Towards a Unified Approach of the Semantics of ‘any’

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Abstract

English *any* has been noted to be associated with two uses, a so called negative polarity (NPI) use and a so called Free choice (FC) use. Each use is associated with a distinct syntactic distribution and apparently a distinct quantificational force. On its NPI use *any* is most naturally interpreted as having existential force and is typically found in so called downward entailing contexts (Ladusaw 1979). On FC use *any* is most naturally interpreted as a universal quantifier and is typically found in contexts which can be interpreted as intensional.

Over the last three decades it has been a matter of discussion whether NPI *any* and FC *any* are two distinct lexical items which simply happen to be morphologically and phonologically homonymous elements or are they a single lexical item with a shared semantic meaning and a distribution which only prima facia seems to be distinct. Until the early 90s, discussion on this issue focused on establishing the quantificational force of *any*: is *any* lexically ambiguous, viz NPI *any* is a reflex of an existential quantifier and FC *any* is a reflex of a universal quantifier or is *any* lexically unambiguous, viz both are reflexes of universal quantifiers or both are reflexes of existential quantifiers? Since the 80s, the existential flavor of NPI *any* has been generally accepted by various arguments to be discussed in section 1. This reduced the discussion to a binary question: Can FC *any* be seen as an existential quantifier on a par with NPI *any* or is it necessarily associated with a universal quantifier?

In a very influential paper, Kadmon and Landman (1993) introduce another possibility: an ‘*any* NP’ is interpreted as the corresponding indefinite ‘*a*-NP’, which, just as ‘*a*-NP’, is interpreted existentially in negative polarity environments and universally in FC (generic) environments, whence the universal flavor associated with FC *any*. Kadmon and Landman’s analysis also introduces another stratum to the discussion of *any*: it examines in addition to the distribution quantificational force of *any*, the semantic function of *any*, and proposes an analysis of *any* which has its restricted distribution
follow from its meaning. They propose that *any* is a noun modifier which has the function of widening the domain of the noun. Since *any* is a widener, they claim it can only occur in those environments in which widening induces a stronger (=more informative) statement in comparison to the statement with a since only in such environments will the use of *any* have any contribution to the ongoing conversation. As they show strengthenening will typically be satisfied in downward entailing environments.

For reasons of space, Kadmon and Landman base their uniform analysis of *any* on examination of a large amount of instances of NPI *any* but only on instances of FC *any* occurring in generic contexts. If Kadmon and Landman’s theory is right, then FC *any* should induce widening and strengthening in other FC environments. This amounts to saying that all other FC licensing environments should be downward entailing and induce strengthening. The goal of this dissertation is to explore this claim: can it be argued that all instances of FC *any* are instances of the same *any* occurring in downward entailing environments? As I show in this dissertation, this is not a simple task. Under an analysis of *any* as an indefinite, other FC environments don’t seem to prima facia induce strengthening from the statement with the *any*-NP to the statement with the *a*-NP. However, I shall argue that a careful examination of some of the central instances of FC *any* can indeed be analyzed convincingly as instantiations of a Kadmon and Landman *any*. I will examine the interaction of *any* with adverbs of quantification and look at *any* in modal environments, imperatives and so called subtrigged episodic environments.
Chapter 1: Introducing the Concern of this Dissertation

0. Introduction

English *any* has been noted to be associated with two uses, each associated with a distinct syntactic distribution and apparently a distinct quantificational force. On its one use *any* is most naturally interpreted as having existential force and is typically found in negative contexts (example 1a and 2a), but not in the corresponding affirmative environments (example 1b and 2b), whence its name negative polarity item (NPI) *any*.

(1) a. I didn’t see any elephants.
    b. #I saw any elephants.

(2) a. I went out without any coat.
    b. #I went out with any coat.

In spite of its name, NPI *any* is not restricted to occurring in negative environments. Besides negation, there are many other environments in which NPI *any* may occur. Among these environments we find the following (for a full list of environments see Klima (1964), Baker (1970), Horn (1972), Ladusaw (1979), Linebarger (1987)):

- **Some adverbials e.g. rarely, but not usually**:  
  (3) a. They rarely invite any friends.  
      b. #They usually invite any friends.

- **Some adversative predicates e.g. doubt, but not be sure**:  
  (4) a. I doubt you’ll find any daffodils in the summer.  
      b. #I am sure you’ll find any daffodils in the winter.

- **Some quantifiers e.g. every, but only in its nominal argument, not in its verbal argument**:  
  (5) a. [NPEvery student who speaks any Semitic language] is exempt from taking this course.
      b. #Every student who is exempt from this course [pred speaks any Semitic language].
• Conditionals, but only in their antecedent argument, not in their consequent argument

(6) a. If you eat any meat, you’re not a vegetarian. (Horn (2005))
   b. #If you are a vegetarian, you eat any meat.

On its other use any is most naturally interpreted as a universal quantifier and is typically found in contexts which can be interpreted intensionally. In these contexts, any calls for free choice of an individual from among all the individuals in the set denoted by the common noun to which it is attached, whence its name, as coined by Vendler (1967), Free Choice (FC) any. Among the contexts licensing FC any we most frequently find environments interpreted intentionally (for a full list of these environments see Horn (1972), Davison (1980), Carlson (1981)):

a. Modal contexts expressing deontic possibility but not ones expressing deontic necessity.

(7) a. You may pick any flower.
   b. #You must pick any flower.

b. Modal contexts expressing epistemic possibility but not ones expressing epistemic necessity.

(8) a. John might be staying at any hotel.
   b. #John must be staying at any hotel.

c. Imperatives

(9) a. Take any chocolate.
   b. #We took any chocolate.

---

1 FC any like NPI any has been noted to be acceptable in antecedents of conditionals. The following sentence is ambiguous between an NPI reading and an FCI reading of any:

• If anyone can move this stone, I’ll be amazed. (Carlson 1981)
  *If there is a person that can move...* (NPI reading)
  *If every person can move...* (FCI reading)

I assume that NPI any is licensed by the universal quantifier over possible worlds introduced by the conditional (see Kadmon and Landman (1993), while FC an in conditionals is licensed by the modal can (as discussed in chapter 3) or an implicit generic quantifier.
d. Future contexts when used in a generic or modal sense, but not when used in an episodic sense

(10) a. I will answer any question at the end of this lesson.
   b. #I will answer any question by the end of this hour.

e. Generics contexts, but not episodic contexts

(11) a. Any owl hunts mice. (Kadmon and Landman (1993))
   b. #Any owl is hunting mice.

Modal contexts, however, are not the only environments licensing *any*. As observed by LeGrand (1975), Davison (1980) and Dayal (1995, 1998, 2004), an ‘*any* NP’ in episodic sentences is rendered acceptable when a subordinate clause or some other post nominal modifier modifying the ‘*any*’ nominal head is present in the sentence. LeGrand called this phenomenon ‘subtrigging’. Contrast, for example, the acceptability of *any* in the following examples. FC *any* is not licensed in (12a, b) since in (12a) there is no modifier and in (12b) though there is a modifier, it is a postnominal modifier. In (12c) FC *any* is licensed by virtue of the relative clause:

(12) a. #I answered any question.
   b. #I answered any obligatory question.
   c. I answered any question that was for credit.

Over the last three decades it has been a matter of discussion whether NPI *any* and FC *any* are two distinct lexical items which simply happen to be morphologically and phonologically homonymous elements or are they a single lexical item with a shared semantic meaning and a distribution which only prima facia seems to be distinct. Until the early 90s, discussion on this issue focused on establishing the quantificational force of *any*: is *any* lexically ambiguous, viz NPI *any* is a reflex of an existential quantifier and FC *any* is a reflex of a universal quantifier or is *any* lexically unambiguous, viz both are reflexes of universal quantifiers or both are reflexes of existential quantifiers? Since the 80s, the existential flavor of NPI *any* has been generally accepted by various arguments to be discussed in section 1. This reduced the discussion to a binary question: Can FC *any* be...
seen as an existential quantifier on a par with NPI *any* or is it necessarily associated with a universal quantifier?

In a very influential paper, Kadmon and Landman (1993) introduce another possibility: an ‘*any* NP’ is interpreted as the corresponding indefinite ‘*a*-NP’, which, just as ‘*a*-NP’, is interpreted existentially in negative polarity environments and universally in FC (generic) environments, whence the universal flavor associated with FC *any*. Kadmon and Landman’s analysis also introduces another stratum to the discussion of *any*: it examines in addition to the distribution and quantificational force of *any*, the semantic function of *any*, and proposes an analysis of *any* which has its restricted distribution follow from its meaning. Specifically, they propose that *any* is a noun modifier which has the function of widening the domain of the noun. Since *any* is a widener, it can only occur in the environments listed above because only in such environments does the widening induce a more informative statement and hence its use is pragmatically justified.

In this dissertation, I will pursue a Kadmon and Landman based analysis of *any* which provides a unified account of *any* under its NPI and FC use. I examine other FC environments beside generic ones and show that the range of interpretations available for an indefinite ‘*a*-NP’ is also available for an FC ‘*any*-NP’. An adverbially bound reading of FC *any* is available in positions in which the corresponding indefinite can be interpreted as adverbially bound. A generic reading of FC *any* is available in positions in which ‘a noun’ can be interpreted as a generic quantifier. These I will show include, in addition to characteristic environments, episodic environments containing a relative clause modifying the ‘*any*-NP; an existential reading of FC *any* is available in positions in which ‘a noun’ can be interpreted as an existential quantifier. These I will show contain contexts which can be interpreted as intensional.

This is plan for the rest of this chapter; in section (1) I review the arguments in favor of unifying both occurrences of *any* under a single semantic definition. In section (2) I review the arguments which have been used to argue that NPI *any* is an existential quantifier. In
section (3), I show that neither is the treatment of free choice *any* as an existential quantifier empirically supportable nor is its treatment as a universal quantifier. In section (4), I present Kadmon and Landman’s theory of *any* which builds on Ladusaw’s downward entailing theory of NPIs. I stress the motivations for maintaining their theory and end the section with a lay out of the remaining unsolved issues about any this dissertation will account for. In section (6) I represent Dayal’s theory which is considered the most challenging theory arguing against Kadmon and Landman’s unified theory of *any* and show how I set out in the next chapters to argue against her analysis. I complete the chapter with a brief examination of 3 theories proposed in the literature for English *any* which provide a unified account of *any*. I discuss their empirical problems and show why Kadmon and Landman’s account is theoretically more elegant than these theories.

1. **Positive evidence in favor of a unified reading of *any***

A unified approach to the analysis of *any* is a desirable goal as many languages contain a single lexical item which is used in negative polarity environments as well as in free-choice environments. Among these languages we find French with lexical item *le moindre* ‘the least’, Hebrew with the lexical item *kol* ‘any’ (to be discussed in chapter 5), Hindi with *ek bhii* ‘any’ and its variants (Kadmon and Landman (1993) Dayal (1998) Lahiri (1998)) and Polish with –*kolwiek* pronouns (Aszczak 1999). As Kadmon and Landman (1993) point out, since *any* has parallels in other languages, it seems unlikely that *any* is lexically ambiguous between NPI *any* and FC *any* due to historic coincidence.

As the following data show, a unified approach to the analysis of *any* is not only crosslinguistically desirable but also empirically supported. First, as observed originally in Horn (1972), both NPI *any* and FC *any* allow modification by ‘whatsoever’ (examples 13a, b). This is a property which is neither compatible with universals nor with existentials (examples 13c, b):

(13) a. He didn’t invite any boy whatsoever.

   b. Any owl whatsoever hunts mice.

   c. #He didn’t invite every/some boy whatsoever.
d. #Every/ some owl whatsoever hunts mice.

Second, both FC *any* and NPI *any* allow modification by an exceptive phrase, a property which has been shown by Horn (1972) to be associated with universals, but not with existentials:

(14)  
   a. He didn’t invite any boy but John.  
   b. Any owl but a very sick one hunts mice.  
   c. He invited every boy but John.  
   d. He invited *some boy but John.

Third, as observed originally in Horn (1972) and Kamp (1973), in all environments where NPI *any* and FC *any* are allowed, a disjunctive phrase can receive a conjunctive interpretation. For example, a conjunctive interpretation of a disjunctive expression is available in the scope of negation (15a), in the scope of a universal quantifier (15b), in the scope of generic statements (15c) and in the scope of the modal *may* (15d)

(15)  
   a. I didn’t see John or Mary.  
   = I didn’t see John and I didn’t see Mary.  
   b. Every student who talked to John or Mary got confused.  
   = Every student who talked to Mary got confused and every student who talked to John got confused.  
   c. A flea or a coyote jumps high = A flea jumps high and a coyote jumps high  
   d. You may see John or Mary = You may see John and Mary

By contrast, in environments in which NPI *any* or FC *any* are not licensed, a conjunctive interpretation of a disjunctive phrase is not allowed either. Thus a conjunctive interpretation of an ‘or’ expression is not available in affirmative statements (16a), in the
scope of an existential quantifier (16b), in episodic statements (16c) and in the scope of the modal *must* (16d):

(16) a. I saw John or Mary.
    ≠ I saw John and I saw Mary.

    b. Some student who talked to John or Mary got confused.
    ≠ Some student who talked to Mary got confused and some student who talked to John got confused.

    c. A flea or a coyote are jumping high. ≠ A flea is jumping high and a coyote is jumping high.

   d. You must see John or Mary. ≠ You must see John and you must see Mary.

If all and only environments licensing *any* in its NPI use or its FC use allow a disjunctive phrase to have a conjunctive interpretation, there clearly must be a uniform semantic meaning property which governs their distribution (I return to a discussion of this property in chapter 3).

To conclude, the data in this section run counter to the proposal that we have two distinct *anys*. In the next section, I represent the evidence that establishes beyond doubt the an *any*-NP is interpreted as existential in NPI contexts.

2. **The existential force of NPI *any***

If we look at extensional negative sentences, *any* indeed can be interpreted as a wide scope universal or a narrow scope existential. This is because ∀x¬P(x) is truth conditionally equivalent to ¬∃xP(x). Sentence (17a), for example, can be paraphrased as (17b) or as (17c):

(17) a. I didn’t see any elephants.

   b. It’s not the case that I saw some elephant.

   c. For every elephant it is not the case that I saw it.
Such freedom in choice of quantificational representation is not available in intensional contexts. As is well known, intensional contexts exhibit ambiguity between a ‘de dicto’ reading and a ‘de re’ reading of an NP expression in their scope. However, as noticed first by Abbott (1976), intensional contexts containing an NP expression with an occurrence of NPI *any* in their scope do not exhibit such ambiguity: an NP expression cannot be interpreted in such contexts as a wide scope universal when the triggering operator for *any* is an explicit negator. (18a) and (18b), for example, can only be associated with a de dicto reading. This is evidenced by the corresponding examples in (19) where the relative clause renders the sentences ungrammatical since it only makes a de re reading available, a reading which is unavailable in the presence of NPI *any*.

(18) a. I don’t think John found any book about koalas.
    b. I doubt you will find any apples

(19) a. ??I don’t believe he found any book about koalas that he had borrowed from the library.
    b. ??I doubt you will find any apples that I bought this week

Assuming that the de re reading is represented by placing the NP outside the scope of the intentional verb and a de dicto reading is represented by placing the NP inside its scope, we see that example (18a) can be translated as ‘I don’t believe ∃x (x is a book about koalas and John found x)’ but not as ‘∀x (x is a book about koalas and I don’t believe John found x)’. This is because the object NP has to be under the scope of *believe*. Similarly example (18b) can only be translated as ‘I doubt ∃x (x is an apple and you find x)’, but not as ‘∀x (x is an apple and I doubt you’ll find x)’.

If we look at non negative triggering environments for *any*, we see that there are environments which like intensional negative contexts don’t allow an ‘*any* NP’ to be interpreted as a wide scope universal quantifier:

(20) a. Every student who speaks any Semitic language is exempt from this course.
b. I doubt you will find any dumb student in this class.

Example (20a) can only be translated as ‘every student who speaks some Semitic language is exempt from this course’ and not as ‘for every Semitic language every student who speaks it is exempt from this course’. Similarly Example (20b) can only be translated as ‘I doubt there is some dumb student in this class’; It can not have an interpretation under which any is interpreted as a universal quantifier which takes wide scope with respect to its trigger to give the interpretation ‘every dumb student is such that I doubt he or she is in this class’.

The existential flavor of NPI any is also supported by the interaction of NPI any with existential there and with so called ‘A-adverbs’ like absolutely and almost; existential there constructions are known to license existentials but to reject universals and A-adverbs are known to be compatible with universals and rule out existentials (examples 21a, b). As observed originally in Horn (1972), an occurrence of NPI any can be embedded in a ‘there construction’ and cannot be modified by so called ‘A-adverbs’ (examples 22a, b):

(21)  a. There is somebody/*everyone knocking at the door.
    b. He ate almost #something/everything put on his plate.

(22)  a. There isn’t anyone outside.
    b. #There isn’t almost anything on his plate.

As the following examples show, the existential flavor of NPI any is not manifested only in negative statements. NPI any allows there insertion (examples 23a, b, c) and excludes modification by A-adverbs (examples 24a, b, c) in other non negative downward entailing contexts.

(23)  a. I doubt there is any daffodil you will find at this time of year.
    b. Rarely there is any friend they invite.
    c. If there is any question on polarity any you want to ask, call me
Let us finally present Ladusaw’s arguments (1979) in favor of an existential treatment of any. The first piece of evidence comes from constructions in which no other quantifier in the position of any can take wide scope. For example, Ladusaw claims that API some is unacceptable in the imperative construction in (25a) because its wide scope preference over negation cannot be fulfilled: an imperative environment does not allow it to get outside the scope of the auxiliary not to mean something like somebody don’t open the window, the only reading available for some in a negative environment. Crucially if some can’t take wide scope, there is no reason, but an ad hoc one, to have NPI any in the imperative construction be interpreted as a wide scope universal:

(25) a. #Don’t somebody open the window.
   b. Don’t anyone open the window.

The second piece of evidence comes from constructions with a triggering element for NPI any inducing an implication which clearly only allows an existential interpretation of any. For example, Ladusaw claims that if we construe NPI any as a universal, sentence (26) will assert (27a) and implicate (27b). On the other hand, if we construe any as an existential, sentence (26) will assert (28a) and implicate (28b). Crucially, because of the implications associated with anymore, both assertions can be logically associated with sentence (26), but only the implication in (28b) is available, the one where any is interpreted as an existential.

(26) John doesn’t want any tacos anymore.

(27) a. Asserts: Every taco is such that John doesn’t want it.
   b. Implicates: Every taco is such that over some past interval John wanted it.

(28) a. Asserts: It is not the case that John wants some tacos.
   b. Implicates: Over some past interval, John wanted some tacos.
To sum, the data presented in this section show convincingly that if NPI *any* contributes any quantification at all, the quantification it introduces can only be existential quantification. Let us turn now to establish the quantificational force of FC *any*.

3. **Assimilating FCI *any* to NPI *any***

Since there is a clear consensus as to the existential flavor of NPI *any*, there has been a tendency to assimilate FC *any* to an existential quantifier on a par with NPI *any* in order to preserve the unity of *any*, which as I showed in section 1 is a desirable goal on crosslinguistic and empirical grounds. Unfortunately, arguing for a univocal existential analysis of *any* is not a simple task.

First, unlike NPI *any*, FC *any* patterns with universals in that like universals FC *any* resists ‘there’ insertion, independently of their quantificational flavor.

(29)  

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td>#There are any flowers for sale.</td>
</tr>
<tr>
<td>b.</td>
<td>#There is anyone that may have stolen my laptop.</td>
</tr>
<tr>
<td>d.</td>
<td>#There is any question I will answer at the end of the lesson.</td>
</tr>
<tr>
<td>e.</td>
<td>#There is any baby that cries.</td>
</tr>
<tr>
<td>f.</td>
<td>#There is any dress that is on sale that Mary wants to buy.</td>
</tr>
</tbody>
</table>

Second, a close look at the environments licensing FCI *any* shows that though some environments licensing *any* favor an existential interpretation of an occurrence of an *any* NP in their scope, there are also environments which favor a universal reading of an *any*-NP occurring in their scope.

---

2 Lee and Horn (1994) present another piece of evidence in favor treating NPI *any* as an existential. they show that NPI *any* and its anaphoric pronoun can be unselectively bound by an operator just like a regular indefinite can and unlike universals:  

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td>If a farmer owns a donkey, he beats it.</td>
</tr>
<tr>
<td>b.</td>
<td>If any farmer owns any donkey, he beats it.</td>
</tr>
<tr>
<td>c.</td>
<td>#If a farmer owns every donkey, he beats it.</td>
</tr>
</tbody>
</table>
In deontic and epistemic possibility statements and in imperatives, FC *any* is most naturally interpreted existentially:

(30)  
   a. You may pick any flower.  
       Paraphrase: *You are permitted to pick some flower, whichever flower you want.*  
   b. Anyone may have stolen my laptop.  
       Paraphrase: *Someone stole my laptop - this person could be whatever person there is.*  
   c. Take any chocolate  
       Paraphrase: *Take some chocolate, it doesn’t matter which.*

In future statements, generic statements and ‘subtrigged’ cases, *any* is interpreted universally:

(31)  
   a. I will answer any question at the end of the lesson.  
       Paraphrase: *all contextually relevant questions are such that I will answer them at the end of the lesson.*  
   b. Any baby cries.  
       Paraphrase: *all babies in contextually relevant situations cry.*  
   c. Mary bought any dress that was on sale.  
       Paraphrase: *all contextually relevant dresses that were on sale are such that Mary bought them.*

Notice that those environments which induce a universal reading of *any* allow modification by A-adverbs while those environments which induce an existential reading of *any* either resist modification by A-adverbs or are judged as marginal. This patterns nicely with the observation that universal quantifiers, but not existentials like *some*, admit modification by A-adverbs. Hence, contrast the acceptability of the examples in (32) with the examples in (33) which range in terms of acceptability from marginal to unacceptable.
(32) I’ll answer absolutely any question at the end of the lesson.
   Absolutely any baby cries.
   Mary bought almost any dress that was on sale.

(33) ?You may pick almost any flower
   ?Absolutely anyone may have stolen my laptop
   #Press almost any key to continue (Ginnakidou 1999)

To conclude this section, what the data presented in this section indicates is that we cannot unify both instantiations of any at least not by an appeal to their quantificational force. Kadmon and Landman (1993) provide another solution. They provide a unified account of any which locates the similarities of the two anys in their semantic function rather than in their quantificational force. The next section will be dedicated to an examination of their theory.

4. Kadmon and Landman’s unified account of any

In a very convincing paper, Kadmon and Landman (1993) give a semantic account of any which aims at providing a unified semantic account of any as well as an explanation of why NPI any and FC any environments appear in the set of environments we find them in. Their analysis takes as a starting point Ladusaw’s (1979) downward entailing account of the distribution of NPIs. Let us thus first introduce Ladusaw’s theory.

4.1 Defining NPI environments as downward entailing functions

Since Klima (1964) discussion of any centered around NPI any and focused on identifying the environments licensing NPI any and unifying them under a core semantic definition. With the aim of providing a characterization of all environments licensing NPIs, Ladusaw (1979, 1980a,b), building on Fauconnier (1975a, 1975b), shows that all environments licensing any are downward entailing and argues that any is licensed if it appears in the scope of a downward entailing operator. Ladusaw defines a downward entailing expression as follows:
An expression d is **Downward Entailing (D.E)** iff
\[ \forall x \forall y [x \subseteq y \rightarrow \text{[S....d(...y...)...]} \rightarrow \text{[S....d(...x...)...]}] \] (Ladusaw 1979: 112)

A downward entailing operator is an operator which induces entailments downward from a statement S containing an expression denoting a set X to the identical statement except that Y a subset of X replaces X in S.

Negation is downward entailing; affirmation is not. Consider the relation between the expressions elephant and baby elephant. The set of baby elephants denoted by the expression *baby elephant* is a subset of the set of elephants denoted by the expression *elephant*. While negation induces entailments downward from a statement containing *elephant* to the identical statement except that *elephant* is substituted for *baby elephant*, affirmation does not induce such entailments:

\[
(34) \begin{align*}
\text{a.} & \quad \text{I saw an elephant} \not\Rightarrow \text{I saw a baby elephant.} \\
\text{b.} & \quad \text{I didn’t see an elephant} \not\Rightarrow \text{I didn’t see a baby elephant.}
\end{align*}
\]

Because negation is downward entailing, it licenses *any* in its scope. Because affirmation is not downward entailing, it doesn’t license *any* in its scope.

\[
(35) \begin{align*}
\text{a.} & \quad \text{I didn’t see any elephants.} \\
\text{b.} & \quad \#\text{I saw any elephants.}
\end{align*}
\]

Similarly, the quantifier *every* is downward entailing with respect to its first argument but is not downward entailing with respect to its second argument; *every* induces entailments downward from a statement containing the expression *elephant* in the nominal argument to the identical statement except that *elephant* is substituted for *baby elephant*: Every elephant has a trunk entails every baby elephant has a trunk. Every does not induce entailments downward from a statement containing *move* in the verbal argument to the identical statement except that *walk*, which denotes a subset of the set denoted by *move* replaces *move*: every elephant moved does not entail every elephant walked. Because *every* is downward entailing with respect to its nominal argument, it licenses *any* in the
subject position. Because *every* is not downward entailing with respect to its verbal position it doesn’t license *any* in the predicate position:

(36) a. \([NP\] Every student who speaks any Semitic language\] is exempt from this course.
    b. *Every student who is exempt from this course \([\text{pred} \text{speaks any Semitic language}\].

Research into the licensing of NPIs has required amendments to the influential Fauconnier/Ladusaw hypothesis. This is because there are contexts which license *any* which are not D.E and there are contexts which are D.E and yet don’t license *any*. This has led to such innovations as Heim’s (1984) restricted definition of downward entailment, Von Fintel’s (1999) use of Strawson downward entailment and Horn’s (2002) account of assertoric inertia which permit NPIs to ignore certain aspects of meaning. Still, Ladusaw’s theory of NPIs gives a unified semantic definition of the class of environments licensing *any*, which follows from their truth conditional meaning and, crucially, is independent of their ability to license NPIs. It is thus of no surprise that his theory is considered the point of departure on which subsequent theories of *any* continue to build.

4.2 Kadmon and Landman (1993)

Ladusaw’s downward entailing condition on the acceptability of NPI *any* is not related in any way to the meaning NPI *any* itself nor is it related to its FC use. Kadmon and Landman (1993) give a semantic account of *any* which aims at providing a unified semantic account of *any* which relates the distribution of *any* on both its manifestations to its semantic interpretation. They discuss NPI *any* and FC *any* in generic subject positions, and hypothesize that their account of the semantics of *any* can be extended to other FC environments.

They suggest that an ‘*any*-NP’ is an indefinite NP corresponding to the regular indefinite ‘*a*-NP’ with the meaning of *any* added to the range of meanings normally available for an indefinite NP. An existential reading of *any* is available in positions in which an ‘*a* NP’ can be interpreted as an existential and a universal reading of *any* is available in positions in
which an ‘a NP’ can be interpreted as a generic quantifier, whence the universal flavor of FC any in generic contexts.

Kadmon and Landman propose that any has the function of contextually widening the extension of the common noun it attaches to relatively to its extension when attached to a. Consider the following example with an occurrence of NPI any, uttered in a context where you have been told not to pick a rare flower.

(37)  A: I didn’t pick a flower [where, flower = a contextually determined narrow domain of flowers- the set of protected flowers]
B: Not even a ragwort?
A: No, I didn’t pick any flower [where flower = a contextually determined wider domain of flowers, the set of protected + non-protected flowers.]

When speaker A utters I didn’t pick a flower in this context, the meaning of flower is naturally taken to be a contextually restricted domain of flowers, the domain of protected flowers; in switching to the corresponding statement with any, speaker A instructs speaker B to consider a wider construal of flowers; he instructs him to consider a domain of flowers which contains protected as well as non protected flowers.

The same widening effect is associated with FC any. As illustration consider their owl example

(38)  A: An owl hunts mice.
B: Right. But of course, a sick one doesn’t.
A: Wrong. Any owl (sick or healthy) hunts mice.

When speaker A utters an owl hunts mice, the meaning of owl is taken to be a contextually restricted domain of owls, containing healthy owls; in switching to the corresponding statement with any, speaker A instructs speaker B to consider a wider construal of owls, which contains healthy or sick owls.
To account for the licensing of any, Kadmon and Landman introduce a semantic-pragmatic constraint; they suggest that any is licensed if the widening associated with any induces truth conditional strengthening of the statement in which it occurs in comparison to the statement with the corresponding indefinite determiner a. This will be the case if the wide interpretation associated with the statement with any, entails the corresponding narrower interpretation associated with the statement with a.

