But what is salient will

[36] Another interesting thing about *both* is that it is much harder to understand the subject collectively in examples like (130)b, which suggests it is incompatible with covers in which all the individuals occupy a single cell together. However, given the appropriate context it is possible to interpret *both* with a collective subject, as in the following example from Schwarzschild (1996: 148 (362)).

(i) John made the soup, I made the eggplant and we both made the pot roast.

often be somewhat indeterminate. Consequently, with this sort of domain widening it might be much more debatable to what point a domain may be widened.

Although I have assumed throughout that widening only occurs when the presuppositions of *even* are satisfied, I have so far neglected discussion of languages in which additive particles are used to widen universal quantifiers or D-operators. This shortfall will be redressed in the next section where I move the discussion from English to Cantonese.

4.4 Distributivity and domain widening in Cantonese

In Chapter Two we saw that, while English uses focal stress alone to widen *ANY*, Cantonese always uses the additive particle *dōu* overtly. In this section I would like to suggest that this difference between English and Cantonese is partially repeated when it comes to the case of distributives.

Apart from the *dōu* meaning "even/also" which was discussed earlier, Cantonese also possess a possibly distinct *dōu* usually translated as "all" (Matthews and Yip 1994). My goal here is to investigate how the additive particle *dōu* and the quantificational *dōu* are related, and whether the mechanics of domain widening might help us understand this apparent convergence.

In most studies on quantification in Chinese, typically concentrating on Mandarin, the additive particle *dōu* is set aside or is considered to be derivative from the quantificational *dōu*. Previous studies have analyzed *dōu* as a quantificational adverb (Lee 1986, Cheng 1991, 1995) or as a D-operator (Lin 1996, Yang 2001).

Dōu "all" is like *dōu* "even/also" in that it is always associated with some NP to its left, preverbally. Examples of its co-occurrence with plural definites are given in (131) which contains NPs introduced by the plural classifier *dī*,[37] and in (132) which contains examples of conjoined NPs.[38] These may be either a subject or a fronted object, as in (132)b.

(131) a.

Dī	gūngyán	dōu	jūngyi	kéuihdeih	ge	lóuhsáai
cl.pl	worker	all	like	their	prt	boss

'The workers all like their boss'

[37] This is an important point of difference between Mandarin and Cantonese. In Cantonese, definite noun phrases are usually expressed as bare classifier phrases [CL + NP]. Bare NPs are either generic or indefinite. In Mandarin, definiteness is expressed with a bare NP, and bare classifier phrases [CL + NP] are indefinite. See Cheng and Sybesma (1998) for a detailed discussion of the differences between Mandarin and Cantonese noun phrases.

[38] I have found that speakers (usually strongly) prefer to double up the definite plural with some other quantificational element in these cases. For instance, for the definite plural in (131), speakers often also use a reduplicated classifier which itself functions as a universal.

(i)

Dī	gūngyán	go-go	dōu	sihk	daahngōu
cl	worker	cl-cl	dou	eat	cake

'The workers are all eating cake.'

I do not know the significance of this tendency, but it does call into question how similar Cantonese *dōu* is to Mandarin. From impressions gathered through first-hand work on Cantonese and from reviewing the literature on Mandarin, it seems that plural definites in Mandarin are far more likely to be used with *dōu* without additional quantificational material.

b. Dī gūngyán dōu sihk daahngōu
cl worker all eat cake
'The workers are (all) eating cake.'

(132) a. A-Wāi tùhng a-Lìhng dōu chéng-jó a-Sōu sīnsāang.
Wai and Ling all invite-pfv So Mr.
'Wai and Ling (both) invited Mr. So.'

b. Léih yanfā seui, leuhtsī fai, gīnggéi yúng dōu yiu béi
you stamp duty lawyer fee agent commission all need pay
ge.
prt
'You have to pay stamp duty, legal fees and commission.'
modified from Matthews and Yip 1994: 289

The peculiar thing about *dōu* which distinguishes it from *all* in English is that it regularly co-occurs with other quantifiers, such as *múih* "every/each", *só yáuh ge* "all", *chyùhnbouh* "whole", *sèhng* "whole", *daaih bouh fahn* "most/a large part" and reduplicated classifiers which translate as universals. These are underlined in the following examples.

(133) a. Múih (yāt) go yàhn dōu lèih la.
each one cl person all come prt
'Everybody has arrived.'

b. Só yáuh (ge) tùhngsih dōu tùhngyi.
whatever have lp colleagues all agree
'All our colleagues agree.' Matthews and Yip 1994: 267

c. Kéuihdeih chyùhnbouh dōu jūngyi ngóh.
they whole.lot dou like me
'They all like me.'

d. Sèhng gāan ūk dōu chaak.
whole cl house all demolish.
(We're) tearing down the whole house.

e. Daaih bouh fahn yàhn dōu wúih làuh hái Hēunggóng.
big cl part person all will stay at Hong Kong.
'Most people are staying in Hong Kong.' Matthews and Yip 1994: 277

f. Dī chyùhsī tiùh-tiùh yú dōu jáam-gán.
cl cook cl-cl fish all chop-prog
'The cooks are chopping all the fish.'

Lin (1996) discusses this sort of collocation of *dōu* with another preverbal quantifier in Mandarin and argues that in these cases *dōu* continues to function as a D-operator.

In my discussion, I will concentrate on the type of data in (133) in which *dōu* co-occurs with some other quantificational element. It is not my goal to give a radically new account of quantification in Cantonese. I find Lin's account of *dōu* "all" as a D-operator generally persuasive, even in cases involving these other preverbal quantifiers.[39] Therefore, I will hereafter assume that *dōu* in these sentences is an overt D-operator.

Acknowledging that Cantonese has a quantificational *dōu*, my objective will be to investigate whether this D-operator has any relation to the *dōu* "even/also" involved in widening Cantonese NPIs. Given my analysis of *all* in English as a stressed D-operator which satisfies the presuppositions of *even*, this question becomes rather pertinent.

Before addressing the relation of the two *dōu*'s, I will first make a brief excursus on the co-occurrence of *dōu* with preverbal quantifiers to demonstrate Lin's system, enriched by subsequent insights by Yang (2001).

4.4.1 The co-occurrence of *dōu* with other quantifiers.

Taking the case of Mandarin *dabufen-de* "most", Lin draws on Yabushita's (1989) analysis of English *most*, and argues that this quantifier is not inherently distributive. Rather, *dabufen-de/most* has a lexical entry as in (135) (Lin 1996: 35 (27)) instead of the regular generalized quantifier treatment in (134).

(134) $[[\text{most}]] = \lambda P \lambda Q[\ |P \cap Q| > |P - Q|]$

(135) $[[\text{most}]] = \lambda P \lambda Q \exists z \exists x[\forall y(y \subseteq x \leftrightarrow P(y)) \wedge z \subseteq x\ \wedge Q(z) \wedge |z| > |x| - |z|]$

Under the more conventional generalized quantifier treatment in (134), the truth of a proposition is checked by seeing whether the cardinality of the intersection of the set denoted by common noun and a VP is greater than the cardinality of the set denoted by the common noun less the VP. Yabushita's *most* involves existential quantification over plural individuals (the variables x and z).[40] Once the common noun and VP arguments are saturated (135), there is a plural individual x which comprises all the Ns, and furthermore there is another sub-individual z of x, which accounts for more than half of x, such that z VPs.

Lin then shows that this meaning of *dabufen-de* is compatible with there being a D-operator present in the structure. I demonstrate with the semantic analysis of Cantonese *daaih bouh fahn* from (133)e below in (136).

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[39] I am excluding Lin's analysis of NPIs and free choice items. Lin continues to treat *dōu* as a D-operator in these constructions, whereas I would advocate a pure additive particle analysis. See section 2.4 for further discussion of negative polarity in Cantonese.

[40] Following the discussion earlier, I am treating plural individuals as set-denoting and of type e. The noun phrase and verb phrase which will replace P and Q in the formula are equivalent to second-order sets of type <e,t>.

(136) a. Daaih bouh fahn yàhn dōu wúih làuh hái Hēunggóng.
big cl part person all will stay at Hong Kong.
'Most people are staying in Hong Kong.' Matthews and Yip 1994: 277

b. $\exists z \exists x[\forall y(y \subseteq x \leftrightarrow \text{person}(y)) \wedge z \subseteq x \wedge \forall y[y \in \text{Cov} \wedge y \subseteq z \rightarrow \text{stay.in.HK}(y)] \wedge |z| > |x| - |z|]$

This says that there is a maximal plural individual x comprising all the people (*yàhn*). There is also another plural individual z, which is a sub-individual of x which contains more than half of x. This z VPs. The VP has a D-operator on it, so the argument z plays a role similar to plural definites in the earlier discussion of English. The distributive conjunct of the formula says that each subpart y of z that is also in the cover will also stay in Hong Kong. The whole expression means that most subparts of x, which comprises all people, will stay in Hong Kong.

Universals can be treated in a similar way. Lin (1996) treats Mandarin *mei-yi-ge* "every" as non-quantificational. He claims that *mei* is a function of type <<e,t>,e>, which picks out the maximal collection of individuals in its restriction.

(137) [[mei]] = that function f such that for all $P \in D_{<e,t>}$, $f(P) = \cup[[P]]$

Therefore, a *mei-yi-ge* nominal is of type e and has the meaning of a plural definite. It is straightforward to see that it can combine with the D-operator *dōu*.

Yang (2001) also gives a very similar analysis of quantifiers in Mandarin. Yang follows Lin in analyzing *dōu* as a D-operator, but she argues that *mei* is still quantificational, unlike Lin's analysis. First she notes that unlike plural definites, a *mei* NP in Mandarin can never have a collective construal. Secondly, she notes that unlike plural definites, *mei* NPs can be modified by *jihu* "almost". Yang therefore proposes a different treatment of *mei*, as given in (138).[41]

(138) $[[\text{mei}]] = \lambda P \lambda Q \exists x[\forall y[(y \in x \leftrightarrow P(y)) \wedge Q(x)]]$

Yang's arguments seem to go through for Cantonese as well. First of all, let us note that the Cantonese equivalent of *mei*, *múih*, only permits distributive and never collective readings.

(139) Múih yāt go yàhn dōu sihk-jó yāt go daahngou
every one cl person all eat-pfv one cl cake.
a. 'Every person ate one cake.'
b. * 'All the people ate one cake (together).'

This contrasts with plural definites, which may have either a collective or distributive construal. In Cantonese, definite plurals are formed with the plural classifier *dī*.

[41] Under current assumptions, x is a set-denoting plural individual and y is an atomic individual. The numeral plus classifier NP, *yi-ge NP* "one NP", is set-denoting and of type <e,t>. The VP is a second order set of type <e,t>.

(140) Dī gūngyán sihk-jó yāt go daahngōu.
cl worker eat one cl cake.
a. 'The workers ate one cake (each).' *accepted*
b 'The workers ate one cake (together).' *preferred*

It is also interesting to note that the same contrast is found between *múih* and other universal quantifiers, like reduplicated classifiers. As seen in (141), reduplicated classifier quantifiers permit both distributive and collective readings like plural definites.

(141) Go-go yàhn dōu sihk-jó yāt go daahngou
cl-cl person all eat-pfv one cl cake.
a. 'All the people ate one cake (each).'
b. 'All the people ate one cake (together).'

Yang also argues that *mei* can be distinguished from definite plurals in Mandarin because it may co-occur with *jihu* "almost", whereas a definite plural may not directly combine with *jihu*. The same contrast is found in Cantonese, where *múih* can co-occur with *chā-mdō* "almost" (142), but a definite plural cannot (143).

(142) Chā-mdō múih yāt go yàhn dōu heui fangaau.
almost every one cl person all go sleep
'Almost everybody went to sleep.'

(143) *Chā-mdō dī yàhn heui fangaau.
almost cl person go sleep
'Almost the people went to sleep.'

I will hereafter adopt Yang's analysis of *mei* for Cantonese *múih*. This is given in (144).

(144) $[[\text{múih}]] = \lambda P \lambda Q \exists x[\forall y[(y \in x \leftrightarrow P(y)) \wedge Q(x)]]$

Note that there is nothing in this formula that enforces the full distributivity we saw in (139). Yang explains the fact that Mandarin *mei* can only have a distributive reading as due to the numeral *yi* "one". According to Yang, this numeral makes the only salient cover for the D-operator one in which there are as many cells as there are men, each man occupying one cell. Likewise in Cantonese *múih* normally co-occurs with *yāt* "one", so the same arguments apply. Note that this is different from the reduplicated classifier which combines directly with a noun as in (141), or occurs after it as in (133)f. Hence, any type of cover may be salient with these reduplicated classifiers and full distributivity is not enforced.[42]

[42] Below I will analyze reduplicated classifiers as basically the same as *múih*, except that they do not contain salient covers in which all the individuals occupy singleton cells. I am not sure this is the whole story with reduplicated classifiers. I suspect they are actually more like numerical partitives, such as *sāam go* in (i) below.

(i) Kéuihdeih sāam go dōu heui.
they three cl all go
All three of them are going. Matthews and Yip 1994: 263

Using these semantics, the sentence in (133)a is interpreted as (145).[43]

(145) a. Múih (yāt) go yàhn dōu lèih la.
each one cl person all come prt
'Everybody has arrived.'

b. $\exists x[\forall y(y \in x \leftrightarrow \text{person}(y)) \wedge \forall z[z \in \text{Cov} \wedge z \subseteq x \rightarrow \text{arrive}(z)]$

Here, the P argument of *múih* has been saturated by *(yāt) go yàhn* "one person". This is the argument on the right hand side of the biconditional in (145)b. The Q argument of *múih* is saturated by the VP *dōu lèih* "all come", where *dōu* is the D-operator. The D-operator plays a different role from *múih* in this sentence. *Múih* introduces existential quantification of some set x whose atomic parts are members of the set denoted by *yāt go yàhn*. The D-operator *dōu* introduces universal quantification over the subsets of this plural individual x, which are also members of the contextually supplied cover. Since the subject NP involved the numeral *yāt*, a cover in which every group of one person occupies their own cell of the cover will be salient. In other words, a cover in which each individual person occupies a singleton cell, thereby resulting in a fully distributive meaning.