Given that the meaning of any is that of widening, the strengthening requirement on its licensing will only be satisfied in downward entailing contexts; only in downward entailing contexts, which induce entailments downward from the statement with the more general expression to the statement with the less general expression, will the widening associated with any (which makes an expression more general) create a stronger statement. This is why any is acceptable in negative but not affirmative statements:

(39)  

a. I didn’t pick any flowers [some flower from the widest construal of flowers]. $\rightarrow$

I didn’t pick a flower [some flower from the narrowest construal of flower].

b. $\#$I picked any flowers [some flower from the widest construal of flowers]. $\nrightarrow$

I picked a flower [some flower from the narrowest construal of flower].

This is also why any is acceptable, in generic but not episodic statements. FC any is licensed in (40) because the generic operator which has been argued to be associated with a universal quantifier over worlds and individuals induces entailments downward from the statement containing the more general expression any owl to that containing the less general expression an owl.

(40)  

\[
[\text{Any owl} \ [\text{healthy or sick}] \text{ hunts mice}] =
\]

$\forall_{w,x}: w \text{ is epistemically accessible from } w_0 \land \text{owl}_{\text{healthy or sick}} \ (x, w) \rightarrow \text{hunts mice} (x, w).$

$\Rightarrow$

\[
[\text{An owl } [\text{healthy}] \text{ hunts mice}]
\]

$\forall_{w,x}: w \text{ is epistemically accessible from } w_0 \land \text{owl}_{\text{healthy}} \ (x, w) \rightarrow \text{hunts mice} (x, w).$
In non generic contexts strengthening will not be satisfied: if there are some owls from a wide construal of owls which hunted mice it doesn’t necessarily follow that there are some owls from a narrow construal of owls that hunted mice

\[(41) \quad \left[\text{Any owl [healthy or sick] hunted mice}\right] = \exists x \text{owl}_{\text{[healthy or sick]}} (x) \land \text{hunts mice} (x).
\]

\[\not\Rightarrow\]

\[\left[\text{An owl [healthy or sick] hunts mice}\right] \quad \exists x \text{owl}_{\text{[healthy]}} (x) \land \text{hunts mice} (x).
\]

Here is Kadmon and Landman’s summary of their 3 main features:

- **The syntactic category of any**: An indefinite equivalent to \(a\)
- **The semantic function of any**: *any* widens the domain of individuals denoted by the noun in comparison to the domain of individuals denoted by the noun when \(a\) is used. The widening is done along a contextually given dimension.
- **The licensing condition on any**: *any* is licensed iff the statement with *any* is stronger than (=entails) the corresponding statement with indefinite *a*.

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3 Krifka (1989, 1995) offers a similar analysis of NPI *any*. According to Krifka, a noun phrase with *any* is interpreted as the weakest (least specified) element among a set of alternatives introduced by *any*, which are ordered by a relation of strength (specificity). Strength is defined by the algebraic concept of set inclusion: an expression \(\alpha\) is stronger than an expression \(\beta\) iff \(\llbracket\alpha\rrbracket \subseteq \llbracket\beta\rrbracket\), or for propositions if \(\llbracket\alpha\rrbracket \Rightarrow \llbracket\beta\rrbracket\). For example, *every man* is a stronger expression than *some man* because (under a generalized quantifier interpretation of noun phrases) \(\llbracket\text{every man}\rrbracket \subseteq \llbracket\text{some man}\rrbracket\). Given that a noun phrase with *any* is interpreted as the weakest element among a set of stronger alternatives, NPI *any* will only be acceptable in a negative or other downward entailing environment, since only such environments will create the strongest proposition among a set of corresponding alternatives. However, Krifka’s account considers NPI *any*, but not FC *any*. Since in this dissertation I am examining the implications of a unified theory, I will not discuss his account further. A similar account is offered in Chierchia (2006) who claims that NPI and FC items involve domain widening that activates alternatives but he claims that NPI and FC items involve domain widening that activates different alternatives. Since I am pursuing a uniform analysis of *any*, I will not discuss his theory either.
4.3 **An evaluation of Kadmon and Landman’s theory**

There are 4 welcome consequences of Kadmon and Landman’s analysis:

1. It provides one uniform semantic analysis of *any*.

2. It provides one uniform condition that constraints the distribution of both *anys*.

3. It relates the meaning of *any* to its particular distribution: since *any* widens and is licensed by strengthening, it must occur in downward entailing environments because only in environments of this sort will widening induce a stronger statement.

4. It accounts for the double quantificational flavor associated with *any*: being an indefinite, an *any*-NP like the corresponding regular indefinite *a*-NP can be interpreted as an existential quantifier in environments inducing an existential reading and as a universal quantifier in environments inducing a generic reading.

For reasons of space, Kadmon and Landman base their uniform analysis of *any* on an examination of a large amount of instances of NPI *any* but only on an examination of instances of FC *any* occurring in generic contexts. If Kadmon and Landman’s theory is right, then FC *any* should induce widening and strengthening in other FC environments. This amounts to saying that all other FC licensing environments should be downward entailing and induce strengthening. The goal of this dissertation is to explore this claim: can it be argued that all instances of FC *any* are instances of the same *any* occurring in downward entailing environments? As I show in the following chapters, this is not a simple task. Under an analysis of *any* as an indefinite other FC environments don’t seem to prima facia induce strengthening from the statement with the *any*-NP to the statement with the *a*-NP. However, I shall argue that a careful examination of some of the central

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4 There is another welcome consequence to Kadmon and Landman’s theory: their analysis of widening and strengthening accounts for the acceptability of *any* in those environments which are not strictly speaking D.E (the scope of antecedents of conditionals) and for the unacceptability of *any* in those environments which are strictly speaking D.E. (the scope of the quantifier *each*)
instances of FC any can indeed be analyzed convincingly as instantiations of a Kadmon and Landman any. I will examine the interaction of any with adverbs of quantification and look at any in modal environments, imperatives and so called subtrigged episodic environments.

This is the plan for the rest of this dissertation:

- **In chapter 2**, I am going to examine the occurrence of any in generic contexts containing an adverb of quantification. I will discuss Dayal’s (1995, 1998, 2004) argument that FC any cannot be seen as an instance of a generic indefinite in generic statements. I shall show that the data she provides does not in fact provide evidence against Kadmon and Landman’s account of FC any as an indefinite;

- **In chapter 3**, I am going to examine the occurrence of any in modal contexts and offer an analysis of the data, which maintains Kadmon and Landman’s account of any as an indefinite determiner with extra properties of widening and strengthening.

- **In chapter 4**, I am going to account for the acceptability of any in episodic statements, which maintains the treatment of any as an indefinite

- **In chapter 5**, I provide evidence from Hebrew for adhering to a unified analysis of any

Before I complete this chapter, I will look at five other major theories of any – Dayal’s (1995, 1998, 2004) theory which argues against Kadmon and Landman’s unified indefinite analysis of any and four other major theories which attempt to give a unified indefinite analysis of any. I will show why I prefer to stick to Kadmon and Landman’s theory.

5. **Dayal’s analysis**

Dayal’s account of any constitutes the most challenging theory against Kadmon and Landman’s unified indefinite analysis of any. Dayal presents three pieces of evidence against treating FC any as a generic indefinite. The first piece of evidence she presents
comes from adverbs of quantification; she shows that while an indefinite interpreted generically can be bound by an adverb of quantification, an ‘any-NP’ resists such binding just as an ‘every-NP’ does:

(42)  
  a. An owl usually hunts mice.  
  b. Any owl usually hunts mice.  
  c. Every owl usually hunts mice.

(43)  
  a. A lion is usually majestic.  
  b. #Any lion is usually majestic.  
  c. #Every lion is usually majestic.

(42c) can either be associated with a frequency reading asserting that every typical owl hunts mice or with an adverbially bound reading asserting that an occasional owl hunts mice. (42b) like (42c) and unlike (42a) can only have a frequency reading asserting that every owl occasionally hunts mice. (43b) like (43c) is rendered ungrammatical because the frequency reading, which is according to Dayal the only reading available in the presence of any, is ruled out by the presence of an individual level predicate which rejects such a reading.

The second piece of evidence Dayal provides comes from modal contexts. Dayal shows that any is licensed in possibility contexts even when the corresponding indefinite ‘a-NP’ does not have a generic reading. Hence any is acceptable in (44a) expressing deontic possibility and in (44b) expressing epistemic possibility even though substituting a regular indefinite a-NP for ‘any-NP’ does not yield a generic interpretation. Sentences (45a) and (45b) have existential interpretations:

(45)  
  a. You must pick a flower.  
  b. #You must pick any flower.  
  c. A student must work hard.  
  d. Any student must work hard.

5 In support of Kadmon and Landman’s treatment of FC any as a generic indefinite, Dayal shows that any can be licensed in necessity contexts when a corresponding indefinite receives a generic reading. Contrast the acceptability of any in examples b and d. c but not a can be interpreted generically.
Her third piece of evidence comes from subtrigged cases. Dayal observes that an ‘any-NP’ is licensed in episodic statements containing a relative clause modifying the any-NP even though the corresponding statement with an indefinite ‘a-NP’ does not have a generic reading; example (46a) is acceptable even though the corresponding statement with an indefinite ‘a-NP’ has an existential reading (example 46b). As Dayal notices, (46c) with every is in fact the closest semantic equivalent of (46a):

(46) a. John talked to any woman who came up to him.
   b. John talked to a woman who came up to him.
   c. John talked to every woman who came up to him.

This leads Dayal to endorse a lexically ambiguous analysis of any which postulates the existence of two distinct anys – NPI any which has existential quantificational force and FC any which has universal quantificational force.6

She proposes that FC any is an inherently intensional universal quantifier whose domain of quantification is the set of possible individuals of the relevant kind rather than a set of particular individuals. Formally, in her analysis any is a modal universal quantifier which quantifies over pairs of individuals and situation. In a generic context we would have two operators, one contributed by the any NP and one by the VP as is claimed to be the case7

6 Dayal also argues against K and L’s notion of widening. She observes that a partitive construction fixes the domain to a contextually given set, whence rejecting any subsequent widening. This according to Dayal provides evidence against the notion of widening.

You may take any of these apples
I will deal with these cases in a separate paper.

7 An immediate problem, as Giannakidou already, observes is why the genericity inherent to any does not suffice to make any acceptable in the absence of VP genericity.

#Yesterday any owl hunted mice
Any owl hunts mice
\( \forall s, x \ [\text{owl}(x, s) \land C(s) \land \text{GEN} \ s' \ [s' < s' \land C' (s')] \ \exists y \ [(\text{mice} \ (y, S') \land \text{hunt} \ (x, y, s'))]] \)

All contextually relevant \( s \) that have an owl in them generally extend to situations in which an owl hunts mice

To account for the distribution of \textit{any}, Dayal introduces the constraint of ‘contextual vagueness’ which says that the use of \textit{any} must not give rise to an interpretation in which the speaker identifies the individuals which verify the sentence.

- \textit{Any} \ (A) \ (Op B) is felicitous iff \( A \cap B \) is not contextually salient in any relevant world; where Op may be \( \Diamond \) (possibility), \( \Box \) (necessity), \( \neg \) (permission), \( ! \) (obligation) or null.

Dayal doesn’t discuss the satisfaction of this constraint in generic contexts, but we can check this ourselves: Under this constraint and given Kadmon and Landman’s theory of genericity, \textit{any} is licensed in a generic statement such as (47) because we do not definitely know which individuals are quantified over when we utter a generic statement and which are considered exceptions. In the corresponding episodic statement \textit{any owl hunted mice}, there is no toleration of exceptions and the set of owls hunting mice is contextually salient.

Since in the next chapters I am going to argue extensively against each of Dayal’s arguments against an indefinite analysis of FC \textit{any}, I will postpone the evaluation of her theory to the next chapters and just point to the inelegancy of assuming two \textit{anys}. As the title of this dissertation indicates, this dissertation aims at avoiding the postulation of two \textit{anys}.

6. \textbf{Unified indefinite based approaches of any}

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8 Building on Dayal’s work, Menendez - Benito (2006) attempts to save Dayal’s account, in cases where her theory is not sufficient to account for the data, by adding to the wide scope universal representation an exclusivenesness condition (which she casts in the framework of Kratzer’s and Shimoyama’s (2002) alternative semantic account of indefinites). Since I argue that Dayal’s basic observations are wrong, I will not explore her theory any further.
6.1 **Lea and Horn (1994)**

Lee and Horn (1994) interpret both instantiations of *any* as end-of-scale indefinites equivalent to indefinite *a* modified by *even*. Given the semantics of *even* (Horn (1969, 1971), Fauconnier (1975), Karttunen and Peters (1979), Kay (1990)), an indefinite *any* determiner indicates that a proposition p holds for the least likely quantity or kind bearing the common noun property. Parallel to Kadmon and Landman, Lee and Horn interpret FC *any* as an indefinite interpreted generically.

According to Lee and Horn, the licensing of *any* depends on the possibility of construing a likelihood scale as required by the semantics of *even*; the scale can be of a quantity type (= the elements on the scale are quantities of a CN: one problem, two problems and so on) or of a kind type (= the elements on the scale are kinds of a CN: the most difficult problem, difficult problem and so on). The presence of a quantity scale is diagnosed by the possibility of substituting the indefinite *a* for *even a single* and the presence of a kind scale is diagnosed by the possibility of replacing the indefinite *a* for *even + superlative* (e.g. *the most stupid boy*). The contexts which permit this substitution are those satisfying the downward entailing condition, whence the licensing of *any* in their scope. Consider, for example, the following sentences: *any* is licensed in the negative sentence (48a) but not in the corresponding affirmative sentence (49a) because *any* can be substituted for *even a single* in the former sentence but not in the latter one, as sentences (48b, 49b) show. FC *any* is licensed in contexts expressing deontic possibility (50a) but not in contexts expressing epistemic necessity (51a) because it can be substituted for *even the simplest* in the former sentence but not in the latter, as sentences (50b, 51b) indicate:

(48)  
   a. John didn’t invite any friends.  
   b. John didn’t invite even a single friend.

(49)  
   b. ?John invited even a single friend.
(50) a. Any boy could have done this
    b. Even the tidiest boy could have done this.

(51) a. *Any boy must have done this
       b. ?Even the tidiest boy must have done this.

6.2 Tovena and Jayez (1999a)

Tovena and Jayez view any in both its NPI and FC uses as a non quantificational abstract scalar item along the lines of Lee and Horn (1994) which indicates that some property holds even of an object located at the end point of an appropriate scale, viz, which is least expected to have or not to have a certain property. To account for the licensing of any, they introduce an informational constraint they call ‘non-individuation’ which says that an ‘any’ statement is grammatical if the information conveyed by the sentence is not reducible to a referential situation in which a fixed set of individuals satisfy the truth of the sentence. Consider the occurrence of any in the following examples:

(52) a. Mary didn’t pick any flower.
       b. Any owl hunts mice.

In (52a), the function of any is to indicate that Mary didn’t pick even the flower she was least expected not to pick, she didn’t pick even a widely common flower or a wilted flower. Since the truth of the sentence does not depend on reference to a particular set of flowers - the set of flowers which have not been picked does not matter- any is licensed. In (52b) the function of any is to indicate that even the least expected owl hunts mice, even a very young or very sick owl hunts mice. It is licensed because no reference is made to a particular set of owls.

If we look at the corresponding non licensing environments for any, we see that non individuation is not satisfied:
(53)  a. Mary picked any flower.
   b. Any owl hunted mice.

In (53a), reference is made to a particular set of flowers, viz to all flowers existing in the actual world. In (53b), reference is made to the set of all actual owls existing in this current world.

6.3 **Evaluation of Lee and Horn’s and Tovena and Jayez’s theories**

If we look closely at the theory of Lee and Horn and at the theory of Tovena and Jayez, we see that by virtue of the incorporated *even* component in the semantics of *any*, in particular its indication of the element(s) for which the proposition is least likely to hold, *any* under their theory has the effect of widening the domain of the common noun over which it quantifies relatively to the domain of the common noun when quantified by indefinite *a*: while indefinite *a* indicates that the statement holds only of typical individuals with the common noun property elements for which the proposition normally does hold, indefinite *any* indicates that the statement holds for non typical individuals bearing the common noun property as well as for typical individuals.

Kadmon and Landman’s theory however, has an advantage over these theories: it provides a distributional constraint which follows from its semantic function: since *any* has the function of widening the domain, such widening will only make an informative contribution in environments where the statement with the more general expression is stronger than the statement with the more specific expression. The two scalar theories provide a constraint which does not follow from the meaning they provide for *any*.

In addition, Lee and Horn’s and Tovena and Jayez’s distributional constraint on the licensing of *any* suffers from the problem of under-licensing. Consider the occurrence of *any* in deontic modal contexts.

(54)  a. You may pick any flower.
   b. #You must pick any flower.
According to Lee and Horn’s theory, any is predicted to be acceptable in (55a), which expresses deontic possibility (permission) but unfortunately it wrongly predicts any to be grammatical in (55b), which expresses deontic necessity. This because both occurrences of any can be substituted for even + superlative:

(55)  a. You may pick even the rarest flower.
     b. You must pick even the most wilted flower.

According to Tovena and Jayez’z ‘non individuation’ constraint on the licensing of any, the information conveyed by both statements is not reducible to a referential situation in which a fixed set of individuals satisfy the truth of the sentence. No reference to a particular fixed set of flowers is made. This wrongly predicts that any should be grammatical in both deontic possibility and deontic necessity statements.

6.4 Giannakidou (1999, 2001)

Following Zwarts’ (1995) non veridical account of the licensing of any, Giannakidou (1999, 2001) claims that FCI any like NPI any are indefinites which are not licensed in the scope of a veridical operator.

A propositional operator Op is defined as veridical if the truth of Op p in a given context requires that p be true in some individual’s epistemic model:

Let c be a context which contains a set M of models relative to an individual x.

a. A propositional operator Op is veridical iff \([Op \, p]_c = 1 \Rightarrow [p] = 1\) in some epistemic model ME(x) \(\in c\); otherwise Op is nonveridical.

b. A nonveridical operator Op is antiveridical iff \([Op \, p]_c = 1 \Rightarrow [p] = 0\) in some epistemic model ME(x) \(\in c\).

Negation unlike affirmation is characterized as an anti veridical operator because p=\(\neg\)o. Accordingly, under Giannakidou’s theory, NPI any is licensed in (56a) because negation is an anti- veridical context: if it’s not the case that John invited any friends is true then it must be the case that John invited any friends is false. In (56b), any is not licensed.
because affirmation is a veridical context. If it is the case that John invited any friends is true, then John invited any friends must be true too.

(56) a. John didn’t invite any friends.
    b. #John invited any friends.

According to Giannakidou a determiner is defined as veridical if the truth of [DET NP VP] requires the set denoted by the NP to be non empty.

A determiner DET is veridical wrt its NP argument iff it holds that: $\left[ \text{DET NP VP} \right]_c = 1 \Rightarrow \left[ \text{NP} \right]_c \neq \emptyset$; otherwise, DET is nonveridical.

A universal quantifier is characterized as a non veridical operator because the extension of NP may be empty; Since a generic operator is associated with universal force, a generic operator will also be characterized as non veridical. Accordingly, under Giannakidou’s theory, FC any is licensed in (57a) because genericity is a non-veridical context: if it is the case that all typical owls hunt mice, then it is quite possible that the set of owls is empty. By contrast, any is not licensed in (57b) because a negative episodic statement is veridical. If it is the case that any owl hunted mice is true, it must be the case that the set of owls is non empty

(57) a. Any owl hunts mice.
    b. #Any owl hunted mice

Giannakidou claims that any is a special indefinite in that it cannot be bound by a default existential quantifier as a regular indefinite can. In environments licensing any such as negation, where no other quantificational operator is present, existential closure can apply because there is some nonveridical operator taking scope over the existential closure. Giannakidou claims that the universal flavor of any from a conversational implicature which requires any to occur in nonveridical sentences that provide alternative worlds such that the value of the FC any variable must varies from world to world, whence the universal flavor of any. In extensinal contexts, e.g., with episodic negation
and questions, there are no worlds that can serve as i-alternatives, and the implicature is cancelled.

a. *Any* $P$ is an extensional indefinite of the form $P(x)$, where $x$ is an individual variable.

b. The $x$ variable is dependent: it cannot be bound by a default existential, unless there is another nonveridical operator above the existential at the sentence level. If the nonveridical operator is a $Q$-operator, then the $Q$-operator binds the $x$ variable, as is standardly the case with indefinites.

c. It is conversationally implicated that there are i-alternatives such that: $\forall w_1, w_2 [\alpha]^{w_1} \neq [\alpha]^{w_2}$, where $\alpha$ is the *any* $P$.

6.5 **Evaluation of Giannkidou’s theory**

Giannakidou’s veridicality condition on the licensing of *any* was introduced by Giannakidou in order to deal with the problems of raised by a downward entailing account such as under licensing and indeed her non veridical constraint on the licensing of any manages to provide an account of the licensing of *any* in environments which are not strictly speaking Downward entailing such as *only* ‘only John bought anything’ or imperatives ‘pick any flower’ – both only and the imperative operator are non veridical contexts.

The problem of Giannkidou’s theory is of a different nature: Giannakidou’s distributional constraint on the licensing of *any* does not follow from its meaning and in fact aside from claiming that any is a special kind indefinite Giannakidou does not provide a unified account of the meaning of *any* itself.

6.6 **Aloni’s alternative semantic account of *any* (2002, 2006)**

Aloni (2002) adopts Kadmon and Landman’s account of *any* and views *any* as an indefinite which induces widening and involves strengthening. Following Kratzer and Shimoyama (2002), Aloni proposes a Hamblin style semantics for indefinites. Under this
semantic account, indefinites induce sets of propositional alternatives- they tell us that at least one element of a larger set of alternative propositions is true but do not tell you which it is. These alternatives get selected and bound by quantificational operator. Being a widener which is licensed by strengthening, FC any must get bound by an operator over sets of alternatives which is universal in its nature. In (Aloni 2002), Aloni proposes to treat modal operators as quantifiers over alternatives and suggests that may introduces universal quantification over alternatives and must introduces existential quantification over alternatives, whence the licensing of any in the scope of may, but not must. In chapter 5, I will thoroughly discuss Aloni’s theory and compare it with mine. In the meantime, let me just point out the inelegancy in treating may and must as quantifiers with two quantificational forces, a standard one over worlds, and one over propositions.⁹

⁹ See also Aloni (2007 a, b), where Aloni gives a similar account of free choice items in imperative and episodic statements. She introduces an exhaustiveness operator and claims that FC items involve the application of a covert exhaustiveness operator in addition to an application of a covert universal quantifier.
Chapter 2: Quantificational Variability

0. Introduction

In this chapter I am going to discuss Dayal’s argument that free choice any cannot be seen as an instance of a generic indefinite in generic statements. I shall show that the data she provides does not in fact provide evidence against Kadmon and Landman’s account of FC any as an indefinite; indeed, the data she looks at, when examined more closely, in fact, provides an empirical positive test in support of Kadmon and Landman’s theory. Specifically, Dayal claims that unlike an a-NP, an any-NP cannot be bound by an adverbial present in the sentence; this, she claims, indicates that an any-NP cannot be an indefinite. I show that Dayal’s conclusion is based on an examination of a narrow set of adverbials and examples. Once we consider other adverbials and examples, we see that the acceptability of any under a wide scope reading of the adverbial depends on the monotonic properties of the adverbial. If the adverbial is downward entailing and induces strengthening, FC any can appear in its scope. This shows that any shares with a the property of being able to be bound by an adverbial, but unlike a it is sensitive to the monotonic properties of the adverbial.

After convincing the reader that any can get its quantificational force from an adverbial in generic statements, I examine the semantic effect of an adverbial on the truth conditions of the statement and the exceptions the statement can tolerate. I end with a formal representation of an adverbially bound indefinite reading.

1. Apparent differences between FC any and indefinite a in generic statements containing adverbs of quantification

A well known fact is that an indefinite NP in generic statements can get bound by an adverb of quantification present in the sentence instead of the covert generic operator. An FC any, on the other hand, cannot apparently get its quantificational force from an adverb of quantification. Consider the available readings for the following pair of sentences:

(1) a. A professor is sometimes wrong.
   b. Any professor is sometimes wrong.
(1a) with the indefinite a-NP can most prominently be interpreted as saying that every typical professor is such that in some contextually relevant situations he or she is wrong. This reading, which I represent as in (2a), is called a frequency reading. (1a) can, however, also be interpreted as saying that some professors are such that they are generally wrong. This second reading, which I represent as in (2b), is induced by an adverbial bound indefinite reading. I will henceforth call it an adverbial bound indefinite reading.

(2) a. Gen x [[professor(x)] Some s [wrong(x, s) ∧ C(s)]]
   Paraphrase: Every typical professor is such that in some contextually relevant situations he is wrong.

b. Some x, s [[professor (x, s) ∧C(s) ] [wrong(x, s)]]
   Paraphrase: Some contextually relevant situations containing a professor x are such that x is wrong in that situation.  

Under the frequency reading the adverbial takes scope over the nuclear scope and accordingly gets to bind the situation variable which is mapped onto the nuclear scope, but not the variable introduced by the indefinite which is mapped onto the restrictive clause; under the adverbial bound reading, the adverbial takes scope over the restrictive clause and binds the variable introduced by the indefinite. The generic operator takes scope over the nuclear scope where it binds the situation variable introduced in the nuclear scope. Unlike (1a), (1b) with the any-NP can only be associated with the frequency readings. It does not permit quantificational variability.

The difference between the statement with the a-NP and the statement with the any-NP is revealed even more clearly with examples containing individual level predicates. Individual level predicates do not allow a narrow scope adverbial reading, viz, a frequency reading. Thus, in the presence of an individual level predicate, a generic statement containing an any-NP subject and an adverbial is rendered unacceptable under either reading because the narrow scope adverbial reading, which

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1 There is a less salient reading in which some only binds the indefinite variable and the generic quantifier quantifying over the nuclear scope binds the situation variable.
Some x [professor (x)] Gen s[CR(s,x) ∧ wrong(x, s)]
Some professors are such that they are generally wrong.
This extra reading of the sentence will not affect the validity of my account and I will ignore it.
is the only reading available for an *any*-NP statement, is ruled out by virtue of the individual level predicate.

(3) a. A lion is generally majestic.
   b. #Any lion is generally majestic.

(3a) with the individual level predicate *majestic* only has a reading which states that the majority of lions are majestic; (3b) cannot be associated with this reading and, since no narrow scope adverbial reading is available due to the presence of the individual level predicate *majestic*, the statement is rendered unacceptable.

For people who find it difficult to view *majestic* as an individual level predicate, and hence do get a frequency reading for (3a) as well as (3b), consider as another example the contrast in available readings for the following pair of sentences involving the individual level predicate *wooden*.

(4) a. A table is sometimes wooden.
   b. # Any table is sometimes wooden.

While (4a) with the individual level predicate *wooden* has a reading which states that an occasional table is wooden, (4b) cannot be associated with this reading and, since the frequency reading is ruled out due to the presence of the individual level predicate *wooden*, the statement is rendered unacceptable.

According to Dayal, the contrast between the readings available for a generic statement with an *a*-NP subject and the corresponding statement with an *any*-NP subject indicates that an *any*-NP cannot be an indefinite: If an *any*-NP is an indefinite then it should be associated with all the readings that an ordinary indefinite NP, ‘a N’ is associated with. Furthermore, such examples, Dayal says, provide evidence for her claim discussed at length in chapter 1 that an *any*-NP is inherently universal because like *any* statements, universal statements containing an adverbial cannot be associated with a wide scope adverbial reading. This is because the universal quantifier introduces an explicit quantifier with universal force which gets its restriction from the common noun to which it is attached:
a. Every professor is sometimes wrong.

\[ \forall x \left[ \text{professor}(x) \Rightarrow \exists s \left( \text{wrong}(x, s) \land \text{C}(s) \right) \right] \]

Paraphrase: every professor is such that in some contextually relevant situations he is wrong.

c. \#Some x,s \left[ \text{professor}(x, s) \land \text{C}(s) \land \text{wrong}(x, s) \right]

Paraphrase: some professors are such that they are wrong in some contextually relevant situations.