Yang (2001) also makes the valuable observation that the nominal quantifiers in (133) may occur postverbally in object position. Although such examples are often considered to be somewhat marginal, Yang claims that these forms are completely grammatical. Parallel examples from Cantonese are given below. As can be seen, an overt *dōu* is incompatible with these postverbal quantifiers under the reading we are concerned with.[44]

(146) a. Ngóh (#dōu) béi-jó múih go yàhn yāt bún syū.
I (all) give-pfv each cl person one cl book
'I gave each person one book.'

b. Ngóhdeih (#dōu) tái-gwo só yáuh ge jinggeui.
we (all) see-exp whatever have lp evidence.
'We've seen all the evidence there is.' Matthews and Yip 1994:267

c. Go cháak (#dōu) tāu-jó chyùhnbouh dī gām.
cl thief (all) stole-pfv whole.lot cl gold
'The thief stole all the gold.'

d. A-Wāi (#dōu) maaih-jó sèhng faai deih.
Wai (all) sell-pfv whole cl land
'Wai sold the whole property.'

The first classifier in the reduplicated classifier sequence in (141) might be some sort of variable ranging over numerals, always set to whatever cardinality *n* the NP has. This would enable speakers to use numerical partitives even when unsure of the exact cardinality of the set denoted by the nominal. Example (141) would be better paraphrased with "all *n* of the people" under this novel analysis.

[43] I am ignoring the contribution of the numeral classifier in this formula. In Yang's theory which I am adopting, the crucial role the numeral plays is in ensuring a choice of cover with singleton cells.

[44] *Dōu* is possible in these sentences, but it adds a different sense. First, it is possible to get an additive particle reading such as "I also gave each person a book" for (146)a. A second reading adds a throw-your-hands-up-in-the-air nuance such as "Well, I already gave each person a book" for (146)a. I will not discuss these readings.

e. Dī sailóujái (#dōu) sihk-jó daaih bouh fahn dī syutgōu.
cl child (all) eat-pfv big cl part cl ice.cream.
'The kids ate most of the ice cream.'

f. Ngóh (#dōu) gin-jó go-go sailóu.
I (all) see-pfv cl-cl child
'I saw all the kids.'

Following Lasersohn's (1998) and Brisson's (1998) work on English, Yang suggests that in these cases that there is a D-operator on the V°.[45] This way Yang is able to maintain the same treatment of these quantifiers, maintaining their interpretation is dependent in part upon a D-operator. The only difference between the preverbal and postverbal cases is that preverbally Chinese quantifiers interact with an overt D-operator *dōu* on the VP,[46] whereas postverbally the quantifiers interact with a covert D-operator on V.

I will assume Yang's theory of postverbal quantifiers hereafter.

4.4.2 The two *dōu*'s

Now I will return to the main thread of the thesis once again, and ask the question what relation *dōu* "all" has to *dōu* "even", and whether domain widening or any focus related effects arise when *dōu* "all" is used.

Since Chapter Two we have seen that English uses focus alone to accomplish domain widening. This always satisfies the presuppositions of *even*, but *even* is never overtly expressed in such cases. In other languages, *even* is overtly expressed, as we saw in the case of preverbal emphatic NPIs in Cantonese. In the case of distributives, the D-operator is normally phonologically null in English, unless it is stressed to widen the cover variable, in which case it surfaces as floated *all*. My proposal regarding Cantonese is that *dōu* "all" is the D-operator (as in Lin 1996), and moreover, that it derives from *dōu* "even" plus a covert D-operator, which are fused into a single phonological word. Therefore, the D-operator *dōu* actually corresponds to something like *even all* in English.

This amounts to the claim that every preverbal quantifier that co-occurs with *dōu* is emphatic in some way. Since using *dōu* with these quantifiers seems to be the default, this is a rather unconventional claim. I believe the language internal evidence supports this conclusion, however, especially when one examines the discourse contexts in which *dōu* is obligatory versus optional.

As discussed briefly above, most studies of quantification in Chinese do not treat postverbal quantifiers in object position and seem to regard them as marginal. It is much more common for a quantified object to be preverbal and to co-occur with *dōu*. But as Yang (2001) has shown, in fact postverbal quantifiers in Mandarin are completely acceptable, which is also true of Cantonese (146).

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[45] It is important to note that placing a D-operator on V is meant to accommodate the interpretation of definite plurals in object position; this is distinct from Brisson's proposal to posit a D-operator on the DO predicate, since this targeted plural subjects.

[46] Or occupying the head of its own projection, DistP, if Lin's proposal is adopted.

From what I can tell, any marginality there is to these postverbal quantifiers stems from some sort of pragmatic expressive deficiency. The problem is that postverbal quantifiers sound "flat" and are only suitable for very factual or run-of-the-mill statements which are apparently difficult for speakers to reconstruct out of the blue. For instance, taking the quantifier *daaih bouh fahn* "most", this may be used postverbally in the following sort of dialogue between two construction contractors.

(147) A: Léihdeih hái Sōu sīnsāang gódouh jouh mātyeh a?
you.pl at So Mr there do what prt
'What are you doing at Mr. So's?'

B: Ngóhdeih jáam-gán daaih bouh fahn ge syuh lohk lèih
we chop-prog big cl part lp tree fall come
'We're chopping down most of the trees.'

Chìh dī waahkjé wúih chaak gāan ūk
late a.bit maybe will demolish CL house
'And later we might tear down the house.'

Among people who get paid to do certain types of construction, there is nothing special about chopping down most of the trees on a client's lot. This might even be a daily occurrence.

This contrasts with the next example, in which *daaih bouh fahn* must be used preverbally with *dōu*. This dialogue is much more reminiscent of the cases in which determiners are focussed and used in lieu of weaker lexical determiner alternatives, discussed at various points throughout this thesis.

(148) A: Léihdeih haih-mhaih jihnghaih jáam géi pō syuh
you.pl be-neg.be only chop quite cl tree
lohk lèih ga ja?
fall come prt prt
'Are you only chopping down a few trees?'

B: Mhaih wo Ngóhdeih daaih bouh fahn ge syuh dōu
neg.be prt. we big cl part lp tree all
wúih jáam.
will chop
'No. We'll chop most of the trees.'