(5a) is only associated with a frequency reading given in (5b) which states that every professor is occasionally wrong; it cannot be associated with the wide scope adverbial reading given in (5c). (6a) is unacceptable because the only reading available for a universal statement containing an adverbial, a frequency reading, is ruled out by the presence of the individual level predicate wooden.

1.1 An evaluation of Dayal’s quantificational based argument

Dayal’s evidence for the non quantificational variability of an any –NP is based on a narrow set of examples; If Dayal is right and an any NP, unlike an a NP, is not subject to quantificational variability, then an any NP should not vary in its quantificational force with respect to any other adverbial present in the sentence. But, if we can find examples containing other adverbials in which an NP does receive the quantificational force of the adverbial, then Dayal’s apparent evidence underlying her claim that an any NP is not an indefinite will be invalid; a direct consequence of this is that Kadmon and Landman’s claim that an any NP is an indefinite (and not some unusual quantifier), will not lose its force.
In what follows, I show that an adverbially bound *any* reading represented by the form Adv [restrictive clause… NP(x)...] [nuclear scope …], where x is a variable introduced by an *any*-NP is in fact available for an *any*-NP, but only when the adverbial operator is downward entailing on its first argument; This in turn will show that *any* on a par with *a* can be bound by an adverbial, only that not every adverbial can serve as an adequate binder – only those which are downward entailing on their first argument and hence induce strengthening can bind an *any*-NP. I’ll then outline the problem that arises by the proportional adverbials *usually* and rarely which are not downward entailing on their first argument (or second) and yet allow for a wide scope adverbial reading.

I conclude that if an *any*-NP, like an *a*-NP, and unlike an *every*-NP, is subject to quantificational variability then Dayal’s evidence for rejecting the treatment of an *any*-NP as an indefinite is unsubstantial. Furthermore, remember the question we are addressing in this thesis is whether there is support for Kadmon and Landman’s claim that all instances of FC *any* are instances of the same *any* occurring in Negative polarity environments; if the possibility of FC *any* being bound by an adverbial depends on the monotonic properties of the adverbial, we will have evidence in favor of viewing FC *any* as equivalent to NPI *any* – viz treating both as wideners which as such require an environment inducing strengthening.

2. **Wide scope adverbial reading of *any*-NP subjects in generic statements**

To the class of adverbial determiners belong the following adverbials. The list is taken from Lewis (1975)

(7) a. *always* and its equivalents: *invariably, universally*
    b. *sometimes* and its equivalents: *occasionally, once*
    c. *usually* and its equivalents: *mostly, generally,*
    d. *often* and its equivalents: *frequently, commonly*
    e. *rarely* and its equivalents: *infrequently, seldom, almost never*
    f. *never*

Consider now the interaction of each of these adverbials with the following *a*-NP generic statement. To make the statement contextually felicitous, assume the
contextual situation in which the statement is uttered is a university in Canada, which as is well known, gives preference to hiring Canadian citizens on its faculty.

(8) A Professor at this university \( \{ \begin{array}{c}
\text{always} \\
\text{usually} \\
\text{often} \\
\text{sometimes} \\
\text{seldom} \\
\text{never}
\end{array} \} \) has a Canadian passport.

As predicted, with any one of the adverbials inserted in the statement, the statement containing an \( a\)-NP is semantically acceptable under a wide scope adverbial reading. This reading is represented in (9). The individual level predicate \( \text{has a Canadian passport} \), where \( \text{have} \) is taken in the sense of \( \text{own} \) and not \( \text{carry} \), rules out the possibility of getting a frequency reading.

(9) \( \left\{ \begin{array}{c}
\text{Always}_x \\
\text{Usually}_x \\
\text{Often}_x \\
\text{Sometimes}_x \\
\text{Rarely}_x \\
\text{Never}_x
\end{array} \right\} \) [professor at this university (x)] \( \text{Gen s[has a Canadian passport (x, s)]} \)

Paraphrase: all/many/few/some/no professors are such that they have a Canadian passport.

Let us turn now to the corresponding statement with \( \text{any} \) and assume \( \text{any} \) contextually widens the domain of the common noun to include worldwide prestigious professors which the speaker at first may have thought are exempt from having a Canadian passport even when teaching at a Canadian university. Interestingly and contra to Dayal’s predictions, while the statement with the adverbial \( \text{often} \) or \( \text{sometimes} \) are indeed, as Dayal predicts, ungrammatical under a wide scope adverbial reading, under a widening of \( \text{professor} \) along the dimension ‘non-prestigious vs. prestigious’, the statements with \( \text{always, usually, rarely or never} \) can all have a wide scope adverbial reading.
always
usually
#often
#sometimes
rarely
never

(10)  a. Any Professor at this university\[\{\text{always, usually, #often, #sometimes, rarely, never}\}\] has a Canadian passport.

b. \{Always, Usually, #Often, #Sometimes, Rarely, Never\[\text{professor [wide construal](X)}\] Gen s[has a Canadian passport (x, s)]\}

Paraphrase: all/most/#many/#few/#some/no professors are such that they have a Canadian passport.

For those who find it difficult to get a wide scope adverbial reading for indefinites in general and for any in particular out of context, consider the interaction of any and an adverbial in the following context:

(11) A:

A novel by Agatha Christie is\[\{\text{always, usually, often, sometimes, rarely, never}\}\] worthwhile reading.

B: Even the ones with Miss Jane Marple as detective?
A:

Yes, Any novel by Agatha Christie is\[\{\text{always, usually, #often, #sometimes, rarely, never}\}\] worthwhile reading.

Suppose A’s first utterance is uttered in the context of a discussion of detective novels by Agatha Christie featuring Hercule Poirot. ‘A novel by Agatha Christie’ might reasonably be interpreted as a Hercule Poirot novel. In fact 80% of her novels feature this detective. Switching to the statement with ‘Any novel by Agatha Christie’ widens this set to include all novels by Agatha Christie, even those without Hercule Poirot featuring as detective.
The function of the adverbial is to give the proportion of the set which has the property denoted by the predicate. For example, the function of the adverbial *usually* in ‘a novel by Agatha Christie is usually worth reading’ is to indicate that there are a few bad Hercule Poirot books, viz, even among Hercule Poirot novels there are a few exceptions. The function of the adverbial *usually* in ‘any novel by Agatha Christie is usually worth reading’ is to indicate that there are a few bad books among the entire collection of Agatha Christie’s books, including Poirot or non Poirot books. (I will return to a discussion of the semantics of an adverbially bound *any* in section 3).

As we see, a wide scope adverbial reading is available for the statement containing the *any*-NP subject when the adverbial is *always*, *usually*, *rarely* or *never*, but not when the adverbial is *sometimes* or *often*; in the presence of the latter two adverbials the statement with *any* is infelicitous since the individual level predicate *worthwhile reading* rules out the frequency reading of an adverbial.

(12) \[
\begin{cases}
\text{Always} \quad & \text{[books by A.C [wide construal](x)] Gen}$ s[\text{worthwhile reading (x, s)]}
\text{Usually} \\
\text{##Often} \\
\text{##Sometimes} \\
\text{Rarely} \\
\text{##Never}
\end{cases}
\]

Paraphrase: *all/most/many/#some/few/no books by Agatha Christie, featuring the detective Hercule Poirot or the detective Miss Jane Marple, are such that they are worthwhile reading.*

The immediate question to be asked is the following: why is the statement with *sometimes* and *often* unacceptable while the statement with anyone of the other adverbials is acceptable? In what way are *sometimes* and *often* different from the other adverbials? Answer: *sometimes* and *often* are adverbials which are not downward entailing on their first argument and hence the widening induced by an occurrence of *any* in their scope does not result in a stronger statement. All other adverbials, are either downward entailing, viz, *always* and *never*, or at least induce strengthening, viz, the proportional adverbials *usually* and *rarely*. We shall examine how this works in this chapter and show how it supports the general claim that FC *any* is an indefinite with extra properties of widening and strengthening.
2.1 **The monotonic properties of adverbials**

Leaving the proportional adverbial *usually* aside for the moment, let us check that these adverbials are indeed downward entailing on their first argument by checking the downward entailing properties of their adverbial counterparts. As Lewis (1975) observes each adverbial has a quantificational force which is equivalent to that of a determiner. *Always* has a universal quantificational force on a par with *every*; often has a quantificational force on a par with *many*, *sometimes* has an existential quantificational force on a par with *some*, and never has a universal quantificational force on a par with *no*. Following Lewis’ observation, we predict the following monotonic properties for adverbials. I take the reference sets to be the set denoted by *baby* and its subset denoted by *baby boy*.

(13) a. Every baby cries. → every baby boy cries.

Every baby boy cries. ⇔ every baby cries.

Hence: *every* is downward entailing.

*every* = *always* in terms of its quantificational force.

Hence: *always* is downward entailing on its first argument.

b. Many babies cry. ⇔ many baby boys cry.

Many baby boys cry. → many babies cry.

Hence: *many* is upward entailing.

*many* = *often* in terms of its quantificational force.

Hence: *often* is neither upward on its first argument.

c. Some baby cries. ⇔ some baby boy cries.

Some baby boy cries. → some baby cries.

Hence: *some* is upward entailing.

*some* = *sometimes* in terms of its quantificational force.

Hence: *sometimes* is upward entailing on its first argument.

d. Few babies cry → few baby boys cry.

Few baby boys cry ⇔ few babies cry.

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2 *many* is upward entailing on its first argument under the condition that we keep our standard of comparison steady. The downward entailingness characterization of the proportional determiner *few* depends on the same condition.
Hence: *few* is downward entailing.  
*few* = *rarely* in terms of its quantificational force.  
Hence: *rarely* is downward entailing on its first argument.  
e. no baby cries. \(\rightarrow\) no baby boy cries  

no baby boy cries. \(\leftrightarrow\) no baby cries.  
Hence: *no* is downward entailing.  
*No* = *never* in terms of its quantificational force.  
Hence: *never* is downward entailing on its first argument.  

From this follows that if an *any*-NP is acceptable in the scope of an element belonging to the category of determiners, it should be acceptable in the scope of its adverbial analogue, that is, in the scope of that adverbial which has the same quantificational force as the determiner in the scope of which *any* can appear. This prediction holds nicely, as we already saw and I repeat again below.

(14) a. *Every* student who has any background in semantics has registered to this course.  
b. Any professor at this university *always* has a Canadian passport  
Paraphrase: *All professors at this university are such that they have a Canadian passport.*

(15) a. *Many* students who have any background in semantics have registered to this course.  
b. *Any professor at this university* *often* has a Canadian passport.  
Paraphrase: *Many professors at this university are such that they have a Canadian passport.*

(16) a. *Some* men who have any interest in semantics have registered to this course.  
b. *Any professor at this university* *sometimes* has a Canadian passport.  
Paraphrase: *Some professors at this university are such that they have a Canadian passport.*

(17) a. *Few* students who have any interest in semantics have registered to this course.
b. Any professor at this university rarely has a Canadian passport.
Paraphrase: Few professors at this university are such that they have a Canadian passport.

(18) a. No student who has any interest in semantics has registered to this course.
b. Any professor at this university never has a Canadian passport.
Paraphrase: No professors at this university are such that they have a Canadian passport.

2.2 Evidence from conditional statements containing adverbials

Conditional statements provide direct evidence for the acceptability of any in the scope of an adverbial. This is because these constructions provide an explicit restriction clause which serves as the first argument over which an adverbial operator can quantify. As Lewis (1975) claims, in these constructions, the adverbial quantifier serves as unselective operator taking two arguments at type t, the first is expressed by the ‘if’ clause, the second is expressed by the main clause; all indefinites in the restrictive clause being, as argued in Heim (1982), free variables without any quantification of their own get bound by the adverbial operator. As we see, all adverbials can bind an indefinite a-NP in their scope:

(19) a. \(\text{Always, Usually, Often, Sometimes, Rarely, Never}\) if a cat falls from the fifth floor it survives. (Heim 123)

Let us now substitute any for a in the example above and assume any is contextually taken to widen the domain of the common noun to include domestic cats which the hearer may have thought prior to the use of any that they can’t survive a fall from the 5th floor. As we see, although often and sometimes cannot serve as triggers for any, the adverbials always, usually, rarely and never can serve as triggers for any and, hence, render the conditional statement ungrammatical:
(20) \[
\begin{align*}
\text{Always} & \\
\text{Usually} & \\
\#\text{Often} & \\
\#\text{Sometimes} & \\
\text{Rarely} & \\
\text{Never} & \\
\end{align*}
\]
if any cat \text{[street or domestic]} falls from the 5\text{th} floor it breaks a leg.

Again, leaving \text{usually} and \text{rarely} aside, the following entailment relations show that while the triggering class of adverbials all share the property of being downward entailing, the anti triggering class of adverbials don’t. I take the reference sets to be those denoted by \text{cat} and \text{street cat}:

(21) a. Always/Never if a cat jumps from the ninth floor, it survives. $\rightarrow$
    Always/Never if a street cat jumps from the ninth floor, it survives.

b. Always/Never if a street cat jumps from the ninth floor, it survives. $\nrightarrow$
    Always/Never if a cat jumps from the ninth floor, it survives.

(22) a. Sometimes/Often if a cat jumps from the ninth floor, it survives. $\leftrightarrow$
    Sometimes/Often if a street cat jumps from the ninth floor, it survives.

b. Sometimes/Often if a street cat jumps from the ninth floor, it survives. $\rightarrow$
    Sometimes/Often if a cat jumps from the ninth floor, it survives.

Let us now consider Dayal’s own examples.

2.3 \textbf{An evaluation of Dayal’s examples}

Dayal provides the following examples as evidence for the non availability of an adverbially bound indefinite reading for a generic statement containing an adverbial and an \text{any-NP} subject:

(23) a. A professor in this department is sometimes wrong.

b. #Any professor in this department is sometimes wrong.
   (under a wide scope adverbial reading)
(24)  
   a. A lion is generally majestic.
   b. #Any lion is generally majestic.

If we consider Dayal’s examples again, we see that if we substitute a downward entailing operator in (23b) for *sometimes* the statement becomes acceptable under a wide scope adverbial reading. To make the statement pragmatically felicitous, imagine a math department with an academic staff consisting of 7 instructors of which 3 haven’t had much experience in teaching and assume *any* is contextually used to widen the domain to include experienced instructors. Under this context (23b) repeated as (25) would be acceptable under a wide scope adverbial reading and would mean that all/few/most/no professors from a widened domain of professors, viz, containing professors along the dimension ‘experienced vs. not experienced’ are such that they are wrong when teaching.

(25) Any professor in this department [experienced vs. non-experienced] is always/rarely/never wrong.
Paraphrase: all/few/most/no professor from a widened domain of professors are wrong.

Consider now (24b). According to Lewis, *generally* has a quantificational force on a par with *most*, just as *usually* does. We would therefore expect (24b) to be acceptable under a wide scope adverbial indefinite reading, but indeed, as Dayal argues, it isn’t.

Notice, however, that (24a) with the indefinite *a* is for many native speakers marginal under a wide scope adverbial reading as well and (24b), with the adverbial *usually* substituted for *generally*, is for many native speakers as unacceptable under a wide scope adverbial reading as the statement with *generally*.

(26) #Any lion is usually majestic.

Also, (24b) becomes felicitous under a wide scope adverbial reading once we substitute *nocturnal* for *majestic*, bearing the following facts in mind about lions:

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**Lion facts:** It is well known that lions prefer to hunt at night time because (1) their sight is adapted to night vision and (2) the darkness conceals them from their prey. Some lions live in dry areas near water holes. There, the target animals they prey on need to lower their head to drink, a position from which they cannot keep track of the lions or start running as quickly as the lions that are standing and watching, so you might think the lions there would hunt during the day. In fact, only the exceptional ones do that. Given these facts, the following context renders an adverbially bound reading of an _any_-NP acceptable:

(27)  
   a. A lion is usually/generally nocturnal.  
   b. Even lions living near water holes?  
   c. Yes, Any lion [not living near water hole vs. living near water holes] is usually nocturnal.  
      Paraphrase: *most lions whether they live or don’t live near water holes are such that they hunt at night.*

I conclude that ‘*any lion is generally majestic*’ is ungrammatical under a wide scope adverbial reading independently of the interaction between _any_ and the adverbial and follows from the adjective _majestic_. Specifically, _majestic_ is a property we tend to ascribe to lions in general and hence it is difficult to interpret _lion_ when predicated of _majestic_ nongenerically. Accordingly, an adverbially bound reading of _any_ in (24b) is infelicitous (just as for many native English speakers an adverbially bound reading of _a_ in (24a) is infelicitous) since the variable introduced by the predicate is naturally interpreted as bound by a generic quantifier and thus it is not available for binding by the adverbial.

### 2.4 **FC any in the scope usually**

As (28) shows a wide scope adverbial reading is available for a statement containing an _any_-NP subject in the presence of the proportional adverbial _usually_.


(28)  
   a. Any professor at this university usually has a Canadian passport.
   b. Most \( x \) [professor [wide construal](x)] Gen s[has a Canadian passport (x, s)]

   Paraphrase: most professors at this university from a widened domain of professors are such that in normal situations s they have a Canadian passport.

   This proportional adverbial poses a problem to our prediction: usually on a par with most is not downward entailing on its first argument (29) and yet, as (28) shows, usually licenses any in its scope:

(29)  
   Most babies cry \( \rightarrow \) most baby boys cry.
   Most baby boys cry \( \rightarrow \) most babies cry.
   Hence: most is neither upward entailing nor downward entailing on its first argument
   Most!= usually in terms of its quantificational force.
   Hence: usually is neither upward entailing nor downward entailing on its first argument.

   As (30) shows, the same problem holds of most; any is licensed in the scope of most even though most is not downward entailing:

(30)  
   Most boys who have any interest in semantics have registered to this course.

   The solution to this apparent problem lies in strengthening: although most is not considered a downward entailing operator, it does imply (pragmatically) a stronger statement on the wide interpretation associated with any: Consider the inference relation between (31a) and (31b).

(31)  
   a. Most professors at this faculty [junior or senior] have a Canadian passport.
   b. Most professors at this faculty [junior] have a Canadian passport.

   Under a widening of professor along the dimension ‘junior or senior’ (where any widens the domain of professors to include even a senior professor), the statement
with *any* (31a) will not be strictly speaking stronger than the corresponding statement with *a* (31b); If there are 100 professors of which only 6 are junior, and all the seniors and two of the junior ones have Canadian passports, then (31a) will be true and (31b) will be false.

However, in the following context, there is a strong DE implication (although not an entailment). Since *any* is a widener and widens along a dimension, irrespective of subgroups, the *most* quantifier spreads homogeneously across the relevant population and accordingly the DE inference holds.

(32) A: Most professors have a Canadian passport.
    B: Surely, it is only true that most senior professors have a Canadian passport.
    A: No, taken across the board, most professors (i.e. the majority of the faculty) have a Canadian passport. And as long as those senior professors don’t retire, we can hire whatever junior professors we want and still be in compliance with the law.

We see that although *most* is not downward entailing per se (and hence neither is *usually*), it is downward entailing with respect to the statement containing *any* itself (and, thus, so is *usually*): in the presence of *most*, we get entailment downward from the statement on the wide interpretation induced by *any* to the statement on the narrow interpretation induced by *a* and this seems to be sufficient to license *any*; *any* is licensed if downward entailingness is satisfied with respect to a statement containing an *any*-NP itself\(^3\). We can state the following licensing condition:

- A determiner or adverbial which is not downward entailing per se licenses *any* in its scope if it induces entailments (or strong implication) downward from the statement on the wide interpretation induced by *any* to the statement on the narrow interpretation induced by *a*.

---

\(^3\) See Heim (1984) for a similar account of conditionals. Heim observes that antecedents of conditionals are not downward entailing and yet do license *any*. Heim accommodates this problem by means of minor alterations of Ladusaw’s theory; she preserves the downward entailingness essence of Ladusaw’s theory but restricts the downward entailingness notion in such a way that an NPI triggering expression is considered downward entailing with respect to a statement containing the NPI itself and along a scale of alternatives specified by the NPI.
2.5 Summary

Let us summarize this section: what we see is that *any* can be bound by an adverbial, as long as the widening and strengthening condition is met. This shows that *any* shares with *a* the property of being able to be bound by an adverbial, but unlike *a* it is sensitive to the monotonic properties of the adverbial. So far this implies that Kadmon and Landman’s approach to *any* can be extended to FC *any* bound by adverbials. We now look at more data that supports their approach.

Up till now we’ve examined the availability of an adverbially bound reading for an *any*-NP situated in subject position. I turn now to an examination of the interaction between an adverbial and an *any*-NP occupying the object position. As I will show statements with *any*-NPs in object position exhibit the same constraints that *any*-NPs in subject position display. If the adverbial is downward entailing or induces strengthening, it can bind an *any*-NP object.

(33) I \[\{\begin{align*}
\text{always} & \\
\text{usually} & \\
\#\text{often} & \\
\#\text{sometimes} & \\
\text{rarely} & \\
\text{never} & \\
\end{align*}\} \]

enjoy any paper on polarity *any*.

Looking at these gives us further evidence that adverbial quantifiers have the same monotonic properties as quantifiers, which as such can bind *any* in generic statements as long as it is downward entailing.

3. Wide scope adverbial readings for *any*-NP objects

3.1 Diesing 1992

It will be convenient to frame the discussion on the availability of an adverbially bound reading for an *any*-NP object within the theory of Diesing (1992) which examines the readings available for object indefinite NPs in the presence of adverbials. As Diesing shows, habitual sentences are in principle ambiguous between a quantificational and an existential reading for indefinite objects, with the quantificational reading arising when the adverbial binds a variable introduced by the indefinite object and the existential reading arising when the adverbial binds a
situation variable. According to Diesing a sentence like (34a) is ambiguous between (34b) and (34c) (appropriate contexts provided):

(34)  
   a. I always read a paper on polarity *any*.
   
   b. **Quantificational reading:** every paper on polarity *any* (which appears in a good journal) is such that I read it.
      Always_x [paper on polarity any(x) ∧ C(x)] [read (I, x)]
   
   c. **Existential reading:** whenever I don’t sleep at night, there is a paper on polarity *any* that I read.
      Always_s [C(s)] ∃_x [paper on polarity any(x) ∧ read (I, x)]

Diesing shows that verb types vary in which interpretations they prefer for indefinite objects. While verbs of use like *read* permit both a quantificational and an existential interpretation, as the above example shows, verbs of creating like *write* or *draw* allow only an existential reading, because, as Diesing points out, such verbs denote the bringing of their objects into existence and therefore are incompatible with the notion of preexistence, that is, their object cannot be presupposed to exist, which would be the case under a quantificational reading⁴:

(35)  
   a. I always write a paper on polarity *any*.
   
   b. **#Quantificational reading:** Every paper on polarity *any*, is such that I write it.
      Always_x [paper on polarity any(x) ∧ C(x)] [write (I, x)]
   
   c. **Existential reading:** if I am invited to give a talk there is a paper on polarity *any* that I write.
      Always_s [C(s)] ∃_x [paper on polarity any(x) ∧ read (I, x)]

Experiencer verbs, like *enjoy*, are another type of verbs, which in contrast to verbs of use and verbs of creating make available only a quantificational reading. Following Kratzer (1989), Diesing claims that the reason for this is that experiencer verbs are individual

⁴ As pointed out by Rothstein (p.c), (34a) can have a quantificational reading in the following context: *I write outlines for hundreds of papers which remain unwritten. But, if I get as far as writing an outline, I always write a paper on polarity ‘any’.*
level predicates, which unlike stage level predicates, do not have a spatiotemporal argument that can act as a free variable in quantificational contexts; hence an adverbial present in such contexts does not have a spatiotemporal variable to bind; since vacuous quantification in natural language is prohibited (Milsark 1974), an indefinite NP variable must get bound by the quantifier; consequently, only a quantificational reading where the adverbial binds the variable introduced by the indefinite object is possible:

(36)  
a. I always enjoy a paper about polarity any.

b. **Quantificational reading**: Every paper on polarity any (which appears in a good journal) is such that I enjoy it.
   Always, [paper on polarity any (x) \& C(x)] [enjoy (I, x)]

c. **Existential reading**: Whenever I can’t fall asleep there’s a paper on polarity any that I enjoy
   Always, [C(s)] \exists x [paper on polarity any(x) \& enjoy (I, x)]

Parallel to Dayal who argues that an *any*-NP in subject position resists a wide scope adverbial reading and allows only a frequency reading of the adverbial when possible, Diesing argues that an *any*-NP in object position reading allows a quantificational reading but rules out an existential reading for the sentence. Consider the following statement under a widening of papers by *any* along the dimension ‘recent vs. non recent’, where widening is contextually taken to include even non recent papers which the hearer may have thought at an early stage of the conversation that the speaker is not considering. As Diesing shows, (37a) can be associated with the quantificational reading given in (37b), but, it cannot be associated with the existential reading given in (37c). Hence, contrast the infelicity of (37c) with the felicity (34c):

(37)  
a. I always read any paper on polarity any.

b. **Quantificational reading**: Every paper on polarity any [recent or non recent] which appears in a good journal is such that I read it.
   Always, [paper on polarity any [recent or non recent](x)] [read (I, x)]

c. **Existential reading**: Whenever I can’t fall asleep, there is a paper on polarity any [recent or non recent] that I write.
   Always, [C(s)] \exists x [paper on polarity any [recent or non recent] (x) \& read (I, x)]
I agree with Diesing that an *any*-NP in object position rules out an existential reading. And it is clear on our account why this reading is not available: under an existential reading, the variable introduced by the *any*-NP gets bound by a default existential operator which as we know is not downward entailing. Accordingly, the occurrence of *any* under this reading does not create a stronger statement. I don’t, however, agree with Diesing that an *any*-NP in object position always allows a quantificational reading. As I show next, a quantificational reading is available for an *any*-NP in object position only when the adverbial operator is downward entailing on its first argument or induces strengthening. This again shows that *any* on a par with *a* can be bound by an adverbial as long as it is downward entailing (or induces strengthening) on its first argument. This, again, is because such adverbials will allow the widening induced by *any* to create a stronger statement. The ungrammaticality of (37c) is thus clearly to do with the downward entailment of the operator and not to do with issues of scope constrained by *any*.

3.2 **Quantificational reading for an *any*-NP in object position**

Under a quantificational reading, the variable introduced by an *any*-NP in object position appears in the restrictive clause of the tripartite structure OP[^restric\[\text{restrictive clause} \ldots \text{P(x)}\] \text{[nuclear scope} \ldots \text{]}, where it gets bound by the adverbial operator. Contra to Diesing’s claim, this reading is only available when the adverbial is downward entailing on its first argument. Hence such a reading is available for (38a) but not for (38a) because the adverbial *always, usually, never and rarely* induce strengthening on their first argument while the adverbial *sometimes* and *often* don’t. Notice that since *enjoy* is a psych verb, an existential reading is not available either; hence, since the quantificational reading is not available, the sentence is ungrammatical.

(38) a. I always/usually/rarely/never enjoy any paper on polarity any.

b. **Quantificational reading**: all/most/few/no papers on polarity any recent or non recent, which appear in a good journal are such that I enjoy.

all/most/few/no x [paper on polarity any [recent or non recent] (x)] [ read (I, x)]

c. **Existential reading**: for all/most/few/no situations in which I can’t fall asleep, there is a paper on polarity any, recent or non recent, that I enjoy.

all/most/few/no s [C(s)] ∃x [paper on polarity any(x) ∧ read (I, x)]
4. **An adverbially bound reading of an any-NP in the nuclear scope**

Up till now, we have looked at examples where the *any*-NP is interpreted in the restrictive clause. This is because the wide scope adverbial reading of the *any*-NP in the examples we looked at is produced by scoping the adverbial over the restrictive clause which means that the *any*-NP must be situated in the restrictive clause over which the adverbial takes scope. If it were situated in the nuclear scope it would get bound by the generic quantifier which under the wide scope adverbial reading binds the situation variable.

If we can find readings where the adverbial bound reading of an *any*-NP is yielded by scoping the adverbial over the nuclear scope containing the indefinite *any*-NP, then our prediction will be that only adverbials which are downward entailing on their second argument will render *any* acceptable in their scope.

Our set of adverbials includes *always, usually, often, sometimes, rarely* and *never*. As the following shows, *always* on a par with *every* and *sometimes* on a par with *some* are upward entailing on their second argument, *never* is downward entailing on its second argument and *usually* and *often* are neither upward entailing nor downward entailing.


John always/sometimes walks quickly → John always/sometimes walks.

---

5 As pointed by Greenberg (p.c), there is another reading available for (38) under which *sometimes* quantifies over long periods: 

*In some periods of my life, I sometimes enjoy any paper on polarity any.*
Hence, *always* and *sometimes* are upward entailing.