Here, Speaker B does not simply answer Speaker A in the negative, but rather makes the stronger and more truthful answer that she's chopping down most of the trees. There is something slightly remarkable about chopping down most trees in this context.

A similar point can be made of quantifiers in subject position. In the next example, *dōu* is not obligatory with the reduplicated classifier *go-go*, which functions as a universal quantifier.

(149) A: Dī hohksāang jūngyi sihk bīn dī tìhmbán a?
cl student want eat which cl dessert prt
'Which dessert do the students like to eat?'

B: Kéuihdeih go-go jūngyi sihk syutgōu.
they cl-cl want eat ice.cream
'They all like ice cream.'

In (149), the focus is clearly on what the students will eat, with the question of how many of the students being in the background.

This contrasts with the next dialogue. Here, the host has nothing but ice cream to serve, so it is of consequence whether all the potential eaters actually like it. Making the universal generalization here contains some hint of argumentation, since it provides the evidence Speaker B is using to get Speaker A not to worry. B is really trying to emphasize that there are no exceptions.

(150) A: Āiya! Ngóhdeih jihnghaih yáuh syutgōu bō.
oh we only have ice.cream prt
'Oh no. We only have ice cream.'

B: Msái dāamsām. Go-go hohksāang dōu jūngyi sihk syutgōu.
don't worry cl-cl student all like eat ice.cream
'Don't worry. All the students like ice cream.'

Assuming that Lin and Yang are correct that what passes for quantificational NPs in Chinese always depend on a D-operator for their interpretation, then there should be a D-operator in the structure of both (147)B and(149)B. Following Yang, this would be on the V in the example involving the postverbal quantifier, and on the VP (or heading a DistP) in the example with the preverbal quantifier. In neither of these examples is the quantifier emphatic, and in neither of these cases does the D-operator surface as *dōu*.

On the other hand, in both the emphatic cases, (148)B and (150)B, the D-operator does surface as *dōu*, and these are exactly the cases that I am suggesting involve a focussed D-operator associated with the semantics of *even*. Not only is this suggested by the phonological shape of the D-operator, it is also supported by the fact that emphatic object quantifiers must appear preverbally. As discussed in Chapter Two, *dōu* "even" may only occur before VP. It cannot occur within the VP projection anywhere. Therefore, if a D-operator is going to be focussed and associated with the semantics of *even*, it follows that it would have to be a preverbal D-operator.

Strong support that the preverbal quantifiers with *dōu* involve the semantics of *even* is provided by the following data, which is a variation of (148). This example confirms the prediction that *dōu* cannot be used in sentences which assert weaker propositions than other alternatives in discourse. As an answer to (151)A it is not possible to use a preverbal quantifier with *dōu* if this creates a weaker than expected answer. So, although (151)B is perfectly grammatical, it is an infelicitous answer. Rather, a postverbal quantifier without *dōu* must be used.

(151) A: Léihdeih haih-mhaih pō-pō syuh dōu jáam lohk lèih a?
you.pl be-neg.be cl-cl tree all chop fall come prt
'Are you chopping down all the trees?'

B: # Ngóhdeih daaih bouh fahn dōu wúih jáam.
we big cl part all will chop
'We'll chop most of them.'

B′: Ngóhdeih wúih jáam daaih bouh fahn.
we will chop big cl part
'We'll chop most of them.'

This follows if *dōu* "all" involves the semantics of *even*, in which case it must occur in a more informative proposition than the alternatives. However, the inability to appear in weaker propositions is completely unexpected if *dōu* is simply a D-operator.

New questions arise if *dōu* "all" in these cases really is *dōu* "even" plus a focussed D-operator. How exactly does focus on the D-operator create the emphasis in these cases? Is domain widening possible? Let's take the example from (150)B to see what a domain widening account would look like here. The relevant portion of this example is repeated in (152).

(152) (B): Go-go hohksāang dōu jūngyi sihk syutgōu.
cl-cl student all like eat ice.cream
'All the students like ice cream.'

Domain widening is arguably taking place here since Speaker B is indicating that there are no students who don't like ice cream, so Speaker A need not worry about the lack of choice. In English, this would be accomplished by using focus on the quantifier. In Cantonese, I am suggesting that *dōu* is the stressed D-operator, corresponding to preverbal *all* in English, which also carries the presuppositions of *even*. The asserted value is the one in which *dōu* is indexed to the widest subset of students denoted by *hohksāang*. This is interpreted against a set of background alternatives in which the D-operator is indexed to smaller cover variables.

(153) Go-go hohksāang $dōu_{Cov6}$ jūngyi sihk syutgōu

i. $[[\text{All of the students } {}^{\text{D-Cov6}}[_{VP} \text{ like to eat ice cream}]]^{\circ}$
$= \lambda Q \exists x[\forall y(y \in x \leftrightarrow (\text{student}(y)) \wedge Q(x))]({}^{\text{D-Cov6}}\{x \mid x \text{ likes ice cream}\})$

ii. $[[\text{All of the students } {}^{DF}[_{VP} \text{ like to eat ice cream}]]^{f}$
$= \{\lambda Q \exists x[\forall y(y \in x \leftrightarrow (\text{student}(y)) \wedge Q(x))]({}^{X}\{x \mid x \text{ likes ice cream}\}) \mid X \in D_{<<e,t>,<e,t>>}\}$
$= \{ \lambda Q \exists X[\forall y(y \in x \leftrightarrow (\text{student}(y)) \wedge Q(x))]({}^{\text{D-Cov6}}\{x \mid x \text{ likes ice cream}\}),$
$\lambda Q \exists X[\forall y(y \in x \leftrightarrow (\text{student}(y)) \wedge Q(x))]({}^{\text{D-Cov5}}\{x \mid x \text{ likes ice cream}\}),$
$\lambda Q \exists X[\forall y(y \in x \leftrightarrow (\text{student}(y)) \wedge Q(x))]({}^{\text{D-Cov4}}\{x \mid x \text{ likes ice cream}\}),...\}$

We can assume that [[hohksāang]] denotes the set {j, k, l, m, n, o}. The values for the covers on the salient alternatives might be Cov_6 and Cov_5.

(154) $[[Cov_6]] = \{\{j\}, \{k\}, \{l\}, (m\}, \{n\}, \{o\}, (a,b,c,d\}\}$
$[[Cov_5]] = \{\{j\}, \{k\},\{l\}, (m\}, \{n\}, \{o,a,b,c,d\}\}$

The weaker alternative is the one in which the D-operator carries a weaker ill-fitting cover. For now, we can assume that the nominal quantifier *go-go* does not carry its own contextual variable in this case. The salient alternatives in the focus anaphor C^{FOC} are ranked on a scale, since the wider the cover variable the stronger the proposition. These alternatives are given in (155)

(155) <Go-go hohksāang dōu$_{Cov6}$ jūngyi sihk syutgōu,
Go-go hohksāang dōu$_{Cov5}$ jūngyi sihk syutgōu>
$= <\exists x[\forall y[y \in x \leftrightarrow (student(y)] \wedge \forall z[z \in Cov_6 \wedge z \subseteq x \rightarrow like.ice.cream(z)]],$
$\exists x[\forall y[y \in x \leftrightarrow (student(y)] \wedge \forall z[z \in Cov_5 \wedge z \subseteq x \rightarrow like.ice.cream(z)]]>$

The weaker alternative says "All of the students like ice cream", but has a weak cover on the D-operator so leaves it open the possibility that some student, namely o, doesn't like ice cream. By asserting the stronger alternative here, Speaker B is cancelling any possible implicature arising from this weaker background proposition. That this is the strongest of the alternatives is guaranteed by the *even* semantics *dōu* "all" carries.

(156) a. $\exists q[q \in C^{FOC} \wedge q \neq \exists x[\forall y[y \in x \leftrightarrow (student(y)] \wedge \forall z[z \in Cov_6 \wedge z \subseteq x \rightarrow like.ice.cream(z)]] \wedge q = 1]$

b. $\forall q[q \in C^{FOC} \wedge q \neq \exists x[\forall y[y \in x \leftrightarrow (student(y)] \wedge \forall z[z \in Cov_6 \wedge z \subseteq x \rightarrow like.ice.cream(z)]] \rightarrow q <_{informative} \exists x[\forall y[y \in x \leftrightarrow (student(y)] \wedge \forall z[z \in Cov_6 \wedge z \subseteq x \rightarrow like.ice.cream(z)]]]$

This is how domain widening is achieved if *dōu* really is the stressed D-operator with the semantics of *even*. Intuitively, the reason why Speaker B uses *go-go ... dōu* is to cancel an implicature that "not absolutely every student likes ice cream".

4.4.3 Discussion of Cantonese

In this section I will refine some of the generalizations made above, and raise some questions about the overall shape of the analysis. This reality check will concentrate on two main issues which I will try to disentwine: (i) is *dōu* really emphatic, and; (ii) is the stressed D-operator analysis adequate.

4.4.3.1 Is *dōu* really emphatic?

In the preceding discussion I have tried to show that *dōu* "all" incorporates the semantics of *dōu* "even", and that consequently it is emphatic. While I believe this is basically correct, the data is actually a little bit murkier than I have presented. In the pairs (147)/(148) and (149)/(150) we saw that where the speaker has no reasons to use an emphatic quantifier,

because no counter-to-expectation effect need be created, *dōu* is not used with other quantifiers. When an emphatic quantifier is required and a counter-to-expectation effect needed, then *dōu* is used. This tidy generalization is given in the following table.

(157) Co-occurrence of *dōu* with quantifiers (Preliminary)

	dōu present
Non-emphatic Quantifier	*
Emphatic Quantifier	√

In fact the generalization is a bit more nuanced. While, it is true that when the quantifier is emphatic *dōu* is obligatory, it is not actually the case that *dōu* is disallowed when the quantifier is not emphatic. In fact, *dōu*'s presence might even be the norm in these non-emphatic cases. The non-emphatic sentences from (147) and (149) are repeated here with *dōu* in (158) and (159).

(158) A: Léihdeih hái Sōu sīnsāang góudouh jouh mātyéh a?
you.pl at So Mr there do what prt
'What are you doing at Mr. So's?'

B: Ngóhdeih daaih bouh fahn ge syuh dōu jáam-gán
we big cl part lp tree all chop-prog
lohk lèih.
fall come
'We're chopping down most of the trees.'

Chìh dī waahkjé wúih chaak gāan ūk
late a.bit maybe will demolish cl house
'And later we might tear down the house.'

(159) A: Dī hohksāang jūngyi sihk bīn dī tìhmbán a?
cl student want eat which cl dessert prt
'Which dessert do the students like to eat?'

B: Kéuihdeih go-go dōu jūngyi sihk syutgōu.
they cl-cl all want eat ice.cream.
'They all like ice cream.'

The fuller generalization is given in (160).

(160) Co-occurrence of *dōu* with quantifiers (Revised)

	dōu allowed	*dōu* obligatory
Non-emphatic Quantifier	√	*
Emphatic Quantifier	√	√

According to (160), *dōu* is at most quasi-emphatic. What exactly does this mean, and how does my analysis accommodate this fact?

I believe the tendency to always use *dōu*, even in not very emphatic cases, is due to the choice of cover. Unlike definite plurals, assertions containing a quantifier that relies on the D-operator are never compatible with ill-fitting covers. Using *dōu* is thus a way to prevent such a cover from being used. This claim will be better appreciated after considering an example.

Let's consider the following sentence, extracted from the earlier (148).

(161) Ngóhdeih daaih bouh fahn ge syuh dōu wúih jáam.
we big cl part lp tree all will chop
'We'll chop most of the trees.'

Before addressing my point about ill-fitting covers being incompatible with *dōu*, I must first give my domain widening analysis of this sentence.

In (161), there is a counter-to-expectation effect because the speaker is confirming that "we will chop down most of the trees, not just a few". As mentioned, in English this example would not correspond to domain widening in the narrow sense I have been using the term, but rather as an example involving alternative lexical determiners, because in English *most* would be contrasted with a determiner *a few*. But if in Cantonese focussed *dōu* is responsible for the emphasis, then actual domain widening of the cover variable must be taking place.

The assertion here includes an instance of the D-operator *dōu* indexed to the widest (i.e., good-fitting) cover of trees denoted by *syuh*. The narrower alternatives involve the D-operator indexed to ill-fitting covers.

(162) Ngóhdeih daaih bouh fahn ge syuh dōu_{Cov3} wúih jáam

i. $[[\text{Most (of the) trees}\ ^{\text{D-Cov4}}[_{\text{VP}}\ \text{we will chop down}]]^{\circ}$
$= \exists z \exists x[\forall y(y \subseteq x \leftrightarrow \text{tree}(y)) \wedge z \subseteq x \wedge z \in {}^{\text{D-Cov4}}\{y \mid \text{we chop } y\} \wedge |z| > |x| - |z|]$

ii. $[[\text{Most (of the) trees}\ ^{\text{D-F}}[_{\text{VP}}\ \text{we will chop down}]]^{f}$
$= \{ \exists z \exists x[\forall y(y \subseteq x \leftrightarrow \text{tree}(y)) \wedge z \subseteq x \wedge z \in {}^{X}\{y \mid \text{we chop } y\} \wedge |z| > |x| - |z|] \mid X \in D_{<<e,t>,<e,t>>}\}$
$= \{ \exists z \exists x[\forall y(y \subseteq x \leftrightarrow \text{tree}(y)) \wedge z \subseteq x \wedge z \in {}^{\text{D-Cov4}}\{y \mid \text{we chop } y\} \wedge |z| > |x| - |z|],$
$\exists z \exists x[\forall y(y \subseteq x \leftrightarrow \text{tree}(y)) \wedge z \subseteq x \wedge z \in {}^{\text{D-Cov3}}\{y \mid \text{we chop } y\} \wedge |z| > |x| - |z|],$
$\exists z \exists x[\forall y(y \subseteq x \leftrightarrow \text{tree}(y)) \wedge z \subseteq x \wedge z \in {}^{\text{D-Cov2}}\{y \mid \text{we chop } y\} \wedge |z| > |x| - |z|], \ldots\}$

In this example, [[syuh]] might denote the set of trees $\{t_1, t_2, t_3, t_4\}$. The values for the covers on the salient alternatives might be Cov_4 and Cov_3.