(41) John never walks at all. $\rightarrow$ John never walks quickly.

John never walks quickly. $\models$ John never walks.

Hence, *never* is downward entailing.

Evaluating both the entailing and entailed statements in (42) as claims about the proportion of events of John walking at any speed at all we see that the proportional adverbial *rarely* is downward entailing while *usually* and *often* are upward entailing:

(42) John rarely walks. $\rightarrow$ John rarely walks quickly.

John rarely walks quickly. $\models$ John rarely walks.

(43) John usually/often walks. $\models$ John usually/often walks quickly.

John usually/often walks quickly. $\rightarrow$ John usually/often walks.

Our prediction is therefore that *never* and *rarely* which are downward entailing on their second argument will render *any* acceptable while *always*, *usually*, *often* and *sometimes* which are upward entailing on their second argument will render *any* unacceptable. If we look at the following example, our prediction is borne out. Under a widening of *friend* by *any* along the dimension ‘close vs. non close’, where widening is contextually taken to include even non close friends which the hearer may have thought at an early stage of the conversation that the speaker is not considering (44a) is ungrammatical in the presence of *always/usually/often/sometimes*:

(44) a.  
\[
\begin{aligned}
\text{A kid is} & \quad \left\{ \begin{array}{l}
\text{always} \\
\text{usually} \\
\text{often} \\
\text{sometimes} \\
\text{rarely} \\
\text{never}
\end{array} \right. \\
good\text{ to any friend of his.}
\end{aligned}
\]

b.  
\[
\forall x \left[ \text{kid}(x) \land C(x) \right] \left\{ \begin{array}{l}
\text{Always}_y \\
\text{Usually}_y \\
\text{Often}_y \\
\text{Sometimes}_y \\
\text{Rarely}_y \\
\text{Never}_y
\end{array} \right. \\
good\text{ to friend}_{[\text{close or non close}]}(y) \text{ of x's friends}
\]
In this example, the adverbial has no other choice but to take scope over the nuclear scope. This is because the operator taking scope over the restrictive clause is already occupied by an implicit universal quantifier introduced by the generic operator. What we see is that those adverbials which are not downward entailing on their second argument don’t license *any* and those which are do. This shows that an *any*-NP situated in the nuclear scope can be bound by an adverbial as long as the adverbial is downward entailing on its second argument.

Compare the infelicity of (44a) with *always/usually/often/sometimes* with the felicity of the corresponding statement with *a* substituted for *any* with all adverbials. (45) is felicitous with all adverbials. This is because the acceptability of *a* does not depend on the presence of a downward entailing operator.

(45)  
\[
\text{A kid is } \begin{cases} 
\text{always} \\
\text{usually} \\
\text{often} \\
\text{sometimes} \\
\text{rarely} \\
\text{never} 
\end{cases} \text{ good to a friend of his.} 
\]

5. **Conclusions**

I have shown that *any* like *a* can get its quantificational force from an adverb as long as the adverbial is downward entailing or induces strengthening. This supports Kadmon and Landman’s theory that *any* is an indefinite which gets the same quantificational force as *a* does. Under the assumption that *any* has the function of widening the denotation of the noun to include less expected individuals and is licensed by strengthening, then widening of *any* in the scope of downward entailing adverbials is licensed because widening in such environments indeed induces strengthening.

I turn now to an examination of the semantic effect of an adverbial on the domain of quantification and the exceptions the statement can tolerate.

6. **The semantics of an adverbially bound *any***

In the last section, I have shown that ‘*any N*’ in generic contexts can be licensed in the scope of an adverbial rather than a generic operator as long as the adverbial has the
property of being downward entailing. This is because only a downward entailing adverbial will enable widening of the domain of the common noun in such a way that the sentence is strengthened. It is now left to show how an adverbial affects the domain of quantification. Prima facia the occurrence of an adverbial in generic contexts seems redundant. This redundancy is perceived most prominently when the adverbial is universal as in any owl always hunts mice – what could be the semantic contribution of always to the statement already containing a universal quantifier?

Let us show that that there is no semantic redundancy. I will start with an examination of the universal adverbials always and never which, as I will show, have the same semantic effect on the domain of quantification as determined by any and the exceptions the statement can tolerate.

Consider the following context where the use of any instructs the hearer that even baby lions, which the hearer may had first thought the speaker is ignoring are born with their eyes closed – A baby feline is no exception because of it being a baby lion.

(46)  A: A baby feline is born with its eyes closed.
    B: Right. But of course, a baby lion is born with its eyes open.
    A: Wrong. Any baby feline, a cat or lion, is born with eyes closed.

Any is licensed in (46) because the generic operator which introduces a universal quantifier binding a world and an individual variable induces entailments downward from the statement containing the more general expression any baby feline to that containing the less general expression a baby feline.

(47) $[[\text{Any baby feline } [\text{cat or lion}] \text{ is born with eyes closed}]] =$

$\text{Gen}_{w, x} [[w \text{ is epistemically accessible from } w_o \land \text{ baby feline } [\text{cat or lion}] (x, w)]$

$\rightarrow [\text{born with eyes closed } (x, w)]]$

Paraphrase: all non exceptional epistemically accessible baby felines [baby cats or baby lions], are born with eyes closed.

$\Rightarrow$

$[[\text{A baby feline } [\text{cat or lion}] \text{ is born with eyes closed}]] =$
Gen_{w, x} [[w is epistemically accessible from w_{o} ∧ baby feline [baby cats] (x, w)]] → [born with eyes closed (x, w)]]

All non exceptional epistemically accessible baby felines [baby cats] are born with eyes closed.

Consider now the effect of the adverbial *always* added to the same context:

(48) A: A baby feline is born with its eyes closed.
B: Right. But of course, a baby lion is born with its eyes open.
A: Wrong. *Any* baby feline, a baby cat or lion, is born with its eyes open.
B: But, what if the animal is born with a very mature brain? Surely such a baby is born already with eyes open
B: No. Any baby feline, baby cat or lion, is *always* born with its eyes closed

Under a widening of *baby felines* along the dimension ‘baby cat vs. baby lion’, *always* indicates that even nonstandard baby felines along the dimension of widening, are no exception to the claim, viz even those baby felines [cats or lions] born with a mature enough brain to enable birth with eyes open are nevertheless born with their eyes closed. The adverbial *always* indicates that no baby feline along the dimension of widening is an exception to the generalization made.

If we substitute *always* for *never* in the same context, the effect would be of the same nature, to instruct the hearer that no babies along the widened domain are exception to the rule, not even babies born with a mature enough brain to enable birth with their eyes open.

(49) A: A baby feline is born with its eyes closed.
B: Right. But of course, baby lions are born with eyes open.
A: Wrong. Any baby feline is born with its eyes open.
B: O.K, but what if the animal is born with a very mature brain? Surely such a baby is born with its eyes open
A: No. Any baby feline is *never* born with its eyes open
Let us summarize: the use of *always* and *never* by speaker A in (47) and (48) respectively informs speaker B that those baby felines he or she may have thought are exceptions and not part of the domain of quantification as determined by *any* in fact aren’t exceptions. *Always* tells us that all individuals along the dimension of widening, baby cats or baby lions, bear the VP property, no matter what other non standard properties they have: a baby feline which is born with a mature brain will nevertheless be born with eyes closed - it won’t be an exception because of it having a mature brain. Similarly, *never* tells us that all individuals along the dimension of widening don’t bear the VP property, no matter what other properties they have. A baby feline with a mature brain will nevertheless not be born with eyes open. To formally capture these intuitions, I will use Kadmon and Landman’s theory of genericity. Let us start by reviewing their theory.

6.1 Kadmon and Landman’s theory of genericity

For Kadmon and Landman a generic statement, as is also widely accepted in the literature on generics, involves universal quantification over individuals on a par with an explicit universal statement, but, unlike an explicit universal it tolerates exceptions where appropriate exceptions are considered individuals which are viewed as deviating from the norm. The difference, for example, between *every owl hunts mice* and *an owl hunts mice* is that the first would be judged as true only if all contextually relevant owls hunt mice, say if all adult owls hunt mice. The second would be judged true even if there are some adult owls that don’t hunt mice, say sick owls. According to Kadmon and Landman generic statements, unlike universal statements, allow for exceptions. This is because for a universal quantifier there is a well defined set of properties characterizing the set of individuals denoted by the common noun while for a generic quantifier there isn’t. Consequently there is no defined set of individuals that a generic quantifier quantifies over. Accordingly, since we do not definitely know which individuals are quantified over, it is always possible that an individual with the common noun property is not quantified over and hence can be considered a legitimate exception.

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6 I would like to thank Yael Greenberg for thoroughly explaining Kadmon and Landman’s theory of genericity during a seminar she held in 2005. This section adopts her style of representation of Kadmon and Landman’s theory of genericity.
Following this line of thought, Kadmon and Landman interpret the statement in (50a) as (50b), where $X_{\text{owl}}$ is the vague set of properties restricting the set of individual owls quantified over. Kadmon and Landman assume that this vague set is a pair $<v_0, V>$, where $v_0$ is the precise part of the restriction containing a (possibly empty) set of precise properties consistent with each other and compatible with the property OWL and $V$ is the vague part of the restriction, defined as a set as a set of sets of properties. Each set of properties is (a) consistent, (b) contains only properties compatible with the property OWL and (c) is a superset of $v_0$ (i.e. contains the properties which was directly supplied by the context). For example: If $v_0 = \{\text{not living in captivity}\}$, $V$ can be $= \{\{\text{not living in captivity},..., P_1, P_2, P_3, P_4\},\{\text{not living in captivity},..., P_2, P_3, P_5, P_6\},\{\text{not living in captivity},..., P_5, P_7, P_8, P_9\},...\}$.

(50) a. An owl hunts mice
b. $\forall ! X_{\text{owl}} [\text{owl}] [\text{hunts mice}]$ where $!$ stands for the contextual restriction upon the quantifier
Paraphrase: all normal possible owls hunt mice where what counts as normal is inherently vague.

Let us turn now to Kadmon and Landman’s account of any-NPs in generic contexts; like in other triggering environments, in generic contexts an any-NP widens the set denoted by the common noun in such a way that also individuals which were not expected by the context up to now to be part of the domain of quantification are considered once any is introduced. For example, widening of owl in any owl hunts mice can be contextually performed along the dimension ‘healthy vs. sick’. According to Kadmon and Landman, widening is accomplished in two simultaneous parts; the domain of the common noun is enlarged to include healthy or sick owls and the property HEALTHY is excluded from the set of properties characterizing the individuals in the common noun from $X_{\text{owl}}$. If before widening the restriction contained HEALTHY [in the precise part or in one of the precisifications, then after widening, it is changed minimally so as to exclude HEALTHY from its precise part and from its precisifications.
(51) a. Any owl hunts mice
     b. ∀ X_{owl, healthy or sick} [owl, healthy or sick] [hunts mice]

where X_{owl, healthy or sick} is the result of minimally changing X_{owl} so as to
make both healthy and sick compatible with its precise part and with
its precisifications.

For example if P3=Healthy, the effect of widening on X_{owl} would be as follows:

(52) X_{owl} = v_0 = \{not living in captivity\}
    V = \{not living in captivity…, P_1, P_2, Healthy, P_4\}, \{not living in
captivity…, P_2, Healthy, P_5, P_6\}, \{not living in captivity…,
P_5, P_7, P_8, P_6\} …\}

The effect of widening the domain of the common noun along the dimension sick vs.
healthy is that an owl can no longer be considered an exception because of it being
sick; notice, however, that although widening reduces the tolerance of exceptions,
widening doesn’t eliminate the tolerance of exceptions all together. So, for example, a
sick and very old owl can still be considered an exception. This is because although
this owl can no longer be considered an exception because of it being sick, it can be
considered an exception because of it being old since we do not definitely know
which other properties appear in the restriction.

Bearing this in mind, we now turn back to adverbially quantified statements. Consider
again example (47) repeated below in (53).

(53) A:  A baby feline is born with its eyes closed.
    B:  Right, but, of course, a baby lion is born with its eyes open.
    A:  Wrong. Any baby feline, a baby cat or lion, is born with its eyes open.
    B:  But what if the baby cat or baby lion is born with a very mature brain?
        Surely such a baby is born already with eyes open
    A:  No. Any baby feline, a kitten or baby lion, is always born with its eyes closed
If before widening by *any* the restriction contained the property BABY CATS [in the precise part or in one of the precisifications, then after widening, it is changed minimally so as to exclude BABY CATS from its precise part and from its precisifications. This means that a baby feline can no longer be considered an exception because of it being a baby lion, but it can be considered an exception if is associated with some other property because we do not definitely know which other properties appear in the restriction. So a baby feline, kitten or baby lion, born with a mature brain can be born with eyes open. What does *always* do? It indicates extra reduction of exceptions: no baby feline along the widened domain is an exception no matter what other properties it has, so a baby cat or lions with a mature enough brain can no longer be considered an exception.

The semantic effect of *never* on the tolerance of exceptions is of the same nature as the semantic effect of *always*. As illustration consider the following example:

(54) A: An owl hunts at night.
B: Right, but, of course, a sick owl hunts at daytime.
A: Wrong. **Any** owl hunts at night.
B: But what if the healthy or sick owl is born with brain damage? Surely such an owl may hunt at day time.
A: No. **Any** owl, healthy or sick never hunts at daytime

If before widening by *any* the restriction contained the property SICK OWLS (in the precise part or in one of the precisifications), then after widening, it is changed minimally so as to exclude SICK OWLS from its precise part and from its precisifications. This means that a sick owl can no longer be considered an exception because of it being a sick owl, but it can be considered an exception if is associated with some other property because we do not definitely know which other properties appear in the restriction. So an owl, sick or healthy, born with brain damage can hunt at daytime. What does *never* do? It indicates extra reduction of exceptions: no owl along the widened domain is an exception no matter what other properties it has, so a sick or healthy owl with a brain damage can no longer be considered an exception.

We can define the function of *always* and *never* as follows:
• *always* and *never* have the function of eliminating the tolerance of exceptions along the contextually provided dimension of widening. They instruct us that no individual with the properties specified by the dimension cannot be considered a legitimate exception no matter what other properties they have.

Let us turn now to an examination of the proportional adverbials, *usually* and *rarely*, which as we saw can bind *any*.

### 6.2 Proportional adverbials

Consider the following contexts where the use of *any* indicates a widening along the dimension children born to non famous parents vs. children born to famous parents:

(55) A: A pupil in this school must be talented  
B: Right, but those pupils born to famous parents aren’t.  
A: No. Any pupil in this school is talented  
B: Occasionally, there is some kid or another that is accepted just because his father or mother are famous and not because of his talent. I know that for fact.  
A: O.K, then, Any pupil in this school is usually talented

As one can see, the effect of *usually* is to indicate that not all typical children along the widened domain are talented, only most of them. Notice that the individuals who are not associated with the VP property are individuals which are contextually taken to be kids of famous parents. As the following example shows the individuals not quantified over can also be contextually taken to be associated with individuals across the entire dimension

(56) A: Any owl [adult or young] is nocturnal (viz, NO owl is a legitimate exception because it is young)  
B: Wrong, Any owl is usually nocturnal– the very old ones aren’t and the very young ones aren’t
If we substitute *usually* for *rarely* in example 55 repeated below as 57, the effect of *rarely* would be to tell us that very few individuals along the widened domain in fact have the property denoted by the predicate

(57) A: A pupil in this school is not talented  
B: Right, but those pupils born to non-famous parents are talented.  
A: No. Any pupil in this school is not talented  
B: Occasionally, there is some kid or another that is accepted because of his talent.  
A: O.K, then, any pupil in this school is rarely talented

Here, the individuals who are not associated with the VP property are individuals which are contextually taken to be associated with individuals across the entire dimension. But, as the following example shows, the individuals not quantified over can be individuals added after widening

(58) A: Any cake [complicated to make vs. simple to make] that she makes is not tasty  
B: Wrong, any cake she makes is rarely tasty- the very very simple ones not requiring even baking or beating eggs turn out fine.

We can define the function of *usually* and *rarely* as follows:

- *usually* and *rarely* have the function of instructing the hearer that some individual(s) with one of the two properties specified by the dimension of widening are not associated with the property of the VP.

6.2.1 **Kadmon and Landman’s account of almost**

As is well known, an *a*-NP generic statement unlike an *every*-NP statement is not compatible with *almost*:

(59) a. Almost every owl hunts mice.  
b. #Almost an owl hunts mice.
According to Kadmon and Landman, *almost* is not compatible with an *a*-NP in generic contexts because it cannot modify quantifiers that are domain vague. This poses a problem because *any owl* is just as good a generic NP and yet it can be modified by *almost*

(60)  Almost any owl hunts mice.

Kadmon and Landman argue that *any* eliminates some of the vagueness of genericity – it induces dimensional universality – universality along a particular dimension. In the ‘owl’ example it induces universality along a pair of properties, the properties ‘sick vs. healthy’; it tells us that no owl is a legitimate exception just because of it being sick or healthy. It’s because of this universal dimension that *almost* can bind an *any*-NP and accordingly indicate that the universality induced by *any* via dimensional widening is not as universal as expected. If we look at proportional adverbials, we see that adverbials do exactly what *almost* does – reduce the universality induced by *any*. This predicts that the presence of *almost* and a proportional adverbial simultaneously should render the sentence unacceptable due to semantic redundancy. This prediction is born out. The following statements sounds odd under a wide scope adverbial reading of the adverbial

(61)  ?*Almost* any owl *usually* hunts mice.

6.3  **A formal account**

Kadmon and Landman follow Heim (1982) and assume that an indefinite NP introduces a predicate with a free variable and no quantificational force of its own. This variable can get bound in one of two ways (1) by an explicit/implicit quantifier (2) by default existential closure. In generic contexts, the variable introduced by an indefinite NP subject gets bound by an implicit generic quantifier. Since an NP of the form ‘*any* N’ is an indefinite on a par with ‘*a* N’, it gets bound by the generic quantifier, just as ‘*a* N’ does. As assumed in the literature on generics (Krifka et al (1995), Greenberg (2003)), a generic quantifier is equivalent in its force to a universal only that it unselectively quantifies over worlds as well as individuals and, as indicated above, tolerates exceptions. Accordingly, this quantifier, being universal, is
downward entailing on a par with every. This enables the widening induced by any to create a stronger statement in comparison to the statement with a.

I have argued that an any –NP in generic contexts can be bound by an adverbial. In view of the availability of binding by an adverbial, I suggest the following modification of the representation of a generic statement in the presence of an adverbial:

1. The Gen operator only quantifies over worlds
2. The adverbial quantifies over situations and over the domain of individuals denoted by the common noun in the any-NP

This gives the following representations:

(62) a. #Any owl often/sometimes hunts mice.
   b. \(\forall w'[w' \text{ is appropriately accessible from } w_0 \rightarrow \text{Many/Some } x,s\)
      \([\text{owl}_{\text{wide domain}}(x,w') \land C(s,x,w')]\text{ [hunts mice (x,w')]}\)]
   c. paraphrase: In all accessible worlds, for many/some things which are owls [from a wide domain of owls] it is the case that in every world of the modal base it hunts mice.

(63) a. An owl often/sometimes hunts mice.
   b. \(\forall w'[w' \text{ is appropriately accessible from } w_0 \rightarrow \text{Many/Some } x,s\)
      \([\text{owl}_{\text{narrow domain}}(x,w') \land C(s,x,w')]\text{ [hunts mice (x,w')]}\)]
   c. paraphrase: In all accessible worlds, for many/some things which are owls [from a narrow domain of owls] it is the case that in every world of the modal base it hunts mice.

(64) a. Any owl usually/rarely/always/never hunts mice.
   b. \(\forall w'[w' \text{ is appropriately accessible from } w_0 \rightarrow \text{All/Most/Few/No } x,s\)
      \([\text{owl}_{\text{wide domain}}(x,w') \land C(s,x,w')]\text{ [hunts mice (x,w')]}\)]
   c. paraphrase: In all accessible worlds, for all/most/few/no things which are owls [from a wide domain of owls] it is the case that in every world of the modal base it hunts mice.
(65) a. An owl usually/rarely/always/never hunts mice.
b. \( \forall w'[w' \text{ is appropriately accessible from } w_0] \rightarrow \text{Most/Few/All/No } x, s [[\text{owl}_{\text{narrow domain}}(x,w') \land C(s,x,w')] \text{ hunts mice } (x,w')] \)
c. paraphrase: In all accessible worlds, for all/most/few/no things which are owls [from a narrow domain] it is the case that in every world of the modal base it hunts mice.

7. **Summary**

In this chapter we examined the interaction of adverbs of quantification with *any*. We showed that adverbs of quantification do not provide evidence against treating *any* as an instance of a generic indefinite in generic statements as Dayal claims they do. We proved that in fact adverbs of quantification provide an empirical positive test for their claim: FC *any* like *a* can be bound by an adverbial, but, only as long as the adverbial is downward entailing or at least induces strengthening, viz, is downward entailing with respect to the statement containing *any* itself. This is because only a downward entailing adverbial will enable widening of the domain of the common noun in such a way that the sentence is strengthened. We then examined the semantic effect of an adverbial in generic statements and showed that adverbials affect the truth conditions of the statement and the exceptions the statement can tolerate.
Chapter 3: A semantic account of any in modal contexts

0. Introduction

In this chapter I am going to examine the occurrence of any in 3 modal contexts: epistemic possibility, deontic possibility and imperatives designating invitations. On the standard semantic account of these contexts, these contexts don’t seem to be environments which satisfy strengthening and hence seem to provide evidence against maintaining a widening and strengthening account of any. I show that this conclusion is based on employing a truth conditional semantics analysis of modal statements. Once we employ a non truth conditional analysis of modal statements which takes into account the performative function of the modal verb, we see that the acceptability of any in modal contexts is indeed constrained by strengthening à la Kadmon and Landman. Since the primary function of a modal statement is not a simple declaration of facts, shifting to a performative account of modal statements is a welcome move independently of accounting for the acceptability of any:

1. The data-representation

The following data shows that an occurrence of any is acceptable in modal statements expressing deontic possibility, or, as commonly termed permission (example 1a), and in modal statements expressing epistemic possibility (example 1b).

(1) a. You may date any English woman.
    b. John might be staying at any hotel in Eilat.

In (1a) the use of any invites the addressee referred to by ‘you’ to choose whatever individual he or she wants from the set denoted by the noun attached to any. A likely paraphrase of (1a) is: (in view of what I allow you) it is possible for you to date an English woman; this woman may be whatever English woman you wish. In (1b) the use of any by the speaker signals that all hotels in Eilat are epistemically possible places at which John is lodging. A likely paraphrase of 1b is: it is possible that John is staying at a hotel in Eilat; this hotel may be whatever hotel there is.
As the statements in (2) show, the occurrence of any in the corresponding modal statements expressing deontic necessity, or, as commonly termed obligation (example 2a), and in modal statements expressing epistemic necessity (example 2b) is unacceptable:

(2) a. #You must date any English woman.
    b. #John must be staying at any hotel in Eilat.

If these sentences have any meaning at all, they only have a very bizarre meaning. (2a) would mean that it is necessary for the addressee referred to, to date whatever English woman there is. This is equivalent to saying that the addressee must date all English women there are. (2b) would mean that, whatever hotel there is in Eilat, the individual denoted by John is necessarily staying at present at that hotel. This is equivalent to saying that John is staying concurrently at all hotels situated in Eilat.

What the examples in (2) and (3) show us is that an occurrence of any is possible in the scope of a possibility operator but is ruled out from the scope of a necessity operator. This prima facia runs contra to our Kadmon and Landman based prediction: if FC any were an instance of the same indefinite any determiner occurring in negative polarity items, we would expect any to be licensed in necessity contexts and be ruled out from possibility statements. This is because, as we saw above, necessity contexts induce universal quantification over the any-NP; since a universal quantifier is downward entailing on its first argument (every baby cries. $\rightarrow$ every baby boy cries.), it should induce a stronger statement in the presence of any. Possibility contexts, as we saw, induce existential quantification over an indefinite; since an existential quantifier is upward entailing on its first argument (Some baby boy cries. $\rightarrow$ some baby cries.), it should not induce a stronger statement in the presence of any. The question of why any is

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1 Statements expressing deontic or epistemic necessity which contain a relative clause modifying the common noun do license any:
   a. You must pick any flower that you see.
   b. Any hotel in Eilat must be preparing for the vacation.
I will postpone the examination of these modified necessity statements until chapter 4 where I also give an account of the acceptability of any in modified episodic statements.
licensed under the possibility modal and not under the necessity modal is the main concern of this chapter.

A subsidiary question that this paper will address is the occurrence of *any* in imperative statements expressing invitation.

(3) Date any English woman.

The acceptability of *any* in imperatives runs counter to our prediction; since imperatives involve obligation, we would expect *any* to be unacceptable in imperatives just as *any* is unacceptable in obligation. Notice, however, that though, an imperative containing an *any*-NP imposes an obligation, they allow choice within the boundaries of the obligation. The imperative in (3), for example, has a reading under which the speaker obliges the addressee to date an English woman but permits him to choose to date whatever English woman he wishes. A likely paraphrase of (3) is: *you are required to date an English woman; this woman can be whatever woman you wish.* In this respect imperatives are similar to deontic possibility statements; the addressee of (3) as that of (1a) is given free choice permission with respect to which individual from the set of English women to date- the difference between the deontic necessity statement in (1a) and the imperative in (3) resides in the fact that the subject of (1a) does not obligate any dating at all while the subject of (3) does. I will call imperatives containing an *any*-NP ‘restricted permission’ constructions.

In this chapter, we look at epistemic possibility statements, deontic possibility statements and restricted permission under an imperative construction, all of which involve free choiceness. We show how strengthening is maintained in these construction à la Kadmon and Landman. Here is the plan for the rest of the chapter. I start with arguing that treating *any* in modal contexts as a wide scope universal is empirically wrong (section 2). I follow with an outline of the problem that arises for all environments if we maintain Kadmon and Landman’s theory of *any* as a widener inducing strengthening and assume a standard possible world semantics of modal operators (section 3). In section 4, I convince the
reader that *may* is downward entailing and *must* is not and hence the two differ in their availability to induce a stronger environment for *any*. I then show how switching from a truth conditional analysis of modal statements to a performative analysis allows us to capture the difference in the monotonic properties of *may* and *must* and accordingly maintain Kadmon and Landman’s theory of *any* (section 5). I end with an evaluation of Aloni’s (2006) analysis of *any* in modal contexts (section 6).

2. **A universal interpretation of FC *any***

To represent the meaning of the sentences in (1) and (3), an obvious possibility is to differentiate FC *any* from NPI *any* and treat FC *any* as a universal quantifier over individuals denoted by the common noun, which, unlike all other universal quantifiers in modal contexts, has the particular feature of taking wide scope over the modal. (1a) and (1b) repeated below in (4a) and (5a) would be represented as (4b) and (5b) respectively:

(4) a. You may date any English woman.
   
   b. \( \forall x [\text{English woman}(x)] \ [\Diamond \text{date (you, } x)] \)

   **Paraphrase:** Every English woman is such that it is deontically possible that you date her.

(5) a. John might be staying at any hotel in Eilat.

   b. \( \forall x [\text{hotel in Eilat}(x)] \ [\Diamond \text{stay in (John, } x)] \)

   **Paraphrase:** Every hotel in Eilat is such that it is possible that John is staying there.

Since this universal quantifier is situated outside the scope of the modal, as an extensional quantifier it would have its domain in the actual world which would rule out the possibility of reference to intentional individuals. There are clear cases, however, which show that if *any* were a wide scope universal, it would have to be a wide scope quantifier stipulated to be intensional in nature. For example, statements with intensional imaginary objects can not be associated with a *de re* reading by virtue of the fact that they don’t exist. In modal logic *de re* readings are represented by putting the quantifier before the modality. If *any* were an extensional quantifier it would not be able to head an
intensional NP denoting a non-existing object, but in fact it can. (6a) cannot be interpreted as (6b). (7a) cannot be interpreted as (7b); nonetheless, the occurrence of *any* is acceptable in both (6a) and (7a) which shows that *any* cannot be a wide scope universal.

(6) a. You may draw any demon.
   b. \(\forall x [\text{demon}(x)] \circ [\text{draw}(\text{you}, x)]\)
      For every demon you may draw it.

(7) a. John might be looking for any unicorn.
   b. \(\forall x [\text{unicorn}] \circ [\text{look}(j, x)]\)
   c. For every unicorn John might be looking for it.