(163) $[[\text{Cov}_4]] = \{\{t_1\}, \{t_2\}, \{t_3\}, \{t_4\}, \{a,b,c,d\}\}$
$[[\text{Cov}_3]] = \{\{t_1\}, \{t_2\}, \{t_3, t_4, a,b,c,d\}\}$

In the actual discourse, the weaker alternative is another nominal *géi pō syuh*, "a few trees". However, in the stronger alternative it is the distributive operator *dōu* which receives

focus. The alternative of *dōu* cannot be a nominal like *géi pō syuh*, but rather must be another D-operator with a different cover index. Focal alternatives can only vary for the value of the focussed item, in this case *dōu*. The consequence is that the apparent discourse alternative *géi pō syuh* can only be represented by proxy, by a paraphrase in which *daaih bouh fahn ge syuh* is used with a *dōu* operator indexed to an ill-fitting cover. The salient alternatives occupy the scale in (164).

(164) < Ngóhdeih daaih bouh fahn ge syuh dōu_{Cov4} wúih jáam,
Ngóhdeih daaih bouh fahn ge syuh dōu_{Cov3} wúih jáam>

$$= \langle \exists z \exists x[\forall y(y \subseteq x \leftrightarrow \text{tree}(y)) \wedge z \subseteq x \wedge z \in {}^{\text{D-Cov4}}\{y \mid \text{we chop } y\} \wedge |z| > |x| - |z|],$$
$$\exists z \exists x[\forall y(y \subseteq x \leftrightarrow \text{tree}(y)) \wedge z \subseteq x \wedge z \in {}^{\text{D-Cov3}}\{y \mid \text{we chop } y\} \wedge |z| > |x| - |z|] \rangle$$

$$= \langle \exists z \exists x[\forall y(y \subseteq x \leftrightarrow \text{tree}(y)) \wedge z \subseteq x \wedge \forall y[y \in \text{Cov}_4 \wedge y \subseteq z \rightarrow \text{chop(we, z)}] \wedge |z| > |x| - |z|],$$
$$\exists z \exists x[\forall y(y \subseteq x \leftrightarrow \text{tree}(y)) \wedge z \subseteq x \wedge \forall y[y \in \text{Cov}_3 \wedge y \subseteq z \rightarrow \text{chop(we, z)}] \wedge |z| > |x| - |z|] \rangle$$

The strong alternative corresponds to the assertion in (161). The weak alternative is the proxy proposition which corresponds to the weaker proposition actually uttered in discourse with *géi pō syuh*, "a few trees". This proxy is truth conditionally equivalent to the proposition containing *géi pō syuh*.

The stronger alternative is true if there is some z which makes up the greatest subpart of the trees x, such that we chop down all z in the accessible part of the cover (i.e., not in the junkpile). So if $[[x]] = \{t_1, t_2, t_3, t_4\}$ and $[[z]] = \{t_1, t_2, t_3\}$, and Cov_4 is a good-fit of z as in (163)a, then this means that the trees t_1, t_2, t_3 get chopped down, which is most of the trees.

The interesting case is the weaker alternative which stands in proxy for *géi pō syuh*, in which an ill-fitting cover Cov_3 is chosen. According to the semantics given here, this sentence is true even if only t_1, t_2 of the trees get chopped down. This is because the distributive operator does not quantify only over the subparts z, but the members of Cov_3 that are also subparts of z. It is not really the case that most of the trees x got chopped down, and yet the sentence is true. According to the semantics of *daaih bouh fahn*, there must be some subpart of the trees z which comprises most of the trees. But since its semantics relies on the D-operator, it is possibly the case that an ill-fitting cover of z is chosen, so not every tree in z is included in the quantificational generalization. This is perhaps a surprising outcome.[47]

The prediction of this analysis is that in cases involving non-emphatic *daaih bouh fahn* "most", that is sentences with no *dōu*, an ill-fitting cover on the covert distributivity operator might be possible. Since *dōu* always corresponds to the D-operator having a good-fitting cover, one expects when *dōu* is absent that ill-fitting covers should be possible. For

[47] Some readers might wonder how a system like Cantonese works with respect to the Difference Set Hypothesis discussed in section 4.2, where we saw that non-universal quantifiers cannot undergo genuine widening. In the Cantonese system, it is still the case that the restriction of *daaih bouh fahn*, namely the set of trees in *pō syuh* under discussion, does not get widened. Rather, what gets widened is the cover variable in the D-operator. Since the actual set of trees can never get widened, but only some subset of trees, I do not think Cantonese has a system which sneaks around the Difference Set Hypothesis.

instance, sentences like (147)B, repeated here as (165), are expected to sometimes be true even if it is not the case that most of the trees are chopped down.

(165) Ngóhdeih jáam-gán daaih bouh fahn ge syuh lohk lèih
we chop-prog big cl part lp tree fall come
'We're chopping down most of the trees.'

This is an example of non-emphatic *daaih bouh fahn*, where a focussed D-operator *dōu* is not present. One would expect in principle that an ill-fitting cover like Cov_3 in (163) could be chosen. However, this prediction is completely wrong. Sentence (165) is false in a situation where only half the trees get chopped down, like 2/4 or 5/10.

The lesson is this: in an assertion including a quantificational noun phrase, only a good-fitting cover may be chosen.

Now we can return to the point I was addressing just before pondering this example, namely why *dōu* so frequently occurs with quantificational nominals, even in not very emphatic circumstances. The previous example has shown that in an assertion, quantifiers which rely on the D-operator are never compatible with ill-fitting covers, unlike definite plurals in English. This is where *dōu* plays a role. Using an overt D-operator fused with the (perhaps residual) semantics of *even* guarantees that the cover variable chosen will be good-fitting. Therefore, using overt *dōu* signals that a good-fitting cover has been chosen. In practical terms the only time an ill-fitting cover is chosen is in the "fiction" of the narrower alternatives, whose propositional content may very well be presupposed, but which themselves would never be asserted.

4.4.3.2 Is the stressed D-operator analysis really adequate?

This is a good point to start addressing the second major question of this section: Is the focussed D-operator analysis of *dōu* really adequate? While I will continue to support the stressed D-operator analysis of *dōu*, there are some drawbacks to the analysis which need to be mentioned. First of all, in examples like the following involving a preverbal nominal quantifier *múih* and the reduplicated classifier, it is the nominal quantifier that has greater stress relative to *dōu*. That is, *dōu* does not bear the greatest stress in the sentence.

(166) Ngóh *MÚIH* yāt go yàhn dōu gin dóu
I every one cl person all see v-prt
'I saw everybody.'

(167) Dī gūngyán *GO-GO* dōu sihk-jó.
cl worker cl-cl all eat-pfv
'All the workers have eaten.'

This is what we would expect to see if *dōu* simply meant *even*, and it was associated with a focussed quantifier, just as in my example of emphatic negative polarity items.

What should we make of this sort of data? Is it the case that the D-operator analysis of *dōu* is completely off and that *dōu* really is just an additive particle? This would make for

a simpler system overall, and avoid some of the unusual conclusions reached above with respect to emphatic *daaih bouh fahn* "most/a large part".

While I would be very happy to make this claim, I do not think the evidence completely favours this analysis either. First of all, in examples not involving nominal quantifiers, but just definite plurals, there is a difference in stress between the *dōu* meaning "even/also" and the one meaning "all". This follows an observation made by Sybesma (1996) for Mandarin, which seems to hold for Cantonese as well. When *dōu* means "even/also", it is often phonologically reduced and its high tone can be neutralized. When *dōu* means "all", it always receives some stress and is pronounced with a full-fledged high tone. (Note that the capitalization of *DŌU* in the "all" case is only meant to indicate lightly stressed).

(168) A-Wāi tùhng a-Lìhng dōu chéng-jó a-Sōu sīnsāang.
Wai and ling also invite-pfv So Mr.
"Wai and Ling also invited Mr. So."

(169) A-Wāi tùhng a-Lìhng *DŌU* chéng-jó a-Sōu sīnsāang.
Wai and ling all invite-pfv So Mr.
"Wai and Ling (both) invited Mr. So."

Here, in cases where *dōu* putatively means "all" with a plural subject, there is a contrast with a clearly non-quantificational *dōu* in (168). So in examples not involving nominal quantifiers, there is evidence that *dōu* is a stressed D-operator.

The question comes down to whether *dōu* in examples like (166) and (167) is also quantificational. From an English perspective an analysis which can avoid a quantificational treatment of *dōu* in these cases might be welcome, since the double loci of quantification raises challenging questions given the current state of semantic theory. Perhaps it would be a cleaner analysis if nominal quantifiers did not rely on a separate D-operator to get their distributivity.

Just to give a little more Cantonese perspective, I will introduce some more data which I think supports the view that this language simply has this multi-pronged quantificational system. The sentences in (170) are more or less interchangeable.

(170) a. Kéuihdeih chyùhnbouh dōu lèih-saai.
they whole.lot all come-saai
They all came.

b. Kéuihdeih dōu lèih-saai.
they all come-saai
They all came.

c. Kéuihdeih lèih-saai le.
they come-saai prt
They all came.

Here, aside from the nominal quantifier *chyùhnbouh* and the putative D-operator *dōu* there is also the quantificational verbal particle *saai*.[48] According to Matthews and Yip (1994), the primary role of *saai* "all, completely" is to quantify over the subject of an intransitive or either/both argument(s) of a transitive. The sentence in (171) is three-way ambiguous (Matthews and Yip 1994: 222).

(171) Kéuihdeih heui-gwo saai Āujāu.
they go-exp all Europe
a. 'They've been everywhere in Europe.'
b. 'They've all been to Europe.'
c. 'They've all been everywhere in Europe.'

Not only does *saai* sometimes triple up with *dōu* and some nominal quantifier, sometimes it is used with a nominal quantifier in cases where *dōu* is absent (Matthews and Yip 1994: 222).

(172) Nī gāan yīyún dī bìhbī chyùhnbouh yám sāai nī jek
this cl hospital cl baby whole.lot drink all this cl
láaih-fán.
milk-powder
'All the babies in this hospital drink this brand of milk powder.'

The point is that the apparent redundancy of *dōu* is not actually an argument against it being regarded as quantificational.

In the end, I will continue to advocate the analysis of *dōu* given in 4.4.2 as a focussed D-operator corresponding to *even all* in English. The great benefit of this analysis is that it both acknowledges the quantificational nature of *dōu* "all", and also its emphatic nature, which has gone unremarked in the literature. Since the focussed D-operator analysis is inspired by my treatment of *all* in English, it also has some precedent in the analysis of another language as well.

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[48] Matthews and Yip (1994) report that *saai* is peculiar to Cantonese with no direct counterpart in Mandarin. In some uses, *saai* may correspond to Mandarin *gūang*, as in Cantonese *sihk saai*, Mandarin *chi gūang* "eat up", although *saai* has a much broader distribution.

It is interesting to note that Cantonese has another postverbal "quantifying particle" with a distribution matching *saai* which is also absent in Mandarin, namely *màaih*. What is interesting is that *màaih* is an additive particle, which may also co-occur with *dōu* in an acceptably redundant fashion.

(i) Lìhn Bill dōu làih màaih.
even Bill also came along
'Even Bill came along.' Matthews and Yip 1994: 225

Therefore, both the additive particle system and the quantificational system are typically redundant. Note this redundancy of additive particles is found in spoken English , as with (ii) which is acceptable.

(ii) $John_F$ also came too.

See Tang (1996) and Teng (1996) for theoretical studies of *saai*.

This completes my analysis of quantification and *dōu* in Cantonese. The purpose of this section has been to investigate the interactions of distributivity operators and additive particles to achieve domain widening. In the next section I will end the chapter by discussing other possible interactions between additive particles and distributive quantifiers which might further illuminate the analysis.

4.5 More thoughts on the use of additive particles as distributivity markers

In this final section of Chapter Four, I would like to mention two other avenues of research that I have not explored here that might shed some light on systems like Cantonese, and more generally the relation of additive particles to distributivity markers.[49]

Both Gil (1995) and Haspelmath (1995) investigate the diachronic origins of distributive universal quantifiers crosslinguistically, and report that one of the primary sources of distributive quantifiers are free choice determiners. Haspelmath argues that German *jeder* "every; any", which is the cognate of English *either*, was originally a free choice item that has developed into a genuine distributive universal quantifier. He argues that this diachronic change has not been total, however, and so one finds residual instances in which *jeder* may still function as the appropriate German corollary of English free choice *any*. While *jeder* and *any* do not function as appropriate translations of each other in (173) and (174), in (175) and (176) *jeder* still does correspond to free choice *any* (modified from Haspelmath 1995: 375 (19-22)).

(173) G: Jedes Kind bekam zwei Äpfel.
E: Every (*any) kid got two apples.

(174) G: Wenn irgendein (≠ jedes) Kind zwei Äpfel kriegt, will ich auch zwei.
E: If any kid gets two apples, I also want two.