As another example, consider the following statements which express a proposition about possible individuals bearing the common noun property rather than a proposition about actual individuals:

(8) a. You may date any starving actress.
   b. She might end up in any job.

If we were to treat *any* as an extensional universal wide scope quantifier, (8a) would have a reading under which the addresses is allowed to date a starving actress existing in the actual world but not a reading under which he is allowed to date some woman who becomes a starving actress in some future accessible world; Similarly, treating *any* as an extensional universal wide scope quantifier in (8b) will induce a reading under which the individual subject may be offered a job which is already vacant in the actual world but not a reading under which she may be offered a job which becomes available in some future world.

This idea of treating *any* as a wide scope intentional universal quantifier is proposed in the work of Dayal (1995, 1998, 2004) who treats *any* as a generic universal quantifier.
quantifying over possible individuals\textsuperscript{2}. Under Dayal’s proposal the content of (1a) repeated below in (9a) is represented as in (9b). The content of (2a) repeated below in (10a) is represented as in (10b)

\begin{enumerate}
  \item You may date any English woman\textsuperscript{3}.
  \item $\forall s, x \ [(\text{English woman}(x, s) \& C(s)) \exists s' [ s < s' \& \Diamond \text{date (you, x, s')}]$ 
  \item Paraphrase: \textit{For every possible situation s involving an English woman, there is an extension s’ of that situation s.t s’ is part of some accessible world and the addressee dates that woman in that situation.}
\end{enumerate}

\begin{enumerate}
  \item John might be staying at any hotel in Eilat.
  \item $\forall s, x \ [(\text{hotel in Eilat}(x, s) \& C(s)) \exists s' [ s < s' \& \Diamond \text{stay (John x, s')}]$ 
  \item Paraphrase: \textit{For every possible situation s involving a hotel in Eilat, there is an extension s’ of that situation s.t s’ is part of some accessible world and John stays in that hotel in that situation.}
\end{enumerate}

In the next section we evaluate Dayal’s proposal.

\section{An evaluation of the universal quantifier based account of any}

Aside from the fact that if we treat FC any as an intensional wide scope universal quantifier we lose the integrity of any, we are also introducing a very peculiar universal quantifier to our language, one which has a modal in its scope. In addition, there are several empirical problems with treating any as an wide scope intentional universal. Let

\textsuperscript{2} Though Dayal doesn’t state this directly, she treats FC any as an intensional quantifier in order to account for the fact that any in subtriggered cases is only compatible with an essential reading of the relative clause (a reading under which membership in the set denoted by the relative clause is essential to the truth of the sentence). I discuss this feature of FC any in chapter (4)

\textsuperscript{3} Recall that Dayal claims that statements with any are ruled out if they don’t satisfy the constraint of contextual vagueness. In necessity statements such as #you must marry any English woman, any would be ruled out under this constraint because the speaker knows the set of women that will be married. Dayal however claims that the infelicity of any in such necessity statements is due to pragmatic infelicitousness that results from the interaction between the semantics of necessity with that of FC any when interpreted generically and doesn’t relate this explanation to contextual vagueness, though she may have meant to. in any even, since this section deals with the force of any and not with its distribution, I refer the reader to her paper for a an account of the distribution of any in modal statements
us divide the problems into those which result from treating FC *any* as a wide scope universal and into those which result from treating FC *any* as intensional in its nature.

### 2.1.1 FC *any* as a wide scope quantifier

An analysis of *any* as a wide scope universal will not be able to capture correctly the reading induced by imperatives containing an *any*-NP. Specifically, if we treat *any* as a wide scope universal quantifier, the imperative in (11) will have a reading under which the subject is required to marry all English women, which is not the reading associated with the statement in (11). The imperative in (11) says that the subject must marry an English woman but this woman can be whatever woman he wishes.

\[(11)\]
\[
a. \text{Marry any English woman} \\
   b. \forall x [[\text{English woman}(x)] \sqcap \text{marry} (\text{you}, x)]
\]

Second, if *any* were a true wide scope universal it should be able to take scope over negation, but it can’t. (12a) cannot be paraphrased as (12b), only as (12c):

\[(12)\]
\[
a. \text{You may not marry any English woman- only one with a Ph.D.} \\
   b. \forall x [[\text{English woman}(x)] \neg \diamond \text{marry} (\text{you}, x)] \\
      \text{For every woman it’s not the case that it is possible for you to marry her.}
   c. \neg \forall x [[\text{English woman}(x)] \diamond \text{marry} (\text{you}, x)] \\
      \text{It’s not the case that for every woman it is possible for you to marry her.}
\]

Third, a sentence such as (13a) containing a universal quantificational NP in subject position and an existential quantificational NP in object position is ambiguous between a reading under which the object NP has scope over the subject NP and a reading under which it has scope under it. In (13b), only a narrow scope reading of the universal quantifier is possible due to the contextual information supplied by the ‘but’ clause. If *any* were a true wide scope universal then the result of substituting *any* for a universal quantifier in (13b) should render the statement ungrammatical but it doesn’t: if we
substitute *any* for the universal quantifier, the resulting sentence will be pragmatically felicitous:

(13) a. Everyone might love someone.
    b. Everyone might love someone, but surely it’s not John whom everyone might love
    c. Anyone might go to some hotel, but surely it is not to that one.

2.1.2 *Any* as an intensional quantifier

As observed by Rothstein (p.c.), if we treat *any* as a wide scope intentional universal quantifier, it will have scope over the modal operator. This will allow quantification over all possible individuals in all possible worlds bearing the common noun property. Intuitively, however, such quantification is not available since the restriction of the modal also restricts the domain of the quantifier in its scope.

Suppose, for example, I am a traditional Jew and a vegetarian- I don’t eat meat but if I did it would be kosher. Imagine I take my meat eating son out to dinner and we engage in the following conversation:

(14) A: Can I order a meat dish?
    B: Yes, you can order a meat dish.
    A: Any meat dish, even an expensive one?
    B: Yes, you can order any meat dish [non expensive or expensive].

Switching to *any* in the context in (14) has the effect of widening the domain of quantification to include meat dishes which were not contextually assumed to be part of the domain of quantification, say very expensive meat dishes, but, clearly, being traditional Jewish, my use of *any* does not induce widening of the domain to include non-kosher meat dish. I clearly still prohibit my son to order a non-kosher meat dish. My permission ‘yes you can order any meat dish’ allows him to order an expensive meat dish but not a non kosher one. Extracting *any* out of the scope of *may* in (15b), will,
unfortunately, allow my son to order a non-kosher meat dish as well, which as we see is a reading which is not available:

(15)  

a. You can order any meat meal  
b. \( \forall x \left[ \text{meat meal}(x) \right] \circ \left[ \text{order} \left( \text{you, } x \right) \right] \)  

\text{For every possible meat meal you can order it} 

We see that the possibilities quantified over in (15) are constrained by the set of prohibitions imposed on the addressee by the speaker, viz., constrained by what I may allow my son to eat. Thus, since the contextual restrictions on what possible meat dishes are allowed are determined by \textit{may}, if there is any universality at all induced by \textit{any}, the universality is necessarily relative to what the permission allows. This forces the \textit{any}-NP to be under the scope of \textit{may}.

I conclude that treating \textit{any} as a wide scope universal is not just expensive to maintain but it also gives the wrong empirical results. Let us suppose instead that Kadmon and Landman are right. If they are right then we should be able to treat an \textit{any}-NP in modal statements as an indefinite NP which signals a wider construal of N than would be available if the indefinite \textit{a} were used and which is licensed by strengthening. This is what I aim to show.

3. \underline{Maintaining Kadmon and Landman’s theory for deontic and epistemic modal statements}  

3.1 \underline{Kadmon and Landman’s theory- overview}  

Recall that under Kadmon and Landman’s analysis, \textit{any} is an indefinite on a par with \textit{a}, which gets its quantificational force from the linguistic environment in which it occurs. Unlike \textit{a}, \textit{any} induces widening of the set denoted by the common noun and is licensed if the widening creates a stronger statement. This will always be the case in downward entailing contexts since in such contexts domain widening will create a stronger statement. Consider again the following example:
A: An owl hunts mice.
B: Right. But of course, a sick one doesn’t.
A: Wrong. Any owl (sick or healthy) hunts mice.

Under a widening of any along the contextual dimension ‘sick vs. healthy’, any is licensed in (16) because the generic operator which is argued to be associated with a universal quantifier over worlds and individuals induces entailments downward from the statement containing the more general expression any owl where ‘owl’ is interpreted under a wide sense to that containing the less general expression an owl. where ‘owl’ is interpreted under a narrower sense

(16)  

(17)  

Let us turn now back to our modal statements. Under an analysis of any as an indefinite inducing widening, a likely paraphrase of a modal statement expressing permission or epistemic possibility with an occurrence of any would be as follows:

(18)  

Similarly, a likely paraphrase of a modal statement expressing a command or epistemic necessity would be the following:
(19)  a.  #You must date any English woman
       = you must date some English woman from a wider construal of women
          that might be at first contextually assumed.

       b.  #John must be staying at any hotel in Eilat.
          = John must be staying at some hotel from a wider construal of hotels that
          might be at first contextually assumed.

We need to show now that the licensing condition Kadmon and Landman assume for *any*
is met in modal environments expressing possibility (examples 18a,b), but not in modal
statements expressing necessity (example 19a,b). As I show next, Kadmon and
Landman’s licensing condition is not met, at least not under the standard possible world
semantics of modal operators. This was already observed in Aloni (2002).

3.2 **Examining the interaction between strengthening and the standard
semantics of modals**

Under the standard possible worlds semantics of modal operators (Kratzer 1977, 1981),
*may* is treated as an existential quantifier over worlds and *must* is treated as a universal
quantifier over accessible worlds:

\[
\text{(20) a. } [\text{May } \varphi]_{w_0} = 1 \iff \exists w: [\text{w is contextually accessible from } w_0] \land [\varphi]_w = 1.
\]

\[
\text{b. } [\text{Must } \varphi]_{w_0} = 1 \iff \forall w: [\text{w is contextually accessible from } w_0] \rightarrow [\varphi]_w = 1.
\]

If we treat *any* as an indefinite which à la Heim gets its force from a quantifier present in
the sentence, (21a) will be represented as in (21b), where *any* gets existential force by
virtue of the existential quantifier introduced by *may*. An existential quantifier will not
induce entailments downward from a statement with the more general expression ‘any
English woman’ to the corresponding statement with the less general expression ‘an
English woman’. Hence (21) does not entail (22), which wrongly predicts that *any* should
not be grammatical in the scope of *may* interpreted deontically:
(21)  a. [You may marry any English woman [from a wide construal of women]]
   b. ∃w,x: w is deontically accessible from w₀ ∧ English woman [from a wide construal of women](x,w) ∧ marry (you, x, w).

   For some world w which is deontically accessible from the actual world and for some English woman x in w which is from a wide construal of English women, it is the case that you marry that woman in w. ↔

(22)  a. [You may marry an English woman [a narrow construal of women]]
   b. ∃w,x: w is deontically accessible from w₀ ∧ English woman [narrow construal of English women](x,w) ∧ marry (you, x, w).

   For some world w which is deontically accessible from the actual world and for some English woman x in w from a narrow construal of women it is the case that you marry that woman in w.

The same lack of entailment holds in epistemic necessity contexts; (23) does not entail (24), which wrongly predicts that any should not be grammatical in the scope of epistemic may either:

(23)  a. [John may be staying at any hotel [from a wide construal of hotels]]
   b. ∃w,x: w is epistemically accessible from w₀ ∧ hotel [from a wide construal of hotels](x,w) ∧ stay(John, x, w).

   For some world w which is epistemically accessible from the actual world and for some hotel x in w which is from a wide construal of hotels, it is the case that John stays at that hotel in w. ↔

(24)  a. [John may be staying at an hotel [from a wide construal of hotels]]
   b. ∃w,x: w is epistemically accessible from w₀ ∧ hotel [from a narrow construal of hotels](x,w) ∧ stay(John, x, w).

   For some world w which is epistemically accessible from the actual world and for some hotel x in w which is from a wide construal of hotels, it is the case that John stays at that hotel in w.
Let us turn now to necessity modal statements. If we represent *any* as we did above, viz, as an indefinite which gets its force from the quantifier present in the sentence, (25a) will be represented as in (25b), where *any* gets universal force by virtue of the universal quantifier introduced by *must*. A universal quantifier induces entailments downward from a statement with the more general expression ‘any English woman’ to the corresponding statement with the less general expression ‘an English woman’. Hence (25) entails (26):

(25)  
a. You must marry any English woman.  
b. \( \forall w,x: w \text{ is deontically accessible from } w_0 \land \text{English woman} \) [wide construal of English women](x,w) \( \rightarrow \) marry (you, x, w).  

*For every world w and English woman x, if w is deontically accessible from the actual world and x is an English woman from a wide construal of women in w then you marry that woman in w.*  

\( \rightarrow \)

(26)  
a. You must marry an English woman.  
b. \( \forall w,x: w \text{ is deontically accessible from } w_0 \land \text{English woman} \) [narrow construal of English women](x,w) \( \rightarrow \) marry (you, x, w).  

*For every world w and English woman x, if w is deontically accessible from the actual world and x is an English woman from a narrow construal of women in w then you marry that woman in w.*  

This again wrongly predicts that *any* should be grammatical in a *must* environment because strengthening is satisfied.

We could maintain Kadmon and Landman’s account within a standard semantic analysis of modals: notice that a statement with an indefinite ‘a NP’ in the scope of *must* doesn’t have a reading under which the indefinite gets bound by the universal quantifier introduced by *must; you must marry an English woman* doesn’t mean that ‘every English woman is such that you must marry her’. The meaning of (26a) repeated below in (28a) is more naturally represented as in (28b) where the ‘a NP’ gets existential force. If we treat both ‘a/any NP’ as an indefinite interpreted existentially, which captures the meaning of
(28a) correctly, *any* will correctly be predicted to be ungrammatical but not because of the monotonic properties associated with *must* and at the cost of treating a/*any* as an indefinite which doesn’t seem to get its force from the quantifier present in the sentence but rather seems to introduce its force by itself:

(27) a. You must marry any English woman
b. $\forall w: w$ is deontically accessible from wo $\rightarrow \exists x$ English woman [wide construal of women](x,w) $\land$ date(you, x, w).

*For every world w, if w is deontically accessible from the actual world then there’s an x such that x is an English woman from a wide construal of women and ‘you’ marries that woman.*

\[\neg\]

(28) a. You must marry an English woman
b. $\forall w: w$ is deontically accessible from wo $\rightarrow \exists x$ English woman [narrow construal of women](x,w) $\land$ date(you, x, w).

*For every world w, if w is deontically accessible from the actual world then there’s an x such that x is a English woman from a wide construal of women and ‘you’ marries that woman.*

I leave it to the reader to check it for himself that the same problems hold in epistemic necessity statements.

Let us sum up. What the entailment relations above show us is that under the standard semantics of modals, strengthening is not satisfied in possibility environments and yet *any* is licensed in their scope. Strengthening is not satisfied in necessity environments either, but in these environments it is not is not the necessity operator which is responsible for the non-satisfaction of strengthening. As I show next, there is evidence in favor of treating *may* as downward entailing and *must* as upward entailing which provides evidence in favor of maintaining a Kadmon and Landman’s licensing condition for *any* in modal statements.
3.3 Evidence in favor of treating *may* as a downward entailing operator and *must* as an upward entailing quantifier

As has been observed originally in Horn (1972) and Kamp (1973), two or more disjuncts coordinated by *or* allow a conjunctive interpretation in the same environments in which *any* is licensed, for example, in the scope of negation (29), in the scope of a universal quantifier (30), and in the scope of *too* (31):

(29)  
   a. I didn’t see any cats.
   b. I didn’t see John or Mary.
      = I didn’t see John and I didn’t see Mary.

(30)  
   a. Every student who talked to any professor got confused.
   b. Every student who talked to John or Mary got confused.
      = Every student who talked to Mary got confused and every student who talked to John got confused.

(31)  
   a. John is too short to reach any shelf.
   b. John is too short to reach the top or bottom shelf.
      = John is too short to reach the top shelf and John is too short to reach the bottom shelf.

In the corresponding upward entailing environments in which *any* is not allowed a conjunctive interpretation of *or* is not allowed either. Thus a conjunctive interpretation of *or* is not available in affirmative statements (32), in the scope of an existential quantifier (33), and in the scope of the adverbial *enough* (34):

(32)  
   a. #I saw any cats.
   b. I saw John or Mary.
      ≠ I saw John and I saw Mary.

(33)  
   a. #Some student who talked to John or Mary got confused.
   b. ≠ Some student who talked to Mary got confused and some student who talked to John got confused.
The availability of a conjunctive interpretation of \( \text{or} \) in environments licensing \( \text{any} \), viz in downward entailing environments is not a mere coincidence, but seems to be related to the subset relation that holds between a conjunction and its equivalent disjunction; specifically, we know that the set of worlds in which a conjunction is true is a subset of the set of worlds in which a disjunction is true: \( \{ w: (p \land q)_w = 1 \} \subset \{ w: (p \lor q)_w = 1 \} \). This follows from the fact that a conjunction is true only in worlds where both conjuncts are true while a disjunction is true in worlds where either both disjuncts are true or only one of them is true.

In downward entailing contexts where entailments hold downward from a statement containing an expression \( x \) to the corresponding statement containing a subset of \( x \), a statement containing a disjunctive expression ‘a dog or a cat’ will entail the identical statement except that ‘a dog and a cat’ which denotes a subset of the set denoted by ‘a dog or a cat’ is substituted for ‘a dog or a cat’ (example 35a). This is why in downward entailing environments an \( \text{or} \) expression has a conjunctive interpretation. In an upward entailing environment where entailments hold upward from a statement containing an expression \( x \) to the corresponding statement containing a superset of \( x \), a statement containing a disjunctive expression ‘a dog or a cat’ will not entail the identical statement except that ‘a dog and a cat’ is substituted for ‘a dog or a cat’ (example 35b). Hence, an \( \text{or} \) expression will not have a conjunctive interpretation in upward entailing environments.

(34)  
\begin{itemize}
  \item a. \( \# \text{John is short enough to reach any shelf.} \)
  \item b. \( \text{John is short enough to reach the top or bottom shelf.} \)
  \item \( \text{= John is short enough to reach the top shelf and John is short enough to reach the bottom shelf} \)
\end{itemize}

(35)  
\begin{itemize}
  \item a. I don’t have a dog or a cat. \( \Rightarrow \) I don’t have a dog and I don’t have a cat.
  \item b. I have a dog or a cat. \( \nRightarrow \) I have a dog and I have a cat.
Let us turn now to modal statements and check the availability of a conjunctive interpretation. As the following examples show, a conjunctive interpretation of or is available in the environment of may, but not in the environment of must. This contrast between may and must holds for both deontic and epistemic contexts (Kamp 1973, Zimmerman 2000). Contrast the statements in (36a,b), where there is entailment from the premises of (36a, b) to their conclusions, with the corresponding statements in (37a, b) where there’s no such entailment.

(36)    a. You may take an apple or you may take a pear ⇒ you may take an apple and you may take a pear

    b. He might be staying the Hilton or Dan hotel ⇒ he might be staying at the Hilton hotel and he might be staying at the Dan hotel.

(37)    a. You must take an apple or you must take a pear ⇏ you must take an apple and you must take a pear.

    b. John must be staying at the Hilton or Dan hotel ⇏ John must be staying at this Hilton hotel and John must be staying at the Dan hotel.

If under the scope of may there is entailment downward from a statement containing an ‘or’ expression to a statement containing an ‘and’ expression, then may has to be a downward entailing environment – there is no other operator to induce the entailment downward from the statement with or to the statement with and. If under the scope of must there’s no entailment downward from a statement containing an or expression to a statement containing an and expression, then must has to be a non downward entailing operator.

How can this be? Following Kamp (1973), I show in the next section that entailment for modal statements should not be defined in terms of truth conditions but rather in terms of the performative function of modal statements. Under this non truth-conditional

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4 See Zimmerman (2000) who views disjunctions as conjunctive lists of epistemic possibilities, whence the conjunctive interpretation of or in modal statements expressing possibility.
definition of entailment for modal statements, *may* is downward entailing and *must* is upward entailing, whence the contrast in the entailment patterns in (36) and (37). This in turn will allow us to maintain Kadmon and Landman’s strengthening constraint on the licensing of *any*.

But, before we turn to the next section let us consider the following data which seems to prima facia provide evidence against treating *may* as downward entailing:

### 3.4 Apparent counter evidence

If we look at simple non disjunctive modal sentences, we see that a permission with a more general indefinite noun phrase does not entail a permission with the corresponding less general indefinite noun. In simple non disjunctive modal sentences, *may* apparently does not classify as downward entailing:

\[(38) \quad \text{You may marry an English woman.} \quad \not\implies \quad \text{You may marry an English woman who has 7 kids.}\]

The premise of (38) does not entail its conclusion, which shows that *may* is not downward entailing. The obvious reason for the lack of entailment is that there are two prohibitions at the background of (38) and the permissive statement only lifts one of them. Imagine a scenario in which the speaker has prohibited the speaker to date a non-American woman or one who has more than 7 kids. Under this scenario lifting the prohibition against dating English women does not lift the prohibition against dating women who have more than 7 kids. This seems to show that *may* is not downward entailing- it does not induce entailments downward from a statement containing the expression ‘an English woman’ to the identical statement where ‘an English women with 7 kids’ which denotes a subset of the set denoted by ‘an English woman’ is substituted for ‘an English woman’.
A solution to the problem, which will enable us to maintain a characterization of *may* as a downward entailing operator and *must* as an upward entailing operator in such cases, is to check whether the inferences hold under the assumption that all prohibitions associated with the conclusion are lifted. This is the solution that Von Fintel (1999) proposes to maintain a downward entailing account of cases which license *any* and yet strictly speaking are not downward entailing. Consider for example the environment *only*. As the following shows, *only* is not a downward entailing operator; it does not induce entailments downward from the statement with *vegetables* to the identical statement except that the expression *kale* which denotes a subset of the set denoted by the expression *vegetables* is substituted for *vegetables*. Nonetheless *any* is licensed in the scope of *only*:

(39) a. Only John ate vegetables for breakfast \(\nRightarrow\) Only John ate kale for breakfast
b. Only John ate any kale.

To establish the DE-ness of *only*, Von Fintel improves Ladusaw’s proposal and uses a notion of entailment which he calls Strawson-entailment. This entailment checks whether an inference is truth preserving under the assumption that all conventional implicatures and presuppositions of the premises and conclusion are satisfied

- A function \(f\) of type \(<\sigma, \tau>\) is Strawson D.E iff for all \(x, y\) of type \(\sigma\), such that \(x \Rightarrow y\) and \(f(x)\) is defined: \(f(y) \Rightarrow f(x)\)

A function is D.E iff for any two argument such that the first entails the second and the conclusion has a defined semantic value the result of applying the function to the second argument entails the result of applying the function to the first

On this new sense of entailment *only* is downward entailing. Adding to the premise of (39a) the implicatures of its conclusions (viz, the presupposition ‘kale is a vegetable’ and the implicature ‘John ate kale for breakfast’) will induce entailments downward from the premise of (40) to its conclusion:
(40) Kale is a vegetable.
    John ate kale for breakfast.
    Only John ate vegetables for breakfast

    :. Only John ate kale for breakfast

We can use a Strawson downward entailment definition for our case too: if we add to the premise of (38) the implicature associated with its conclusion, viz (‘ marrying someone with 7 kids is not prohibited’) then the downward entailing inference from the premise of (38) to its conclusion follows:

(41) Marrying someone with 7 kids is not prohibited
    You may marry an English woman

    :. You may marry an English woman with 7 kids

This solution, as the reader may feel himself, is an ugly one. In the next section, I will present a performative analysis of modals à la Kamp and show that a performative analysis of modals will solve the problem represented in this section more elegantly.

3.5 Conclusions

I conclude that despite the cases presented in 3.4, there is evidence that a may environment is a downward entailing environment. This in turn provides us with further support for Kadmon and Landman’s claim that all instances of FC any are instances of the same any occurring in negative polarity environments which induce widening and are licensed by strengthening.

Unfortunately, we saw that a possible world semantic account of modal statements fails to account for the monotonic properties of may and must. As I show next, if we switch from a truth conditional possible world semantic account of modal statements, to a performative account of modals, as suggested by Kamp, we will be able to account for
the monotonic properties of modals. As I show *may* on its performative analysis is downward entailing and hence induces strengthening. *must* on its performative analysis is not downward entailing and hence does not induce strengthening.

4. **A performative account of deontic statements**

Let us consider again the semantic constraint Kadmon and Landman associate with *any*

**Strengthening:** *any* is licensed iff the widening it induces creates a stronger, viz, more informative, statement than the corresponding statement with indefinite *a*. This will be the case if the statement on the wide interpretation induced by *any* ⇒ the statement on the narrow interpretation induced by *a*

In negative episodic statement and generic affirmative statements, for example, *any* is licensed because the statement on the wide interpretation entails the statement on the narrow interpretation. In affirmative episodic statements *any* is not licensed because the statement on the wide interpretation does not entail the statement on the narrow interpretation.

Strengthening is equated with informativeness and is defined in terms of truth conditional entailment: a statement A is stronger/more informative than statement B if A ⇒ B. This will be the case if in every situation in which A is true, B is true too. For example, *John picked a red rose* is more informative than *John picked a rose* since every situation in which *John picked a red rose* holds is a situation in which *John picked a rose* holds too.

Following Stalnaker’s (1978) pragmatic account of assertions, we can provide a pragmatic explanation for this equation between informativeness and entailment: as Stalnaker claims, the pragmatic function of an assertion is to narrow down the set potential worlds which serve as candidates for being the actual world. For example, when I utter the truthful sentence *John has been convicted of a crime he didn’t commit*, I reduce the set of worlds compatible with what has been said in such a way that all worlds which are not compatible with my utterance are eliminated. Since the pragmatic function of a
declarative statement is narrowing the set of live options for being the actual world, the statement holding in a set of worlds will be stronger than a statement holding in a superset of the set of worlds, whence, the stronger statement is the entailing statement. Put differently, since the function of an assertion is to narrow the set of live options, the more worlds that are eliminated the stronger the statement is.

Let us consider now modal statements; contrary to assertions, the pragmatic function of a deontic modal statement such as you may pick a flower is to widen the hearer’s deontic possibilities and the pragmatic function of a deontic modal statement such as it might be there is to widen the hearer’s epistemic possibilities. Accordingly, it is inadequate to define strengthening for non declarative statements in terms of truth relations. Strengthening should be defined in terms of the pragmatic function of the non declarative statement. Since the pragmatic function of permissions and epistemic possibility statements is to widen, the statement which widens most is strongest. You may pick a red rose is stronger than you may pick a rose. Under this account, we will see that you may pick any rose is even stronger.

In other words, what I claim is that because of the pragmatic function of declarative statements, strengthening is equated with truth conditional entailment for declarative statements. Defining strengthening in terms of truth conditional entailment for non declarative statement is a wrong strategy to take. In non declarative statements strengthening should be defined in a non truth conditional manner. Following Kamp’s (1973) analysis of permissions and commands, I will show how a performative non truth-conditional definition of strengthening accounts for the licensing of any in modal statements.

4.1 A performative account of deontic and epistemic statements

4.1.1 Kamp (1973)

As argued in the literature, statements expressing permission or command (Lewis 1970/79, Kamp 1973) have a performative function in addition or instead of their truth
conditional meaning. Under this function, the primary meaning of a permission statement and a command statement is the change they bring about in the set of permissible worlds which the speaker (the “master” in Lewis’ terminology) is allowed by the hearer (the “slave” in Lewis’ terminology) to realize.

Kamp represents the permissibility set as Perm(w, t, B) ‘the set of worlds at which B (the hearer) obeys all prohibitions imposed on him by the speaker at time t’. For Kamp, prohibitions denote propositions (i.e are associated with a set of possible worlds), so the prohibition for you to smoke is the proposition ‘you smoke’. The prohibition for you to speak to strangers is the proposition ‘you speak to strangers’. The prohibition for you to meet a friend after school is the proposition ‘you meet a friend after school’. Any possible world in which one of the prohibitions hold will not be part of the permissibility set which the hearer is allowed by the speaker to realize. So, any world in which the hearer smokes or speaks to strangers or meets a friend after school will be prohibited; it will not be a member of Perm(w, t, B). The difference between a command and a permission resides in the nature of the change they each induce from the old permissibility set to the new permissibility set. A command narrows the set of permissible worlds while a permission widens the set of permissible worlds w.r.t the worlds defined by the relevant propositions.

A command you must A prohibits ¬A. This prohibition is fulfilled by narrowing the permissibility set in such a way that all worlds in which ¬A holds are thrown away from the permissibility set. Formally this is done by intersecting the old permissibility set Perm(w, t, b) with the set of worlds in which A is fulfilled. The result is a set of worlds whose members are each compatible with the content of A. For example, when I utter you must see John I command the hearer to see to it that the proposition ‘you see John’ holds in each of the worlds in his permissibility set which is under my control. The old permissibility set is narrowed via intersection with the set of worlds in which the

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5 Stalnaker (1979) claims that also assertions have a performative function. Under this function, the meaning of an assertion is not just its truth value in each possible world, but also the effect it has on set of possible worlds recognized by the participants in the conversation to be the live options for being the actual world. Stalnaker calls this set the context set.
proposition *You see John* is satisfied. The result is that the new permissibility set, Perm’, contains only a subset of the old permissibility set, viz only those in which the hearer does see John:

(42) a. You must see John.
    b. Perm’(w,t,b) = Perm (w,t,b) ∩ {w: w ∈ you see John}

A permission *you may A* lifts the prohibition against A. This lifting is fulfilled by widening the permissibility set in such a way that a subset of all those previously prohibited worlds in which A does hold are added to the permissibility set. Formally, this is done by unifying the old permissibility set via the operation of union with a subset of the set of worlds in which A holds- viz, with that subset in which no other prohibition is violated. For example when I utter *you may see John* I permit the hearer to add to his permissibility set a subset of the set of worlds in which ‘you see John’ takes place- those in which you see John, but, no other prohibition is violated.

(43) a. You may see John
    b. Perm’(w,t,b) = Perm (w,t,b) ∪ {w: w ∈ you see John & no other prohibition is violated in w}.

If we allowed all worlds in which ‘you see John’ takes place to be added, we would run the chance of adding worlds in which some prohibition which has not been lifted is added. Suppose, for example, that the permissibility set is restricted by the obligation not to smoke cigarettes, not to play music between 14:00-16:00 and not to see John. Lifting the prohibition against seeing John can’t be done by adding all worlds in which the hearer sees John into the permissibility set. This is because some of them may include ones in
which the hearer smokes or plays music between 14:00-16:00- prohibitions which were
not lifted\(^6\).

Notice, that this is why the following entailment discussed in section 3.4 will not hold:

(44) You may marry an English woman. \(\nRightarrow\) You may marry an English woman who
has 7 kids.

The premise of (44) lifts the prohibition against marrying an English woman, but doesn’t
lift the prohibition against marrying someone with 7 kids:

Let us summarize Kamp’s performative account of permission and command:

- Deontic necessity statements have the performative effect of narrowing the set of
deontically accessible worlds. – by narrowing (via intersection) the set of permissible
worlds

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\(^6\) As Kamp points out, this solution won’t do for cases where lifting a prohibition can’t be done without
violating the other. For example: suppose the permissibility set includes worlds which satisfy among other
prohibitions, the prohibition you do your homework straight after school and the prohibition you don’t
meet a friend after school. Now suppose I lift the prohibition against seeing a friend after school. Clearly
this can’t be done without violating the prohibition you do your homework after school. Stalnaker and
Lewis provide a solution: a permission you may A is interpreted as adding the closest worlds making A
true to the permissibility set: \([\text{may } A]_w^p = \{ w \in [A]w : \neg \exists w_2: w_2 <_p w \}\). What is the nature of this order?
Stalnaker claims that the order is defined by reprehensibility- by how much the hearer deviates from the
ideal behavior. Accordingly a permission you may A adds the set of the least reprehensible worlds to the
deontic options of the hearer. This idea is further developed by Harper who suggests to order the worlds
according to how many previously obligations the hearer breaks. Let O be the set of propositions that John
is obliged to do. Then, we say that u is at least as desirable as v with respect to O, \(u \leq_0 v\) iff the set of
commands in O that v makes true is smaller than the set of commands in o that v makes true. The set of
worlds that is added is then the set of worlds which are compatible with a large number of commands.
• Deontic possibility statements have the performative function of widening the deontic options of the addressee – via widening of the set of permissive worlds which are under the control of the speaker uttering the permission.

Formally, we can define \( \text{may}_{\text{deontic}} \) and \( \text{must}_{\text{deontic}} \) as denoting a function from sets of worlds to sets of worlds. \( \text{may}_{\text{deontic}} \) denotes a function which applies to a set of deontically accessible worlds and gives as output a wider set of deontically accessible worlds which is formed by unifying the input set with the set of worlds in which \( \varphi \) holds:

- **May\textsubscript{deontic}:** \( \text{MAY}(P, \varphi) = \{w: w \in P\} \cup \{\varphi\} \) where \( P = \{w: w \text{ is permissible for an individual } x\} \)

  A function from sets of worlds into (wider) sets of worlds.

\( \text{must}_{\text{deontic}} \)\( \varphi \) denotes a function which applies to a set of deontically accessible worlds and gives as output a narrower sets of deontically accessible worlds containing no \( \varphi \) worlds:

- **Must\textsubscript{deontic}:** \( \text{MUST}(P, \varphi) = \{w: w \in P\} \cap \{\varphi\} \)

  A function from sets of worlds into (narrower) sets of worlds.

On the basis of this account, we now turn to define a performative, non truth conditional definition of strengthening for deontic statements:

**4.1.2 A performative definition of strengthening for deontic statements:**

Under a non truth conditional performative account of permission and command the scope of a permission statement is downward entailing and the scope of a command statement is upward entailing.

Since the purpose of a permission is to widen the set of available worlds, the wider the statement the stronger it will be. This gives the following definition of entailment for permission:
• Permission $\psi$ entails (=stronger than) permission $\varphi$ iff

The set of deontically accessible worlds induced by the use of permission $\psi$ is a superset of the set of worlds induced by the use of permission $\varphi$. (Kamp (1973))

Under this entailment definition introduced by Kamp, $\text{may}_{\text{deontic}}$ is downward entailing since it induces entailments downward from a permission ‘may $\psi$’ containing a proposition $\psi$ to the corresponding statement ‘may $\varphi$’ where $\psi$ is replaced by $\varphi$, which denotes a subset of the set of worlds denoted by $\psi$.

Since the purpose of a command is to narrow the set of available worlds, the narrower the statement the stronger it will be. This leads to the following Kamp style definition of entailment for commands:

• Command $\psi$ entails (=stronger than) command $\varphi$ iff

The set of deontically accessible worlds induced by the use of command $\psi$ is a subset of the set of worlds induced by the use of command $\psi$.

Under this entailment definition, $\text{must}_{\text{deontic}}$ is upward entailing since it induces entailments upward from a command containing a proposition $\psi$ denoting a set of worlds to an identical statement except that $\psi$ is replaced by a proposition $\varphi$ which denotes a superset of the set of worlds denoted by $\psi$.

In the next section we will see that once we employ a non truth conditional analysis of modal statements which takes into account the performative function of the modal verb, the acceptability of $\text{any}$ in modal contexts can indeed be seen as constrained by strengthening à la Kadmon and Landman. Before we end this section and turn to give an account of $\text{any}$ in modal contexts, let us see how these definitions of strengthening enable Kamp to explain the logical relations between $\text{or}$ and $\text{and}$. Recall that a conjunctive interpretation of $\text{or}$ is available in the environment of $\text{may}$, but not in the environment of $\text{must}$:
According to Kamp, in permission statements ‘or’ stands for set theoretic union, viz, it has the effect of unifying the set of worlds denoted by disjunct x with the set of worlds denoted by disjunct y. Thus, ‘or’ has the effect of adding a larger class of worlds than would be added by a simple permission of either conjunct— the union of the set of worlds added by each disjunct. Since the purpose of a permission is to widen the set of available worlds, the wider the statement the stronger it will be. Thus a disjunctive permission will be stronger than (=entail) each of its disjuncts.

Assuming that ‘or’ has the same effect in commands, a disjunctive command will not be stronger than (=entail) each of its disjuncts. This is because the purpose of a command is to narrow the set of available worlds. Since, insisting on p or q narrows the set of deontically accessible worlds less then either insisting on p or insisting on q, the disjunctive command will be weaker.

As we see next, any like or has the effect of moving a larger class of worlds than the corresponding statement with a Accordingly strengthening is satisfied and any is licensed.

4.1.3 An account of any in deontic statements

Let us recall Kadmon and Landman’s theory of widening and strengthening; any is an indefinite on a par with indefinite a. The function of any is domain widening: it widens the set of individuals denoted by the common noun to which it is attached in comparison to the set of individuals as determined by the corresponding indefinite a. The distribution of any is constrained by strengthening: it is licensed if the statement with any is stronger than the statement with the indefinite a. If we treat propositions as functions from possible worlds into truth values, then the domain widening induced by any will create a stronger statement if the set of worlds denoted by \(\phi\)(any N) is a superset of the set of worlds denoted \(\phi\)(a N).
Since the function of permissions is to widen, the wider the statement is the stronger the permission will be. Thus, in deontic possibility contexts the widening associated with \textit{any} will create a stronger statement. Specifically, since \textit{may} deontic induces entailments downward from a statement containing a proposition \( \psi \) to the corresponding statement where \( \psi \) is replaced by a proposition \( \varphi \) which denotes a subset of the set of worlds denoted by \( \psi \), then ‘\textit{may} deontic \( \varphi \)(any N)’ will be stronger than ‘\textit{may} deontic \( \varphi \)(a N)’.

(46) \[ \varepsilon \]

a. \[\llbracket \text{You may marry any English woman} \rrbracket = \]
\[ \{w: w \in P\} \cup \{\text{you marry an English woman} [\text{wide domain of English women}]\} \]
\textit{The set of worlds in which you behave in compliance with the body of law include all worlds in which you marry a woman from a contextually relevant wide domain of English women (except those worlds in which you marry an English woman but also violate some prior prohibition)}
\Rightarrow

b. \[\llbracket \text{You may marry an English woman} \rrbracket = \]
\[ \{w: w \in P\} \cup \{\text{you marry an English woman} [\text{narrow domain of English women}]\} \]
\textit{The set of worlds in which you behave in compliance with the body of law include all worlds in which you marry a woman from a contextually relevant narrow domain of English women (except those worlds in which you marry an English woman but also violate some prior prohibition)}.

Since the function of commands is to narrow, the narrower the statement is the stronger the permission will be. Thus, in deontic necessity contexts the widening associated with \textit{any} will not create a stronger statement; specifically, since \textit{must} deontic induces entailments upward from a command containing a proposition \( \psi \) denoting a set of worlds to the corresponding statement where \( \psi \) is replaced by a proposition \( \varphi \) which denotes a superset of the set of worlds denoted by \( \psi \), ‘\textit{must} deontic \( \varphi \)(any N)’ will not be stronger than ‘\textit{must} deontic \( \varphi \)(a N)’.
(47) \[\text{[You must marry any English woman]} = \]
\[\{w: w \in P\} \cap \{\text{you marry an English woman \text{[wide domain of English women]} in } w\}\]

*The set of worlds in which you behave in compliance with the body of law are all and only worlds in which you marry an English woman from a contextually widened domain of English women.* \[\Rightarrow \]

b. \[\text{[You must marry an English woman]} = \]
\[\{w: w \in P\} \cap \{\text{you marry an English woman \text{[narrow domain of English women]} in } w\}\]

*The set of worlds in which you behave in compliance with the body of law are all and only worlds in which you marry an English woman from a contextually narrow domain of English women.*

4.1.4 *A performative definition of strengthening for epistemic statements*

Under a truth a conditional analysis of modality, epistemic modality states the probability that a state of affairs denoted by the statement under consideration is true. A statement is said to be *epistemically possible* if it may be true, for all we know and *epistemically necessary* if it must be true, given what we know. It is much harder to give a performative account of epistemic modality. What could be the performative function of epistemic modal statements? Intuitively it seems that the function of an epistemic possibility statement is to make available accessible alternatives via widening; the function of epistemic necessity is to make indirect assertions via narrowing (see e.g. the discussion in Landman 1986). When (48a) is added to the ongoing discourse, the effect is that of widening the epistemically set of accessible worlds to include worlds in which John is in his room. When (48b) is added to the discourse, the effect is that of narrowing the set of epistemically accessible worlds s.t worlds in which John is located in other places but his room are eliminated.

(48)  

a. John might be in his room.

b. John must be in his room.
On the basis of a performative account of epistemic statements, we can give the following performative account of strengthening for epistemic statements.

Since *may*$_{\text{epistemic}}$ has the function of widening, epistemic possibility $\psi$ will be stronger than (=entail) epistemic possibility $\phi$ if the set of epistemically accessible worlds induced by the use of $\psi$ is a superset of the set of epistemically accessible worlds induced by the use of $\phi$:

- **Epistemic possibility $\psi$ entails (=stronger than) epistemic possibility $\phi$ iff**

  The set of epistemically accessible worlds induced by the use of $\psi$ is a superset of the set of epistemically accessible worlds induced by the use of $\phi$.

Since *must*$_{\text{epistemic}}$ has the function of narrowing, epistemic necessity $\psi$ will be stronger than (=entail) epistemic necessity $\phi$ iff the set of epistemically accessible worlds induced by the use of $\psi$ is a subset of the set of epistemically accessible worlds induced by the use of $\phi$:

- **Epistemic necessity $\psi$ entails (=stronger than) epistemic necessity $\phi$ iff**

  The set of epistemically accessible worlds induced by the use of $\psi$ is a subset of the set of epistemically accessible worlds induced by the use of $\psi$.

Accordingly, in epistemic possibility contexts the widening associated with *any* will create a stronger statement: specifically, since, *may*$_{\text{epistemic}}$ induces entailments downward from a statement containing a proposition $\psi$ to the corresponding statement where $\psi$ is replaced by a proposition $\phi$ which denotes a subset of the set of worlds denoted by $\psi$ to, then ‘*may*$_{\text{epistemic}}$ $\phi$(any N)’ will be stronger than ‘*may*$_{\text{epistemic}}$ $\phi$(a N)’.
(49)  a. John might be in any hotel in Eilat =
   *The set of worlds which are epistemically accessible include all worlds in which John is staying at some hotel from a contextually relevant wide domain of hotels*

   ⇒

   b. John might be in a hotel in Eilat =
   *The set of worlds which are epistemically accessible include all worlds in which John is staying at some hotel from a contextually relevant narrow domain of hotels*

In deontic necessity contexts the widening associated with *any* will not create a stronger statement: since \( \text{must} \text{deontic} \) induces entailments upward from a command containing a proposition \( \psi \) denoting a set of worlds to the corresponding statement where that \( \psi \) is replaced by a proposition \( \varphi \) which denotes a superset of the set of worlds denoted by \( \psi \), ‘\( \text{must} \text{deontic} \varphi \text{(any N)} \)’ will not be stronger than ‘\( \text{must} \text{deontic} \varphi \text{(a N)} \)’.

(50)  a. John must be in any hotel in Eilat =
   *The set of worlds which are epistemically accessible are all and only worlds in which John is staying at some hotel from a contextually relevant wide domain of hotels*

   ⇔

   b. John must be in a hotel in Eilat =
   *The set of worlds which are epistemically accessible are all and only worlds in which John is staying at some hotel from a contextually relevant narrow domain of hotels*

### 4.1.5 Summary

Under a performative analysis, *may* and *must*, interpreted deontically or epistemically, affect the set of accessible worlds. *May* widens set of accessible worlds and *must* narrows it.
Since *may* has the function of widening the set of accessible worlds then the wider the set the stronger the utterance will be. Accordingly, *may* will induce entailments downward from a statement containing the wider expression ‘any noun’ to a statement containing the narrower expression ‘a noun’. Since the statement with *any* will end up stronger than the statement with *a*, *any* will be licensed in a ‘*may*’ statement.

Since *must* has the function of narrowing the set of accessible worlds, the narrower the set the stronger the utterance will be. Accordingly, *must* will induce entailments upward from a statement containing the narrower expression ‘*a* noun’ to a statement containing the wider expression ‘*any* noun’. Since the statement with *any* will end up weaker than the statement with *a*, *any* will not be licensed in a ‘*must*’ statement.

We turn now to an account of *any* in imperatives.

5. **Any in the scope of imperatives**

As the following shows *any* is acceptable in imperative constructions, giving the flavor of an invitation\(^7\):

\begin{enumerate}
\item[51] a. Date any English woman.
\item[51] b. Book any flight to London.
\end{enumerate}

Under a truth-conditional analysis of statements, the widening induced by *any* in (53) does not lead to a stronger statement:

\begin{enumerate}
\item[52] a. Date an English woman from a widened domain of English women. \(\not\rightarrow\)
\end{enumerate}

Date an English woman from a narrow domain of English women.

\begin{enumerate}
\item[52] b. Book a flight to London from a wide domain of flights to London. \(\not\rightarrow\)
\end{enumerate}

Book a flight to London from a narrow domain of flights to London.

\(^7\) *any* is ruled out in imperatives which express a command. Notice that the command flavor is only available when *any* appears in a subordinate clause, contrast (51a) with the following sentence: #I command you to date any English woman.
Following Portner’s (2004) analysis of imperatives, I will show how adopting a performative analysis of imperatives will allow us to maintain an analysis of any as indefinite with extra properties of widening and strengthening.

5.1 A performative definition of strengthening for imperative statements

5.1.1 Portner’s analysis of imperatives

According to Portner (2004), imperatives contribute to the To-do list of the addressee. The To-do list of an individual is the set of actions the addressee is supposed to do. Suppose, for example that the To-do list of John includes the following To-dos with no special hierarchy among the actions:

- **John’s To-do list:**
  1. Take a semantic class.
  2. Exercise twice a week.
  3. Visit your family in Jerusalem.

According to Portner, the function of introducing an imperative into the discourse is to add the proposition it denotes to the (contextually relevant) addressee’s To-do list. Suppose for example that John’s friend makes the imperative (addressed to John) ‘marry an English woman’. The effect of making this imperative will be to add the imperative ‘marry an English woman’ to John’s To-do list:

- **John’s To-do list:**
  1. Take a semantic class.
  2. Exercise twice a week.
  3. Visit your family in Jerusalem.
  4. Marry an English woman.

Portner claims that The To-do List of each individual ranks the set of worlds, which are candidate for being the actual world (viz, the context set) according to how successful the individual is in fulfilling the To-dos on his list. This ranking determines what actions an
agent is committed to taking relative to that Common Ground. Suppose for example our context set includes 5 worlds and John’s ‘To do list’ is satisfied among the worlds of the context set as follows, where world 1 is ranked on the same level as world 2 and worlds 4 is ranked on the same level as world 5 since the same number of to-dos are satisfied in each pair:

World 1: take a semantics class; exercise twice a week; visit your family in Jerusalem
World 2: take a semantics class; exercise twice a week; visit your family in Jerusalem.
World 3 take a semantics class, visit your family
World 4: visit your family in Jerusalem
World 5: take a semantics class

Given Portner’s account of imperatives, we can define strengthening as follows: since the function of the to-do list is ordering the set worlds according to how successfully the individual fulfills his To-do’s, one imperative will be stronger than another if the effect of making it leads to a satisfaction of more To-do’s:

- **Imperative \( \psi \) entails (=stronger than) imperative \( \varphi \) iff**

  The set of To-do’s induced by the use of imperative \( \psi \) is a subset of the set of worlds induced by the use of imperative \( \varphi \).

We now have an explanation à la Kadmon and Landman for the licensing of *any* in imperatives: An *any* NP is licensed in imperatives since it will always have the potential of leading to a satisfaction of more to-do’s. This is because the domain widening induced by *any*, which widens the domain to include less typical individuals with the common noun property, will raise the chances that the To-Do provided by the imperative will be satisfied within the context set: any is licensed in (51a) because the statement on the wider interpretation is stronger.
(53)  a.  \[\text{Date any English woman} = \]
The set of worlds in which you fulfill your To-dos contain all worlds in which you date a woman from a contextually relevant wide domain of English women.
⇒

b.  \[\text{Date an English woman} = \]
The set of worlds in which you fulfill your To-dos contain all worlds in which you date a woman from a contextually relevant narrow domain of English women.⁸

6. **Summary**

In this chapter we saw that what counts as a stronger statement is not always the truth conditionally entailing statement. Specifically, we saw that strengthening for non declarative statements is not defined in terms of truth-conditional entailment but rather in terms of the performative function of the modal. Once we employ a definition of strengthening which takes into account the performative function of the modal statement at hand we can give an account of *any* which maintains an analysis of *any* as a indefinite inducing widening and constrained by strengthening.

There are lots of other modal contexts which license *any* although the statement with *any* is not truth-conditionally stronger than the corresponding statement with *a*; e.g,

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⁸ As the following examples show, a conjunctive interpretation of *or* is not available in the environment of *imperatives*. This seems to indicate that imperatives on a par with *must* contexts are not a downward entailing contexts. They do not induce entailments from the statement containing an *or* expression to a statement containing an *and* expression.

Take an apple or a pear \(\not\rightarrow\) Take an apple and take a pear.
If we examine carefully the meaning of the premise, we see that it has a reading under which the speaker oblige the addressee to take some fruit but permits him to choose between an apple and a pear. A likely paraphrase is: you are required to take some fruit, this fruit can either be an apple or a pear. In this respect, imperatives bearing an *any*-NP pattern with permissions. We can paraphrase the premise and conclusion of the example above as follows. Under these paraphrases, an imperative induce entailments from the statement containing an *or* expression to a statement containing an *and* expression and qualifies as a downward entailing operator.

Take some fruit. You can choose an apple or a pear. \(\not\rightarrow\) Take an apple or a pear. You can choose an apple and you can choose a pear.
complements of intensional verbs, episodic future statements all of which introduce operations over possible worlds. The modal contexts we have looked at up till now give us good reason to believe that in these other contexts the same approach will work.

Before I end this chapter, I will provide a comparison of the account provided in this chapter with Aloni’s account of the acceptability of *any* in modal statements. Her account shares with this account the goal of maintaining a Kadmon and Landman account of *any*.

7. **Aloni’s alternative semantic based approach of any**

Aloni (2002) follows Kadmon and Landman in treating *any* as an indefinite determiner equivalent to *a* with extra properties of widening and strengthening, but she acknowledges the free choiceness flavor of *any* and gives a variation based analysis of *any* in modal statements. I list below the main features of her theory:

According to Aloni, existential quantified statements introduce sets of alternative propositions. The propositional alternatives introduced are dependent on the set of possible values for the variable quantified by the existential quantifier:

- **∃xA = 1 iff ∃p ∈ {[[A]M,g]|d|; d ∈ D}; w ∈ p**

If there are 3 individual boys in the domain of discourse, ‘John’, ‘Bill’ and ‘Peter’, then the existential statement, *a boy came* will introduce 3 alternative propositions ‘John came’, ‘Bill came’, ‘Peter came’. If one of these alternative propositions is true, the existential statement will be true too.

*May* and *must* are operators which introduce 2 quantifiers: they quantify over worlds as well as over sets of propositional alternatives; the difference between them is that:

- ‘*may*’ introduces universal quantification over sets of alternatives and existential quantification over worlds:
[\Diamond \phi]m, g = 1 \text{ iff } \forall \alpha \in \text{ALT}(\phi)m, g: \exists w' \in A_w : w' \in \alpha, \text{ Where ALT stands for alternatives and } A \text{ stands for the modal base.}

- ‘must’ introduces existential quantification over sets of alternatives and universal quantification over worlds.

\[ [\square \phi]m, g = 1 \text{ iff } \exists \alpha \in \text{ALT}(\phi)m, g: \forall w' \in A_w : w' \in \alpha \]

Under these definitions, the following deontic statements will be associated with the following truth conditions:

(54)  
   a. \[[\text{You may pick a flower}] = 1 \text{ iff for every alternative proposition of ‘pick a flower’, there is a world where you pick it.}\]
   b. \[[\text{You must pick a flower}] = 1 \text{ iff for some alternative proposition of pick a flower, it is the case that in all worlds the proposition comes out true.}\]

Assume our domain of discourse contains 4 flowers numbered 1-4 of which 3 are non-protected and 1 protected and that switching from the statement with \(a\) to the corresponding statement with \(\text{any}\) induces widening along the dimension ‘non protected-protected’. ‘you may pick a flower’ will be true iff there’s a world where you pick flower 1, a world where you pick flower 2 and a worlds where you pick flower 3. ‘you may pick any flower’ will be true if there is a world where you pick flower 1, one where you pick flower 2, one where you pick flower 3 and one where you pick flower 4. \(\text{Any}\) will be licensed by virtue of the universal quantification over alternatives which will induce entailments downward from the statement with \(\text{any}\) to the statement with \(a\).

(55)  
   a. \[[\text{You may pick a flower}] = 1 \text{ iff for every alternative proposition of ‘pick a flower’ under a wide interpretation of flower, there is a world where you pick it.}\]
b. \[\text{You may pick any flower} = 1 \text{ iff for every alternative proposition of}
\text{‘pick a flower’ under a narrow interpretation of pick a flower, there is a}
\text{world where you pick it.}\]

Assuming again that our domain of discourse contains 4 flowers numbered 1-4 of which
3 are non-protected and 1 protected and that switching from the statement with \(a\) to the
 corresponding statement with \(any\) induces widening along the dimension ‘non protected-
 protected’, then ‘you must pick a flower’ will be true iff for some non protected flower,
say flower 2, it is the case that pick it in all worlds. And ‘you must pick any flower’ will
be true iff for some flower (protected or non protected), say flower 4, it is the case that
pick it in all worlds. \(Any\) will not be licensed because existential quantification will not
induce entailments downward from the statement with \(any\) to the statement with \(a\)

(56) a. \[\text{You must pick a flower} = 1 \text{ iff for some alternative proposition of ‘pick}
\text{a flower’ under a wide interpretation of flower, it is the case that in all}
\text{worlds you pick it.} \not\rightarrow\]

b. \[\text{You must pick any flower} = 1 \text{ iff for some alternative proposition of}
\text{‘pick a flower’ under a narrow interpretation of flower, it is the case that}
\text{in all worlds you pick it.}\]

### 7.1 Problems with Aloni’s theory

Aloni’s theory offers a truth-conditional semantic analysis of modal statements, which
preserves a Kadmon and Landman account of \(any\) while, maintaining a truth conditional
definition of strengthening. There are 3 major problems associated with Aloni’s theory:

First, Under Aloni’s theory, ‘\textit{may}’ and ‘\textit{must}’ are operators which introduce 2 quantifiers
each of which binds a different variable. Indeed, there’s lots of evidence in the literature
 in favor of introducing the notion of unselective quantification- the idea that quantifiers
bind more than one variable, but there doesn’t seem to be any independent evidence for
introducing operators which bind more than one variable- but each variable with different force, one variable with a universal force and another with existential force.

Consider again the truth conditions Aloni proposes for statement (54a) repeated below in (57):

\[ \text{[You must pick any flower]} = 1 \text{ iff for some alternative proposition of ‘pick a flower’ under a narrow interpretation of flower, it is the case that in all worlds you pick it.} \]

Since there is a one to one match between propositional alternatives and possible values for the variable quantified by the existential quantifier, we would be predicting the one unique flower should be picked in all worlds. This is not right empirically: when I utter a command such as ‘you must pick a flower’, I am not necessarily compelling you to pick the same flower in all accessible worlds, I am only compelling you to pick some flower or the other in every world.

Finally, under Aloni’s theory the propositional alternatives introduced by may are dependent upon the set of available values for the variable introduced by the indefinite: 
\[ \text{[You may pick a flower]} = 1 \text{ iff for every alternative proposition of ‘pick a flower’, there is a world where you pick it, viz, iff for every flower in the domain of discourse, there is a world where you pick it. The result of this is wide scope universal quantification with respect to the existential quantifier introduced by may.} \]

As discussed early in this chapter, this seems wrong: we really want the propositional alternatives to be dependent upon the operator may.

To illustrate, let us remind ourselves of the argument we gave in section 2.2: Suppose I am a traditional Jew and a vegetarian- I don’t eat meat but if I did it would be kosher. Imagine I take my meat eating son out to dinner and I permit him to order a meat meal: ‘Yuval, you may order a meat meal if you wish’, obviously, being traditional Jewish, I still don’t allow him to order a non-kosher meat meal- in lifting the prohibition against
eating meat I do not intend to lift the prohibition against eating non-kosher meat. Unfortunately, introducing wide scope universal quantification over alternatives will include this possibility as well; it will allow the truth of a proposition, where the variable introduced by a meat meal picks a non-kosher meat meal.