(175) G: Jedes Kind kann das.
E: Any kid can do that. (Or: Every kid can do that)

(176) G: ohne jeden Grund (= ohne irgendeinen Grund)
E: without any reason

If it is true that crosslinguistically free choice items tend to develop into distributive universals, then we might expect to find morphology corresponding to additive particles in the make up of universal quantifiers. As discussed in 3.1, additive particles are typologically common in the makeup of free choice items.

That free choice items might develop into distributive universals is not very surprising given the analysis of free choice I presented in Chapter Three. As discussed there, non-generic free choice items are normally accompanied by a distributivity implicature. That

[49] Gil (1995) discusses several cases in which universal and distributive quantifiers incorporate an additive particle meaning "also" or "even". I have not given a detailed study to any of these languages, but I would assume that in some of these cases an analysis along the lines of stressed determiner *EVERY* would be more appropriate than an analysis as a stressed D-operator like *all*.

this implicature would be reanalyzed as part of the truth conditions in some languages is quite plausible.

A second way to approach this issue is to ask whether additive particles enforce distributivity with plural definites anyways, aside from the presence of a distributivity operator. Winter (2001: 32) and Hendriks (2002: 10) observe that when an additive particle is used with a coordination structure, only a distributive reading is possible.

To take an example, (177) has two readings. On the collective reading, the Americans fought the Russians, and vice versa. This is a collective reading because the predicate *fought each other* does not divide the definite plural into its two salient subparts, the Americans and the Russians. In other words, the Americans fought the Russians and the Russians fought the Americans. This sentence also has a much less salient distributive reading in which the predicate does distribute down to the members of the coordination. Under this distributive reading, the Americans fought amongst themselves and the Russians fought amongst themselves.

(177) The Americans and the Russians fought each other.

Interestingly, when an additive particle such as *too*, *as well* or *also* is used and associated with the latter half of the conjunct, then only a distributive reading is possible. The sentences in (178) only mean that the Americans fought each other and that the Russians fought each other.

(178) a. The Americans and the Russians too fought each other.
b. The Americans as well as the Russians fought each other.
c. The Americans and also the Russians fought each other. Hendriks 2002: 10 (52)

These are just ordinary additive particles, and yet distributivity is being enforced. In these examples, rather than associating with the entire plural definite *the Americans and the Russians*, the particle is associated with a member of the plural. The existential presupposition is seemingly satisfied by the first member of the conjunct.

When additive particles are associated with a whole plural definite, as with the simplex definite in (179), distributivity is not enforced. These examples can each have a collective reading. This is because the existential presupposition is not being satisfied by members of the plural definite.

(179) a. The boys ate a sandwich too.
b. The boys as well ate a sandwich.
c. The boys also ate a sandwich.

However, if somehow a language did allow an additive particle to see inside a simplex definite plural, then the additive particle would be just a very small step from being a distributivity marker. While I do not at this point have firm evidence for this alternative analysis, it is possible that simplex plural definites in a language like Cantonese have some transparency with respect to additive particles that English plural definites lack, and consequently a reanalysis of the data in 4.4 might be in order. I leave off this speculation for now, but I believe that this line of inquiry is worth pursuing.

The preceding discussion demonstrates that the relation of additive particles and distributive markers has possibly more depth than simply being tied to the phenomenon of domain widening. However, crosslinguistically it seems that additive particles are much more rarely found in the morphological composition of distributive markers than in emphatic NPIs and free choice items. I will address this typological fact at the end of next chapter.

CHAPTER FIVE: CONCLUSION

5 Summary of major findings and some final thoughts about additive particles

This thesis has presented an in depth examination of the phenomenon of domain widening. I have claimed that domain widening is not a lexical primitive, but rather the use of non-contradictory focus on a quantifier to assert a strong proposition with a wide contextual variable. The asserted proposition does not contradict other alternatives in discourse, but merely cancels a scalar implicature arising from these weaker alternatives.

Within my analysis there is nothing distinctive about domain widening, and indeed the very label *domain widening* is simply a convenient term to refer to one particular use of focus. Using this label is in not intended to attribute to domain widening an independent status as a special construction in grammar.

I have tried to clarify the properties of this phenomenon which was first identified by Kadmon and Landman (1993). Apart from distilling a vision of domain widening in Chapter Two, dealing with emphatic negative polarity items, this thesis has also presented a novel conception of the relation of free choice to specificity in Chapter Three and furthermore extended the empirical range of this phenomenon by examining domain widening in the case of universal and distributive quantifiers in Chapter Four. In so doing, I demonstrated domain widening is not a special property of *any*.

A central interest of mine has been to relate my main claims about domain widening to the crosslinguistic use of additive particles which have been morphologically incorporated into other quantifiers. I have claimed that, as non-contradictory and scalar implicature cancelling, domain widening always satisfies the presuppositions of *even*. Consequently, this additive particle is often morphologically expressed where domain widening occurs.

To close, I will address a possible shortcoming of tying the presence of additive particles in quantificational expressions to the process of domain widening. Although additive particles do sometimes get used in universal quantification, I have found that crosslinguistically additive particles are much more frequently used in the make-up of negative polarity and free choice items than in universal and distributive quantifiers (despite my reflection at the end of Chapter Four). If the presence of additive particles was simply tied to the phenomenon of domain widening, one would not expect there to be this discrepancy between the emphatic indefinite and universal quantifiers.

I believe an interesting answer to this problem has already been given in the discussion of the peculiar scopal properties of preverbal *yāt* indefinites and emphatic NPIs in Cantonese in 2.4. Recall that preverbal indefinites in negative sentences must be interpreted above negation (1) unless an additive particle *dōu* is used (2), in which case the indefinite must be interpreted below negation.

(1) Yāt go yàhn móuh sihk.
one cl person neg.have eat
(i) ∃¬: 'One person did not eat.'
(ii) ¬∃: * 'Not one person ate.'

(2) Yāt go yàhn dōu móuh sihk.
one cl person even neg.have eat
(i) ∃¬: * 'Even one person didn't eat.'
(ii) ¬∃: 'Not even one person ate.'

I related this difference in scope to the satisfaction of the presuppositions of *dōu* "even". The indefinite in (2) can only sensibly satisfy the presuppositions of *dōu* if it is interpreted within the scope of negation.

We see here the kernel of a new secondary and derivative function for the additive particle. The mere presence of the additive particle may also signal that the indefinite it is associated with has low scope. In other words, what begins as a requirement imposed by the additive particle's presuppositions, that the indefinite be interpreted below negation, may be re-analyzed as a new function of the additive particle in such sentences. This new function is to signal that the indefinite is a polarity item.

Thus, in negative polarity environments the additive particle may acquire a new use that may eventually eclipse its original role as identifying that certain presuppositions have been met. This scope-distinguishing function is useful, and very possibly explains the great tendency to incorporate additive particles into even non-emphatic negative polarity items.[1]

[1] The frequent use of additive particles in free choice items as compared to universal quantifiers may be a consequence of the fact that FCIs are very often drawn from the same stock of words as negative polarity items.

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