8. **Summary**

In this chapter, we saw that defining strengthening in terms of truth conditional entailment for non modal statement will not allow us to maintain a Kadmon and Landman account of strengthening. We saw that once we define strengthening in a non truth conditional manner, which is pragmatically the right strategy to take given the performative function of modal statements, Kadmon and Landman’s strengthening account can be maintained. Aloni’s attempt to maintain a Kadmon and Landman account of *any* while preserving a truth conditional analysis of modals runs into empirical unwelcome problems as we saw above. This strongly suggests that if we want to maintain a non universal account of *any*, adopting a non truth conditional analysis of modals is unavoidable.
Chapter 4: A semantic account of *any* in episodic statements

0. **Introduction**

In her paper Dayal (1995, 1998, 2004) provides another apparent piece of evidence against treating an *any*-NP as an instance of a generic indefinite. Dayal observes that an *any*-NP is licensed in episodic statements containing a relative clause modifying the *any*-NP even though the corresponding statement with an indefinite *a*-NP cannot be interpreted generically. In this chapter I show that although in the unmarked case, an indefinite *a*-NP modified by a relative clause is interpreted existentially in episodic statements, an indefinite *a*-NP can be interpreted generically in such temporally bounded statements. Based on Greenberg’s (2003, 2007) theory of generic bare plurals and indefinite singulars, I shall show that relative clauses of the kind Dayal characterizes as essential can induce a generic reading of an episodic statement since they provide an in virtue of property, which, as Greenberg argues convincingly, is an essential requirement for the felicitous use of indefinite singular statements as generic. When the relative clause provides an appropriate “in-virtue-of” property, we can assume an iteration of events of the same kind which constitute a local habit in a temporal bounded interval. This will allow generic quantification over participants in the temporally bounded event. A Kadmon and Landman account of *any* can then be maintained: an episodic statement enables an occurrence of indefinite *any* in its scope whenever the corresponding episodic statement with *a* can be interpreted generically. This is because the universal quantifier introduced by the generic operator induces a stronger statement on the wide interpretation associated with the *any* statement. I end with an account of *any* in necessity statements with a relative clause modifier.

1. **The data-representation**

As is well known English FC *any* is not acceptable in affirmative episodic sentences, those sentences which report on a specific event or occasion. Contrast the acceptability

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1 Menéndez – Benito (2006) already made the observation that adding a relative clause facilitates a generic reading of the main verb and hence rescues *any*. However she doesn’t go further into the issue.
2 Of course, an occurrence of *any* is acceptable in affirmative episodic statements when it appears in the scope of a downward entailing operator: ‘at most 5 tourists have any money left. I will ignore such cases containing an explicit downward entailing operator.
of *any* in the following sentences (the generic representations follow Greenberg’s (2003, 2007) style of formalization:

(1) a. Mary eats any vegetable.

\[\forall w, x, s \, [\text{vegetable}_{\text{wide construal of vegetables}}(x, w) \land C(s, x, w)] \rightarrow \text{eats}(m, x, s, w)]\]

*Every contextually relevant situation involving a vegetable across all worlds of a contextually determined modal base F is such that that situation is one in which Mary eats the vegetable in such an accessible world.*

b. #Mary ate any vegetable this morning.

\[\exists e, x \, [\text{vegetable}_{\text{wide construal of vegetables}}(x) \land \text{eat}(e, x, m) \land \text{this morning}(e)]\]

*There is an event e and an individual x such that x is a vegetable and Mary ate that vegetable in that event.*

(2) a. Any dog barks.

\[\forall w, x, s \, [\text{dog}_{\text{wide construal of dogs}}(x, w) \land C(s, x, w)] \rightarrow \text{bark}(x, s, w)]\]

*Every contextually relevant situation involving a dog across all worlds of a contextually determined modal base F is such that that situation is one in which the dog barks in such an accessible world*.

b. #Any dog is barking now.

\[\exists e, x \, [\text{dog}_{\text{wide construal of dogs}}(x) \land \text{bark}(e, x) \land \text{now}(e)]\]

*There is an event e and an individual x such that x is a dog and that dog is barking in that event.*

The (a) examples express a generalization over particular situations and entities and are argued to involve universal quantification over worlds, situations and individuals. Accordingly, under a Kadmon and Landman account, *any* is rendered acceptable in the (a) examples in virtue of the implicit generic quantifier which is downward entailing on its first argument and hence induces entailment from the statement with *any* to the corresponding statement with *a*. The (b) examples, on the other hand, report on a
particular event and are argued to involve default sentence level existential quantification over an event variable. Accordingly, under a Kadmon and Landman account, *any* is not licensed because existential quantification is not downward entailing and hence does not induce entailment from the statement with *any* to the corresponding statement with *a*.

But, *any* is not always ruled out from non-negative episodic statements. When a relative clause or any other postnominal subordinate clause modifies the nominal attached to *any*, *any* is rendered acceptable in episodic environments. This triggering effect of a modifier on the licensing of *any* was observed first by LeGrand (1975) who called it ‘subtrigging’. Contrast the acceptability of *any* in the following pairs of statements (the sentences in (3) are taken from Dayal 1998):

(3) a. #John talked to any woman.
    b. John talked to any woman who came up to him.

(4) a. #Any woman is not drinking champagne.
    b. Any woman who is driving back home is not drinking champagne.

All the examples in (3) and (4) report on a particular episode. In the examples in (3), which report on an episode taking place in the past, the *any* NP occupies the object position. In the examples in (4), which report on an episode taking place in the present, the *any* NP occupies the subject position which appears outside the scope of negation. Only the b-examples where the *any* –NPs are modified by the relative clause are rendered acceptable and seem to report on an eventuality which was repeated for each and every contextually relevant individual in the denotation of the indefinite NP.

Recall that the goal of this thesis is to explore the possibility of maintaining an account of *any*. Episodic statements pose a problem for this goal; if we treat *any* as an indefinite determiner which induces widening and is licensed by strengthening, widening in these contexts will prima facia not result in strengthening. Consider example (3b), repeated below in (5a). Under a widening of *woman* along the dimension ‘native speaker of English
vs. non native speaker of English’, (5a) would have the logical representation in (5b):

(5) a. John talked to any woman [native speaker or non native speaker of English] who came up to him.
b. ∃e,x [woman [native speaker or non native speaker of English] (x) ∧ came-up-to (e, x, John) ∧ talk-to (e, John, x)]

On the obvious existential reading of (5) and (6), widening by any will not result in strengthening; an existential quantifier does not induce entailments downward; hence, the statement on the wide interpretation induced by any (example 5) will not entail the statement on the narrow interpretation induced by a (example 6):

(6) a. John talked to a woman [native speaker of English] who came up to him.
b. ∃e,x [woman [native speaker] (x) ∧ came up to him to (e, x, John) ∧ talk (e, John, x)]

Notice, also, that interpreting an any-NP as existential in such episodic contexts will not capture the universal flavour associated with it. Example (5a), unlike its indefinite counterpart in (6a) is most naturally interpreted as involving some kind of universal quantification: (5a) is most naturally interpreted as saying that John talked to all typical women who came up to him.

This leads to the following question: can we associate the sentences in 5 and 6 with a non existential, viz generic reading? If we interpret statements 5 and 6 as generic, we will also account for the universal flavour associated with an any-NP in these contexts and we will also be able to maintain a Kadmon and Landman account of widening and strengthening: as we have already seen in earlier chapters, a generic quantifier being universal in its nature, induces entailment downward from the statement on the wide interpretation triggered any to the statement on the narrow interpretation triggered by a.

According to Dayal, in these positions the generic solution cannot work. Let us turn and examine her account of any in subtrigged cases.
1.1 **Dayal’s (1998) account of *any* in episodic statements**

Dayal claims that an *any*-NP cannot be an instance of a generic indefinite; if an *any*-NP were an instance of a generic indefinite then the corresponding statement with an indefinite *a*-NP would have a generic reading in subtrigged cases, but it doesn’t. Example (7a) is acceptable even though substituting *a* for *any*, yields an existential reading of the ‘*a*-NP’ (example 7b). As Dayal notices, (7c) with *every* is in fact the closest semantic equivalent of (7a):

(7) a. John talked to any woman who came up to him.
   
b. John talked to a woman who came up to him.
   
c. John talked to every woman who came up to him.

This, among other reasons, leads Dayal to conclude that FC *any* cannot be an instance of a generic indefinite whose universal force is parasitic on the generic operator because, apparently, we cannot get a generic indefinite reading of *a* in the same position; As discussed in chapter (1), Dayal concludes that *any* must be inherently universal. She treats *any* as an inherently intentional universal quantifying over pairs of individuals and situations. Under this analysis of *any* she proposes, (3a) and (3b) repeated below in (8) are associated with the following representations:

(8) a. Yesterday John talked to any woman.

\[ \forall s, x \ [\text{woman}(x, s) \land C(s)] \exists s' [s < s' \land \text{yesterday}(s') \land \text{talk-to}(j, x, s')] \]

Every contextually relevant situation that has a woman in it in extends into a situation located yesterday in which John speaks to the woman.

b. Yesterday John talked to any woman who came up to him.

\[ \forall s, x \ [\text{woman}(x, s) \land C(s)] \land \exists s'' [s < s'' \land \text{Past}(s'') \land \text{came-up-to}(j, x, s'')] \exists s' [s < s' \land \text{yesterday}(s') \land \text{talk-to}(j, x, s')] \]
Every contextually relevant situation that has a woman in it and extends into a situation where John talks to that woman also extends into a situation located yesterday in which John talks to the woman.

According to Dayal (8a) is pragmatically infelicitous because it claims that all possible women talked to John. As Dayal states, this statement is doomed to be false, since there are many possible woman situations that do not overlap with John’s existence. (8b), on the other hand, is pragmatically felicitous because quantification is over a temporally bounded set of possible women. The problem is that Dayal disregards the fact that (8a) and other such non-subtrigged episodic statements really seem to be ungrammatical, not just infelicitous.

In this chapter I argue against Dayal’s claim that an ‘a-NP’ cannot be interpreted generically in subtrigged episodic statements. I show that sentences with indefinite singular NPs can receive a generic interpretation in episodic statements when modified by relative clause of an appropriate kind.

If we can show that an ‘a-NP’ can be interpreted generically in subtrigged episodic statements, we can maintain an analysis of any as an indefinite with extra properties of widening and strengthening: any is acceptable in statements modified by a relative clause to the extent that an indefinite a NP can be interpreted generically in these contexts. If an a-NP can be interpreted generically in the environment of a relative clause, then switching from a to any will guarantee strengthening. This is because a generic operator being downward entailing will induce entailment from the statement on the wider interpretation induced by any to the statement on the narrow interpretation induced by a.

1.2 The nature of the relative clause

As Dayal (1995, 1998) observes, episodic statements with relative clauses modifying an ‘every-NP’ are ambiguous between an accidental reading of the relative clause, one where membership in the set denoted by the relative clause is accidental, and an essential
reading of the relative clause, one where the truth of the statement is dependent upon membership in the set denoted by the relative clause. Example (9) is ambiguous between the reading in (9a) and the reading in (9b):

(9)  
   a. Every student who is in Mary’s class is working on polarity items (Dayal 1995).  
   b. It happens to be true of every student who is in Mary’s class that he/she is working on polarity items. (accidental)  
   c. Every student in Mary’s class, by virtue of being in her class, is working on polarity items. (essential)

Dayal shows that *any* differs from *every* in that an accidental reading of the relative clause will not render *any* acceptable. Contrast the acceptability of the statements in (3b) and (4b), repeated below in (10), with the sentences in (11):

(10)  
   a. John talked to any woman who came up to him.  
   b. Any woman who is driving back home is not drinking champagne.

(11)  
   a. # Today I bumped into any woman who is a semanticist.  
   b. #Any girl that is entering this shop is brunette.

The difference between the sentences in (10) which allow *any* and the sentences in (11) which don’t holds in the nature of the relative clause. In (10a) and (10b) the relative clause has an essential reading in the sense that it is causal, i.e. expresses the reason why the event expressed by the matrix verb happened. (10a) is interpreted as saying that John talked to any woman who came up to him because she came up to him and (10b) is interpreted as saying that any woman who is driving back home is not drinking champagne because she is driving back home. In (11), the relative clause has an accidental reading. In (11a), it just happens to be the case that the individual denoted by the subject bumped into individuals from the set of female semanticists. In (11b), it just happens to be the case that girls entering the shop have brunette hair.
Notice that the sentences in (10a) and (10b) become ill formed once we add ‘happened to’ before the main predicate. This is because this expression, as Dayal notices, induces an accidental relation between the subject and predicate.

(12)  
   a. # John happened to talk to any woman who came up to him.  
   b. #Any woman who is driving back home happens to not being drinking champagne.

Notice, also, that the sentences in (11) sound much better once we change the linguistic contexts into ones which induce an essential-causal reading between the subject and predicate:

(13)   
   a. Today I bumped into any person who came near me (because I was wearing these very high heeled sandals).  
   b. Any girl that is buying that colour sweater is brunette (Rothstein p.c.).

Dayal claims that *any* is incompatible with the accidental reading of the relative clause because it violates contextual vagueness, the licensing condition Dayal associates with *any*:

- **Contextual vagueness (Dayal’s 1995 version)**

  A statement with *any* is licensed if the context of use makes clear that the speaker does not have direct knowledge of the relevant individuals.

Under an accidental reading of the relative clause, the truth of the statement depends on observation of the actual individuals verifying the statement. For example, to find out whether the statement *Every student who is in Mary’s class happens to be working on polarity items* is true we need to have direct knowledge of each individual in Mary’s class, viz the domain of quantification must be contextually specified; if we find out that each individual in Mary’s class is indeed working on polarity items the statement will be evaluated as true. Since we need to have direct knowledge of each individual in Mary’s class, contextual vagueness is violated and
thus, according to Dayal, substituting *any* for *every* in *Every student who is in Mary’s class happens to be working on polarity items* will yield an ungrammatical statement #*Any student who is in Mary’s class happens to be working on polarity items*. The non accidental reading is licensed because to find out whether a sentence under an essential reading is true we do not need to be aware of the relevant individuals. For, example, the truth of *Any student who is in Mary’s class is working on polarity items* does not seem to require the speaker to have exact knowledge of the individuals in Mary’s class, whence the acceptability of *any*. The problem is that if the distribution of *any* is constrained by contextual vagueness, *any* would be wrongly predicted to be licensed in the following statement, where the context of use makes clear that the speaker knows who the individuals are.

(14)  #Yesterday in my 10 o’clock class I talked to any student (Rothstein p.c)

In the indefinite approach that I am aspiring to attain there is an alternative account that can readily explain the semantic constraints associated with the relative clause. This alternative account is based on Greenberg’s (2003) observations. Greenberg argues that statements with indefinite singular subjects (IS sentences) can receive a generic interpretation only if there is some ‘in virtue of property’ associated with the property denoted by the indefinite which validates the generic assertion. In the absence of such contextually relevant ‘in virtue of’ property only the existentiaal reading is available. We shall show that episodic sentences with modified indefinite singulars can be interpreted generically only when the relative clause is essential because only such a relative clause contributes an explicit in-virtue-of property which induces a generic reading for an ‘a NP’. Accordingly *any*, being the wide variant of *a* is only acceptable when the relative clause is essential.

Here is a summary of what this chapter argues:

- An *a*-NP can receive a generic interpretation in apparently episodic contexts by virtue of the relative clause.
- There is a semantic restriction associated with the relative clause. The relative clause must indicate what Greenberg (2003) calls a causal relation with the
generic statement. i.e. it must indicate some good reason in virtue of which the
generic predication holds.

• A Kadmon and Landman account of *any* can then be straightforwardly maintained
which also explains why *any* is only acceptable under an ‘essential’ reading of the
relative clause.

The plan for the rest of the chapter is as follows: in section (2) I introduce the notion of
generic episodicity. In section (2.1), I argue that indefinite *a*- statements can have a
generic reading by virtue of the relative clause. In section (3), I show that the relative
clause can only be essential in the sense of Dayal since only an essential relative clause
provides an in virtue of property in the sense of Greenberg (2003). In section (4), I give
an account of *any* in subtrigged episodic statements. In section (5), I show that a relative
clause also has the ability to induce a generic reading of an indefinite NP in modal
statements expressing necessity, whence the acceptability of any subtrigged modal
statements expressing necessity.

2. **Generic episodicity**

The phenomenon of generic episodicity has already been observed in Greenberg (2003);
Greenberg shows that sentences with indefinite singulars can be interpreted generically
even when predicated by stage level episodic predicates such as ‘be happy’, ‘is barking’
which express a non stable property. She shows that indefinite singulars can receive a
generic reading in these cases when the episodic predicate is modified by a temporal
adverbial which has a so called functional reading. Consider the availability of a generic
reading for the following statements:

(15) a. A lion is very aggressive tonight.

    b. A traditional Jew is in synagogue tonight.

(15a) seems odd on the generic reading, whereas (15b) is felicitous. Greenberg explains
this in the following way. She identifies two readings of temporal adverbials like tonight:
a default indexical reading under which the adverbial simply denotes the temporal location of the utterance and a functional reading under which the adverbial carries with it some additional significant property of the temporal location. In (15a), the temporal modifier seems to simply indicate that the temporal location of the utterance is within the night of the utterance- ‘tonight’ has an indexical reading. (15a), with the indexical reading of ‘tonight’, is unnatural as generic and can only be interpreted existentially indicating that some lion or the other is aggressive tonight. In (15b), the temporal modifier has a functional reading – it indicates that there is something about tonight, due to which a traditional Jew is at synagogue tonight (maybe today falls on a Jewish holiday or maybe today falls on a Jewish memorial day). (15b) has an existential interpretation, but on the functional reading of ‘tonight’, it can also be associated with a generic interpretation indicating that all typical traditional Jews are in synagogue tonight because of some property that ‘tonight’ has.

That (15b) can be interpreted generically is also evidenced by the fact that (15b) shares with characteristic generic statements 3 salient properties which have been used as diagnostic tests for distinguishing generic statements from non-generic statements (Dahl (1975), Heim (1982), Krifka (1987), Krifka et al. (1995), Chierchia (1995, 1998), Asher and Morreau (1995), Wilkinson (1991), Greenberg (2003)). Like generic statements, (15b) tolerates exceptions- (15b) will be judged as true even if some very old Jewish man is not at synagogue tonight. Second, like generic statements (15b) expresses a non-accidental generalization as evidenced by the fact that it supports the counterfactual if this were a Jewish woman, she would probably be at synagogue tonight. Finally, like generic statements (15b) express some flavor of modality- (15b) has a normative-deontic flavor.

The idea of generic interpretations of indefinite ‘a-NPs’ in episodic sentences may seem strange, but a temporally bounded generic event is ontologically possible. There is nothing incoherent in assuming a generalization over individuals of a certain kind and asserting that all normal individuals of that kind have a property which holds at a bounded interval by virtue of some property that this interval has.
In the next section I will show that relative clauses can induce a generic reading in episodic statements just like certain temporal modifiers (or interpretations of temporal modifiers) can. Before we turn to the next section, notice there are also some other linguistic constructions which easily invoke a generic reading of indefinite singulars in episodic statements.

Among these contexts, we find the following:

- **Temporal modifiers denoting a long enough interval. e.g. *in those days***
  
  (16) In those days John talked to a woman (but now that he has become orthodox, he doesn’t anymore)

- **Contrastives. e.g. ‘but’ constructions***
  
  (17) John talked to a woman but now that he has become orthodox, he doesn’t anymore.

- **Adverbials which tell us that there was an iteration of events. e.g. *systematically***
  
  (18) The librarian’s assistant systematically picked up a book that was on the floor (but ignored a book that was on the shelf but out of place)

The interpretation of the following sentence can easily be understood generic. In (16) and (17) we get universal quantification over all contextually relevant and typical women. In (17) we get quantification over all contextually relevant and typical books

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3 Notice that without the relative clause *the librarian’s assistant systematically picked up a book* is not felicitous as a generic. Nonetheless, the adverbial ‘systematically’ does instruct us to interpret the sentence generically: it tells us that there was an iteration of events and that there was a habit involving books in general. We will provide an explanation for the role of the relative clause in enabling a generic reading for indefinite singular sentences in section 3.3.
2.1 **Generic readings of indefinite episodic statements**

Let us consider the corresponding statements to (3b) and (4b) with an indefinite *a*-NP in place of the *any*-NP:

(19) a. John talked to a woman who came up to him.
    
    b. A woman who is driving back home is not drinking champagne.

The most prominent reading of these sentences is an existential reading involving existential quantification over an event variable and over the individual variable introduced by the indefinite NP. Under this reading the relative clause simply has the function of modifying the domain over which the existential quantifier has scope. Formally this has the effect of adding another predicate restricting the variable:

(20) a. $\exists e,x \ [\text{woman}(x) \land \text{came up to (x, j)} \land \text{talk (e,x,j)} \land \text{yesterday(e)}]$  
    There is an event e and an individual x such that x is a woman who came up to John and John talked to that woman in that event.
    
    b. $\exists e,x \ [\text{woman (x)} \land \text{driving back home (x)} \land \neg\text{drink (e,x, champagne)} \land \text{yesterday(e)}]$  
    There is an event e and an individual x such that x is a woman who is driving back home and that woman is not drinking champagne.

However, despite what has been asserted, in the right context the sentences in (19) can also be associated with a generic reading under which the indefinite ‘*a*-NP’ is interpreted generically. Crucially the type of genericity involved is not kind predication genericity but characteristic predication genericity involving quantification over those individuals from the set denoted by the common noun which have the property denoted by the relative clause (see Krifka et al (1995) for a thorough distinction between the two kinds of genericity). In order to get a generic reading for these indefinites, the sentence needs to be in a context in which the relative clause can plausibly be seen as giving a reason for the event taking place. The following scenarios promote generic readings for the sentence in (19):
Scenario for sentence (19a)
John is a very shy man especially when it comes to women. A friend of his invited him to a party. At the party, John did not make an effort to approach women and talk to them but he did talk to a woman who approached him.

Scenario for sentence (19b)
Mary is getting married. Her best friends have organized a hen party. There is champagne at the party. Some women are drinking, but a woman who is driving back home isn’t drinking.

Under the scenario given for sentence (19a), I can readily utter (19a) under a generic sense indicating that John talked to every contextually relevant and non exceptional woman who came up to him: ‘John spoke to a woman who came up to him (but ignored those who didn’t)’. Similarly, the scenario given for sentence (19b), triggers a generic reading for sentence indicating that every contextually relevant and non exceptional woman who is driving back home is not drinking champagne ‘A woman who is driving back home is not drinking champagne (but some of the rest are).

There is also empirical evidence in favor of the availability of associating the sentences in (19) with a generic reading. Under the generic reading inducing scenarios given above, they are associated with all 3 features which distinguish generic statements from non generic statements:

First they express a generalization which is law like as indicated by the fact that they induce counterfactual entailments:

(20)  a. If this had been a woman who came up to John, John would have spoken to her.
       b. If this had been a woman driving back home, she probably wouldn’t have been drinking champagne.
Second they allow for exceptions:

(21) a. John talked to a woman who came up to him but of course this does not include the woman who came up to him and spoke in Hebrew.
    b. A woman who is driving isn’t drinking champagne, but of course this doesn’t include Jane who is so irresponsible when it comes to driving

Third, they are each associated with a different flavors of modality. They express generalization of different modal flavors

(22) a. (Given what is known), John talked to a woman who came up to him. (epistemic)
    b. (Given what is allowed), a woman who is driving back home is not drinking champagne (deontic)

It is much harder to interpret episodic sentences without a relative clause as generic. An adequate scenario of the kind given for the sentences in (19) that will induce a generic reading is much more difficult to build for the sentences in (23):

(23) a. John talked to a woman yesterday.
    b. A woman is not drinking champagne.

Neither of the following scenarios which attempt to induce a generic reading is able to render a generic reading available for the sentences in (23).

**Scenario for sentence (23a)**

John is invited to a friend’s party. At the party, John did not make an effort to approach men and talk to them but he did talk to a woman.
**Scenario for sentence (23b)**

John and Mary are married 25 years. They are having a party to celebrate the occasion. There is champagne at the party. Many men are drinking champagne, but a woman isn’t drinking champagne.

Under the scenarios given for sentence (23a), sentence (23a) is most easily be interpreted existentially, indicating that John talked to some woman. Similarly, under the scenario given for sentence (23b), the sentence can only be understood as saying the some woman is not drinking champagne. It is very hard to get a generic reading if at all.

For those readers who are skeptical about the absence of a generic reading under these scenarios, notice, that the sentences in (23) are not associated with any of the 3 features which characterize generic statements:

They don’t induce counterfactual entailments:

(24) a. John talked to a woman yesterday. \(\neg\) If this had been a woman, John would have talked to her.

b. A woman is not drinking champagne. \(\neg\) If this had been a woman, she probably wouldn’t have been drinking champagne.

Second they don’t allow for exceptions:

(25) a. ?John talked to a woman but of course not to that one which doesn’t speak in English.

b. ?A woman isn’t drinking champagne, but of course not Jane who is so irresponsible when it comes to driving.

Finally they don’t express generalization of different modal flavors:

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4 Notice that a generic reading is much more easily available for *a woman is not dancing with the men* when uttered in a context of an ultra orthodox Jewish wedding (where women and men don’t dance together)
(26)  a.  *(Given what is known), John talked to a woman.  (epistemic)
    b.  *(Given what is allowed), a woman is not drinking champagne.  (deontic)

To sum, we have seen that an indefinite a-NP a can be interpreted generically in episodic environments when accompanied by a relative clause. This strongly shows that it is the relative clause that induces a generic reading. In the next section, we turn and examine the nature of the relative clause and its role in inducing a generic reading for indefinite singular NPs. I take Greenberg’s (2003, 2007) account of genericity as a starting point. Before we end this section, notice that bare plural indefinites can naturally be interpreted generically in episodic environments with or without an accompanying relative clause. The corresponding statements to those in (19) and (23) with a bare plural substituted for the singular indefinite NP can easily be interpreted as denoting an episodic generic statement even without an aiding context or a relative clause.

(27)  a.  John talked to women (who came up to him) yesterday.
    b.  Women (who are driving back home) are not drinking champagne.

We will address this contrast between bare plurals and indefinite singulars in the next section and show this contrast is added evidence for the claim we are pursuing.

3.  **The role of the relative clause in inducing a generic reading**

3.1  **What kinds of relative clause induce generic reading of indefinites in episodic contexts?**

Recall that not all relative clauses will render any acceptable in episodic statements. Contrast again the acceptability of any in the sentences in (10) and (11) repeated below in (28) and (29):

(28)  a.  John talked to any woman who came up to him.
    b.  Any woman who is driving back home is not drinking champagne.

(29)  a.  # Today I bumped into any woman who is a semanticist.
    b.  # Any girl that is entering this shop is brunette.
If we consider the corresponding statements to those in (28) and (29) with an indefinite \(a\) substituted for \(any\), we see that a generic reading of \(a\) is is not available when the relative clause is accidental no more than \(any\) it is when the NP is modified by \(any\). The statements in (30), as we saw in the last section, can be interpreted as generic. The statements in (31) can only be interpreted as involving existential quantification over events and women/girls:

(30) a. John talked to a woman who came up to him.
    b. A woman who is driving back home is not drinking champagne

(31) a. I bumped today into a woman who is a semanticist.
    \[\exists e,x \ [\text{woman}(x) \land \text{semanticist}(x) \land \text{bump}(e,I,x) \land \text{yesterday}(e)]\]
    b. A girl that is entering this shop is brunette.
    \[\exists e,x \ [\text{girl}(x) \land \text{enter}(x,\text{this shop}) \land \text{brunette}(x)]\]

Dayal claims that the distinction between the relative clauses in (28) and the relative clauses in (29) is a distinction between an essential vs. accidental reading of the relative clause. Based on Greenberg’s account, we will show that the distinction between the relative clauses in (28) and the relative clauses in (29) is in fact a distinction between a causal in-virtue-of property and a non causal non in-virtue-of property. We will see that a generic reading is only available for indefinite \(a\)-NPs in episodic statements when the relative clause is essential in Dayal’s sense since only an essential relative clause provides an explicit ‘in-virtue-of property which is associated with the property denoted by the indefinite singular NP.

We will now look at Greenberg’s (2003, 2007) account of generic statements with indefinite singular subjects and bare plural subjects.

### 3.2 Greenberg (2003, 2007)

Most theories of genericity prior to Greenberg’s, view sentences with indefinite singular (IS) subjects and bare plural (BP) subjects as semantically synonymous. Both express
generalizations over individuals and contextually relevant situations. For example, both (32a) and (32b) express a generalization about individual dogs in situations inducing barking (when it hears other dogs bark, when its owner comes home or it is left alone, while playing, when it wants to be fed or go outdoors):

(32) a. A dog barks.
    b. Dogs bark.

In addition, both kinds of generic statements are associated with those features which characterize statements as generic. Both express generalizations which are non-accidental as indicated by the fact that they both support the counterfactual entailment in (33).

(33) If this were dog (in the right situation), it would probably bark

Both allow for the same kind of exceptions:

(34) a. A dog barks, but not one which is very sick.
    b. Dogs bark, but not one which is very sick.

Both express generalizations of different types:

(35) a. A dog barks. (epistemic)
    Dogs bark. (epistemic)

b. A boy doesn’t cry. (deontic)
    Boys don’t cry. (deontic)

c. A vegetarian doesn’t eat meat. (linguistic)
    Vegetarians don’t eat meat. (linguistic)

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5 Bare plurals also have a kind reading. Under this reading a bare plural such as ‘dinosaurs’ does not denote a group of Dinosaurs, but rather the kind Dinosaur ‘Dinosaurs are extinct’

The kind reading of bare plurals is only available with a restricted set of predicates called ‘kind predicates. Among these predicates, we find die out, be extinct, invent, exterminate, be a mammal
Under these theories of genericity, IS and BP sentences are associated with the same semantic representation: a generic statement such as *a dog barks* or *dogs bark* is represented as a tripartite structure headed by a universal quantifier binding an individual variable introduced by the indefinite, a situation variable introduced by the verbal predicate and a variable over worlds which are members of the contextually determined modal base (Krifka (1987), Wilkinson (1991), Krifka et al. (1995), Chierchia (1995)):

(36)  
   a. A dog barks/ dogs bark  
   b. $\forall w_i, x, s [\text{dog}(x, w_i) \land C(s, x, w_i)] \rightarrow [\text{bark}(x, s, w_i)]$ (Greenberg 2003, pg 55) 

Every contextually relevant situation involving a dog across all worlds of a contextually determined modal base $F$ is such that that situation is one in which the dog barks in such an accessible world.

Greenberg (2003) shows that though both generic statements with BP subjects and IS subjects share many similarities, there is a set of semantic and pragmatic differences between generic statements with IS subjects and generic statements with BP subjects. Among them are the following two noticeable differences:

IS sentences cannot be interpreted generically when the IS subject denotes an extremely unnatural class:

(37)  
   a. A Norwegian student whose name ends with S or J wears thick green socks  
   b. Norwegian students whose name ends with S or J wear thick green socks

In the examples above, both the IS subject and the BP subject refer to a non natural class, but, while the IS sentence can only be understood as expressing an existential statement about some particular Norwegian student who regularly wears thick green socks, the BP sentence can also express a generalization about Norwegian students, though a very bizarre generalization.
Second, IS sentences are infelicitous as generic when the VP expresses an extremely unrelated property to the property denoted by the subject:

(38)  a. A man is blond  
     b. Men are blond

In this example the predicate denotes a property which, pragmatically, is one which is extremely unconnected to the property denoted by the subject: we don’t associate with being a man the property of being blond. While the IS subject can only express an existential statement about some particular man who is blond, the BP statement can also express a generalization about men, though as above a very bizarre generalization.

Greenberg argues that these differences show that though both sentences express non accidental generalizations, the type of non-accidental generalization they express is different. She claims that IS sentences can only express ‘in virtue of’ generalizations while BP sentences can express both ‘in virtue of’ and ‘descriptive’ generalizations.

Let us consider first IS statements. When a speaker utters *a dog barks*, he expresses a generalization which is true in virtue of a dog having a particular vocal ‘make-up’ – ‘in all epistemically accessible worlds -because of the vocal makeup of dogs- they bark’. When a speaker utters *a boy doesn’t cry*, he expresses a generalization which is true in virtue say our perception about how tough boys are or should be – ‘in all deontically accessible worlds - because boys are tough - they don’t cry’.

Greenberg suggests that IS sentences require an ‘in virtue of’ accessibility relation; they require the generalization to hold in those worlds where the property denoted by the subject is associated with a contextually determined in virtue of property. This gives the following representation for ‘in virtue of’ generics:
In all appropriately accessible worlds where every P individual has the contextually supplied S property, every P individual has the Q (i.e. VP) property.

Crucially, Greenberg assumes that there is a presupposition constraining the choice of the S property, namely it must be one which can plausibly cause or account for the assertion that P ⊆ Q Accordingly, a dog barks and a boy doesn’t cry are associated with the following representations:

(40) a. A dog barks
b. ∀w’ [w’ R_{epistemic} w_0] → [∀x [dog(x, w’) → [has a dog’s vocal make-up (x, w’)]] → [∀x [dog(x, w’) → barks(x, w’)]]].

In all epistemically accessible worlds where every dog has a dog’s vocal make-up, every dog barks.

(41) a. A boy doesn’t cry
b. ∀w’ [w’ R_{deontic} w_0] → [∀x [boy(x, w’) → [tough(x, w’)] → [∀x [boy(x, w’) → ¬cry(x, w’)]]]].

In all epistemically accessible worlds where all boys are tough, every boy does not cry.

Let us turn now to the corresponding BP statements: Greenberg argues that ‘dogs bark’ or ‘boys don’t cry’ can express in-virtue-of generalizations, like their IS counterparts, but they can also express ‘descriptive’ generalizations, where they merely assert that the generalization is nonaccidental, without attempting to convey the property in virtue of which the generalization is true. When a speaker utters a BP statement, he simply asserts that the generalization holds also in other non actual situations, similar to ours, where the similarity, according to Greenberg, remains unspecified. According to Greenberg, under a descriptive reading, ‘dogs bark’ and ‘boys don’t cry’ are associated with the following
representations (where the notion of maximal similarity follows Stalnaker 1968 maximal similarity, or Lewis’s 1973, 1986b overall similarity)

\[(42)\] a. Dogs bark (descriptive reading)

\[
\forall w'[w' \in \{w_0\} \cup \{w'': w'' \text{ R}_{\text{max}} w_0\}] \rightarrow [\forall x [\text{dog (x,w')} \rightarrow \text{bark (x,w')}]]
\]

In all worlds in the union set of \(w_0\) and all worlds which are maximally similar to \(w_0\) except from what is needed to allow for the existence of different / nonactual dogs - every dog barks

\[(43)\] a. Boys don’t cry (descriptive reading)

\[
\forall w'[w' \in \{w_0\} \cup \{w'': w'' \text{ R}_{\text{max}} w_0\}] \rightarrow [\forall x [\text{boy (x,w')} \rightarrow \neg \text{cry (x,w')}]]
\]

In all worlds in the union set of \(w_0\) and all worlds which are maximally similar to \(w_0\) except from what is needed to allow for the existence of different / nonactual boys - every boy does not cry’

Greenberg shows that the ability of BP sentences to express descriptive generalization is the reason why BP counterparts of infelicitous IS sentences are felicitous. Contrast the statement in (44) with the statements in (45).

\[(44)\] a. #A Norwegian student whose name ends with S or J wears thick green socks.

b. #A man is blond.

\[(45)\] a. Men are blond.

b. Norwegian students whose name ends with S or J wear thick green socks.

Since A Norwegian student whose name ends with S or J denotes an extremely unnatural class there is normally no in-virtue-of property with which it can be associated. Hence
(44a) can’t be interpreted generically. Since there is no property associated with being a man which leads to all men being blond, the statement in (44b) cannot be interpreted generically either. By contrast, the statements in (45a) and (45b) are felicitous as generic since they have the ability to express descriptive generalizations which don’t attempt to convey the property in virtue of which the generalization is true.

As Greenberg shows, the statements in (44) can be interpreted generically when uttered within a context which provides an appropriate ‘in virtue of’ property:

**Scenario inducing a generic reading for (44a)**
There are very interesting traditions in Norway concerning final letters of the name and kind of socks. For example A Norwegian student whose name ends with S or J wears thick green socks. (from Greenberg 2003)

**Scenario inducing a generic reading for (44b)**
This is this very bizarre village. The men in this village must be blond; otherwise they are expelled from the village. This is because there is a legend handed down over generations that a non-blond man will one day stab all the blond women in the village. Hence in this village a man is blond.

We are now ready to turn back to our subtrigged cases and provide a Greenberg based explanation for the absence of a generic reading for a-NPs in the absence of an essential relative clause

### 3.3 An essential relative clause= an explicit ‘in virtue of’ property
Greenberg’s IS examples involve stative verbs or non statives in the (non progressive) present tense which express habituasl. When the verb expresses states or habituasl, the only available reading is a generic reading, which involves an implicit generic operator and, as argued by Greenberg, where an implicit generic in-virtue-of property is presupposed and accommodated contextually. I wish to suggest the following: When the verb is apparently episodic, the linguistic context favours an existential reading and the
availability of a generic reading depends on the presence of a contextually relevant in-virtue-of property which must be explicit, unlike the in-virtue-of property for IS generics which can be accommodated. This is because in episodic statements there is no stative or habitual verb that can contribute a generic operator; thus, we need an explicit information to weight the interpretation in favour of a generic reading of an indefinite singular NP.

An essential or rather causal relative clause provides an explicit in-virtue-of property. This explicit in-virtue-of property allows one to assume an iteration of events of the same kind, which constitute ‘a local habit’ in a short temporal bounded interval, and thus allow generic quantification over participants in the local habit. By contrast, an accidental relative clause does not provide an explicit in-virtue-of property and hence a generic reading of IS indefinites in episodic statements is not satisfied. Bearing this in mind, let us consider again the contrast in the availability of a generic reading for sentences with an essential relative clause vs. sentences with an accidental relative clause.

When the relative clause is essential in Dayal’s sense, the relative clause supplies an explicit in-virtue-of property which is associated with the property denoted by the common noun in the indefinite NP and thus a generic reading is available in the right context:

\[(45)\]

\begin{enumerate}
\item\ a. John talked to a woman who came up to him.
   ‘All typical women in virtue of the fact that they came up to John are such that John talked to them’.
\item\ b. A woman driving back home didn’t drink champagne.
   ‘All typical women in virtue of the fact that they are driving back home are such that they are not drinking champagne’.
\end{enumerate}

When the relative clause is accidental, there is no in-virtue-of property which is associated with the property denoted by the common noun in the indefinite NP and the only reading available is an existential one. Consider the following sentences which are
parallel to Greenberg’s examples of IS subjects denoting unnatural classes (*a Norwegian student whose name ends with S or J*), which can’t be interpreted generically since no in-virtue-of property is associated with them.

(46)  a. John happened to talk to a woman who came up to him.

       b. A woman driving back home happened to not drink champagne.

Similarly, when the relative clause is interpreted as essential and hence supplies an in virtue property, but, the ‘in virtue of’ property does not lead to the predication relation holding between the subject and predicate, the indefinite NP will not be interpreted generically. Consider the following sentences.

(47)  a. A 3\textsuperscript{rd} year student who studies at Bar Ilan University, is getting married this year by virtue of studying at Bar Ilan University.

       b. A student who studies at Bar Ilan University has no classes today by virtue of studying at Bar Ilan University.

The property of studying at Bar-Ilan is not one which will naturally lead to the predication relation holding between ‘a student’ and ‘getting married’. Since no in-virtue-of property is present which causally relates the property denoted by the subject to the property denoted by the predicate, (47a) cannot be interpreted generically. Notice that this example is parallel to Greenberg’s examples of IS subjects which can’t be interpreted generically since the indefinite singular subject isn’t associated with any in-virtue-of property which can lead to the property denoted by the VP since no in-virtue-of property are associated with them (*a man is blond*)\(^6\)

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\(^6\) Notice, that if the statement in (47a) is uttered against a context in which the ‘in virtue of’ property denoted by the relative clause causally relates the property denoted by the subject to the property denoted by the predicate, a generic reading will be available for the statement **Scenario inducing a generic reading for (47a):** there is a very bizarre regulation at Bar Ilan University. To get your B.A at Bar Ilan University, you must be married. So, a student who learns at Bar Ilan, is getting married now, by virtue of learning in Bar Ilan.
By contrast, the property of learning at Bar-Ilan (a university with a Jewish religious identity) is one which will naturally lead to the predication relation holding between ‘an Israeli student’ and ‘has no classes’ when ‘today’ happens to fall on a Jewish fast day (which not all universities give to). Since there is an in virtue of property which causally relates the property denoted by the subject to the property denoted by the predicate, (47b) can be interpreted generically.

What about BP statements? Since bare plurals do not require an in-virtue-of accessibility relation, they can easily be interpreted as generic with any type of relative clause.

(48)  
   a. John happened to talk to women who came up to him.
   b. 3rd year students, who learn at Bar Ilan University, are getting married this year.

Given Greenberg’s account of genericity and the pattern of interpretation suggested by her given in (39) and repeated below in (49), I suggest to represent subtrigged episodic statements of the kind discussed in this chapter as follows:

(49)  \forall w' [w' R F w \rightarrow \forall x [P(x,w') \rightarrow S_c(x,w')] \rightarrow \forall x [P(x,w') \rightarrow Q(x,w')]]

(50)  
   a. At the rally John talked to a woman who came up to him.
   b. \exists i [\tau (the rally) = (i) \land \forall w [w R F w_0 \rightarrow [\forall x, s \ [woman (x, w) \land came-up-to (x, w, s, j) \land CR (s, x, w) \land \tau (s) \subseteq i] \rightarrow came-up-to (x, w, s, j)]] \rightarrow \forall x, s \ [woman (x, w) \land came-up-to (x, w, s, j) \land CR (s, x, w) \land \tau (s) \subseteq i] \rightarrow talk-to (x, w, s, j)]]]

There is a time interval i where i is the time of the rally such that in all worlds of a contextually determined modal base F, if every contextually relevant situation CR involving a woman who comes up to John located during i is indeed a situation in which she came up to John then, he spoke to her in that situation.
Since copying the content of the relative clause into the position of the 'S' property is trivial produces a trivially true antecedent for the conditional, the force of the analysis has to rest on Greenberg's claim that there is a presupposition that the causal in-virtue-of property can indeed be the basis for the assertion made by the matrix clause. If this presupposition is not satisfied, then the interpretation is infelicitous. The presuppositions will be satisfied only if the relative clause is essential in Dayal's sense. If the relative clause is accidental, then the presupposition will not be satisfied, and the sentence will be infelicitous on a generic interpretation, and only the existential interpretation will be available.

To sum, in this section we have seen that a relative clause of the right kind can induce a generic reading of an indefinite \( a \)-NP in episodic environments. We can now readily maintain a Kadmon and Landman account of any in subtrigged contexts.

4. **An account of any in episodic statements**

Under the account of *any* pursued in this dissertation, *any* is viewed as an indefinite determiner equivalent to *a* with the meaning of *any* added to the range of meanings normally available for an indefinite NP. An existential reading of *any* is available in positions in which an ‘*a* NP’ can be interpreted as an existential and a universal reading of *any* is available in positions in which an ‘*a* NP’ can be interpreted as a generic quantifier. An occurrence of *any* is licensed if the statement with *any* is stronger than the statement with *a*.

The licensing of *any* in episodic subtrigged statements is now straightforwardly accounted for. *Any* will be licensed in episodic subtrigged statements whenever the corresponding statement with *a* can be interpreted generically. This is because under the assumption that any is a widener and is licensed by strengthening, the generic operator will induce entailment downward the statement with *any* to the statement with *a*. Whenever the relative clause does not trigger a generic reading of an indefinite –NP, substituting *any* for *a* will not render the statement acceptable.
(51) a. At the rally John talked to any woman who came up to him.

\[ \exists i \left[ \tau(\text{the rally}) = (i) \land \forall w [w \in F \rightarrow \forall x, s \left[ \text{woman} (x, w) \land \text{came-up-to} (x, w, s, j) \land \text{CR} (s, x, w) \land \tau (s) \subseteq i \rightarrow \text{came-up-to} (x, w, s, j)] \rightarrow \forall x, s \left[ \text{woman} (x, w) \land \text{came-up-to} (x, w, s, j) \land \text{CR} (s, x, w) \land \tau (s) \subseteq i \rightarrow \text{talk-to} (x, w, s, j) \right] \right] \right] \]

where \text{boldface} indicates that the conjunction of predicates is to be interpreted as widely a possible.

There is a time interval \( i \) where \( i \) is the time of the rally such that in all worlds of a contextually determined modal base \( F \), if every contextually relevant \text{CR} situation located during \( i \) involving a woman who comes up to John is indeed a situation in which she came up to John then, he spoke to her in that situation.

Clearly this sentence entails (50) above.

(52) a. At the Party any woman who is driving back home is not drinking.

\[ \exists i \left[ \tau(\text{the party}) = (i) \land \forall w [w \in F \rightarrow \forall x, s \left[ \text{woman} (x, w) \land \text{driving back home} (x, w) \land \text{CR} (s, x, w) \land \tau (s) \subseteq i \rightarrow \forall x, s \left[ \text{woman} (x, w) \land \text{driving back home} (x, w) \land \text{CR} (s, x, w) \land \tau (s) \subseteq i \rightarrow \neg \text{drink}(x, \text{champagne}, s, w) \right] \right] \right] \]

There is a time interval \( i \) including the time of the party such that in all worlds of a contextually determined modal base \( F \), every contextually relevant situation involving a woman who is driving back home [from a wide construal of women driving back home] if indeed she is driving back home is a situation is one in which that woman is not drinking champagne.

Clearly this sentence entails the corresponding sentence on a narrow interpretation of \text{women driving home from the party}.

We predict that substituting \textit{any} for \textit{a} will render the statement ungrammatical whenever (1) the relative clause is accidental or (2) is essential but not ‘causal’.
In cases in which the relative clause is accidental, there is no-in-virtue of property leading to the predication relation and hence no generic reading is available for an indefinite statement. Since it is the generic operator which provides the downward entailing environment which licenses any and leads to any inducing a stronger statement than the indefinite a, any-N won’t be licensed because strengthening is not satisfied.

(53)  a. # John happened to talk to any woman who came up to him.
     b. # Any woman driving back home happens to be not drinking champagne.

In cases in which the relative clause is essential but doesn’t lead to the relation holding between the subject and predicate, a generic reading will not be available for an indefinite a-statement either. Accordingly, substituting any for a will render the statement ungrammatical because strengthening is not satisfied:

(54) ?Any 3rd year student who studies at Bar Ilan University is getting married by the end of this year.

We still need to say why it is easier to interpret an episodic indefinite statement as generic with any N rather than a N, that is, why is John spoke to any woman who came up to him easier to interpret as a generic than John spoke to a woman who came up to him. We assume that the since any can only be licensed here in a generic context, the Gricean Principle of Charity will encourage the listener to find a context which will support a generic interpretation, and thus less explicit contextual support is required for the any sentence than for the the indefinite singular with a N.

4.1 Summary

Kadmon and Landman show that FC any can be seen as the same any as NPI any since the generic operator is downward entailing. In this section we have shown that an occurrence of an any-NP is acceptable in episodic statements by virtue of a relative clause which induces a local generic reading. The universal quantifier introduced by the generic operator induces
a stronger statement on the wide interpretation associated with the *any* statement. Accordingly, the licensing constraint on *any* is satisfied.

My proposal can be seen as an elaboration upon Giannakidou’s attempt to maintain an indefinite analysis of *any*. Following Quer (1998, 2000), Giannakidou (2001) treats subtrigged statements as underlying conditionals, where the relative clause is mapped onto the restrictive clause. Under this account of subtrigged cases, the universal flavor of an indefinite *any*-NP is provided by the abstract conditional operator which contributes a universal quantifier.

(55) Yesterday John talked to any woman.

\[ \forall_{w, x} [\text{woman}(x, w) \land \text{came-up}(x, j, w)] \rightarrow \text{talk-to}(j, x, w) \]

We assume essentially the same semantic representation as the end result, but where as Giannakidou, introduces the universal quantifier as coming from an implicit and unexplained conditional structure, I assume it comes from the generic quantifier. I provided a semantic explanation for the availability of paraphrasing a subtrigged episodic statement as a conditional: subtrigged episodic statements can be paraphrased as conditionals because such statements can be interpreted generically. Under this reading they support counterfactual entailments like other generics.

To end this chapter, let us turn back to necessity statements and show how a relative clause salvages an occurrence of *any* in modal statements expressing necessity.

5. **Accounting for the licensing of *any* in necessity statements**

In chapter (3), we showed that *any* is not licensed in modal statements expressing deontic or epistemic necessity:

(56) a. #You must pick any flower.

b. #John must be staying at any hotel in Eilat.
As observed in (Dayal 1998), in the presence of a relative clause modifying the *any*-NP, *any* is rendered acceptable in modal contexts expressing necessity:

(57)  
\[ \text{a. You must pick any flower that you see.} \]
\[ \text{b. Any hotel in Eilat must be preparing for the vacation.} \]

Dayal, who treats *any* as an intentional universal quantifier over possible individuals, claims that (56a) is pragmatically infelicitous because the speaker requires the hearer to pick every possible flower. Since there are many possible flower situations that cannot extend into situations in which the speaker picks the flower, the command will not be able to be carried out. (57a), on the other hand, is pragmatically felicitous because quantification is over a temporally bounded set of possible flowers.

Under the approach developed in this chapter, ‘in virtue of’ relative clauses indicate genericity in episodic sentences. In the examples in (57), the relative clauses seem to have the same function. They induce a generic reading of modal statements just as they do in episodic contexts.

(58)  
\[ \text{a. You must pick any flower that you see=} \]
\[ \text{‘It is in your obligation to pick every contextually relevant and non exceptional flower that you come across because/by virtue of the fact that you come across it’}. \]
\[ \text{b. Any hotel in Eilat must be preparing for the vacation=} \]
\[ \text{‘It is a well known fact every contextually relevant and non exceptional hotel in Eilat must be preparing for the vacation by virtue of/because it is in Eilat’}. \]

Evidence for the presence of a generic reading is the fact that the sentences in (51) induce counterfactual entailments and allow for exceptions\(^7\):

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\(^7\) Notice that modal statements expressing possibility do not induce counterfactual entailments:
You may pick a flower \(\neq\) if this were a flower you may have picked it.

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Counterfactual entailments:
(59)  a. If this were a flower that you saw you would be obliged to pick it.
    b. If this were a hotel in Eilat it would be preparing for the vacation.

Exceptions:
(60)  a. You must pick a flower that you see but of course not a wilted flower.
    b. Any hotel in Eilat must be preparing for the vacation, but of course not this hotel which is closing down.

If an occurrence of an indefinite \(a\)-NP is interpreted generically in subtrigged necessity statements of the kind given in (57), then shifting from \(a\) to \(any\) will not affect the grammaticality of the sentence. This again is because strengthening is satisfied in generic statements (We give only as much structure as is necessary to see that the predicate appears under the scope of the generic operator operator):

(61)  a. You must pick any flower that you see.
    b. \(\forall w \ [w \text{ is deontically accessible from } w_0 \rightarrow \text{Gen}_x \ [\text{flower that you see} \ [\text{wide construal of flowers}] (x,w) \rightarrow \text{pick} (you, x, w)]].\)

All deontically accessible worlds are such that every contextually relevant flower that you come across from a widened domain of flowers is such that you pick it.

(62)  a. You must pick a flower that you see.
    b. \(\forall w \ [w \text{ is deontically accessible from } w_0 \rightarrow \text{Gen}_x \ [\text{flower that you see} \ [\text{narrow construal of flowers}] (x,w) \rightarrow \text{pick} (you, x, w)]].\)

All deontically accessible worlds are such that every contextually relevant flower that you come across from a narrow domain of flowers is such that you pick it.
6. **Summary:**

In this chapter we argued against Dayal’s claim that an *any*-NP cannot be seen as an instance of a generic indefinite in episodic subtrigged environments. We showed that episodic sentences with modified indefinite singulars can be interpreted generically whenever the relative clause is essential in Dayal’s sense since such a relative clause contributes an explicit in-virtue-of property which induces an iteration of events of the same kind. This iteration of events constitutes a local habit in a short temporal bounded interval and thus induces a generic reading for an ‘a NP’. Accordingly *any*, being the wide variant of *a* is acceptable in such episodic environments by virtue of the generic local operator which induces entailment from the statement with any to the statement with *a*.

Before we turn to the next chapter, let us recall what we have shown throughout this dissertation: We argued that all instances of FC *any* are instances of the same *any* occurring in downward entailing environments

- In chapter 2, we examined the occurrence of *any* in generic contexts containing an adverb of quantification and argued contra to Dayal that *any* can be bound by an adverb of quantification present in the sentence as long as it is downward entailing.

- In chapter 3, we examined the occurrence of *any* in modal contexts and showed that if we employ a performative account of strengthening, we can maintain Kadmon and Landman’s account of *any* as an indefinite determiner with extra properties of widening and strengthening.

- In chapter 4, we accounted for the acceptability of *any* in episodic statements, which maintains the treatment of *any* as an indefinite

In chapter 5, to which I turn now, we do something different: we provide evidence from Hebrew for adhering to a unified analysis of *any*. 

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Chapter 5: Polarity items in Hebrew

0. Introduction

In this chapter I am going to examine three polarity determiners in Hebrew – Sum af and kol- which are analogous to English any. I first examine the distribution of Sum and af and show that though, like any, they are licensed in a negative environment but not in an affirmative one, they have distributional properties which distinguish them from any. I follow with an exploration of the semantics of Sum and af and show that they are not synonymous as they first seem to be; they are sensitive to semantic distinctions between different denotations of nouns - individuals, sums of individuals, quantities and kinds. I argue that Sum and af are wideners licensed by strengthening as Kadmon and Landman (1993) argue any is. However, the widening involved is not contextual but rather one which is sensitive to the available denotations for nouns. I end with an examination of the distribution of Kol and show that its distribution is different from that of Sum and af and parallel to that of any. I argue that its acceptability in non negative downward entailning environments as well as typical FC environments provides evidence in favor of a unified analysis of any.

1. Hebrew NPIs – distributional properties

1.1 Introduction

Hebrew has three NPI determiners corresponding to NPI any. These are Sum, af and kol. Sum and af are used in casual speech; kol is restricted to formal registers. As any, they are licensed in negative contexts but not in the corresponding affirmative ones:

(1)

   he not certify SUM/AF/KOL proposal.
   He didn’t certify any proposals.

b. #Hu iSer Sum/af/kol hatsa-a.
   he certify SUM/AF/KOL proposal.
   He certified any proposals.
I postpone the discussion of kol until section (5). This is because, in addition to the fact that kol is not used in casual speech, Kol, unlike Sum and af, is associated with two more uses, in fact, even more prominent than its NPI use:

a. **A universal use on which it is equivalent to English all or each/every:**

(2) Kol yeled kibel maxasev.  
KOL child got computer.  
Every child got a computer.

b. **An FC use on which it is equivalent to FC any:**

(3) Ata yaxol liknot kol glida sehie.  
You can buy KOL ice-cream whatsoever.  
You can buy any ice-cream.

This indicates that kol is sufficiently different from Sum and af to warrant a separate discussion. I will return back to kol in section (5)

1.2 **Licensing by a clause mate negation in simple NP V NP sentences**

The distribution of Sum and af is not the same as for any. When licensed by a clause mate negation, any occurring in subject position is unacceptable, unless the negation appears in a position higher then the subject position (*never did anyone touch your laptop*). By contrast, Sum and af in subject position are acceptable:

(4) a. *Any minister wasn’t present in the plenum.*

b. Sum/af sar lo naxax ba-meliaa.  
SUM/AF minister not present in plenum.  
Any minister wasn’t present in the plenum.

This shows that while any must be in the syntactic scope of not, Sum and af; must appear in the semantic scope of lo ‘not’. As Ladusaw (1979) notes, this gives the effect of a left-
right linear order condition on the licensing of *any* by *not*. The licensing of *any* by *not* and *Sum* and *af* by *lo* can be stated as follows:

NPI *any* is only licensed (by negation), if it occurs rightward of *not*, as determined at S-structure. NPI *Sum* and *af* are licensed by *lo*, if they occupy a position within the sentence c-commanded by *lo*, as determined at LF: \[ \text{not [….Sum/af….]}, \] (Levy 2001: 44)

1.3 **Licensing of Sum/af by non sentential negation**

1.3.1 **Constituent negation**

As observed in (Zilxa (1970), Ben-Asher (1972) and Glinert (1982a, 1989)), *Sum* and *af* are not restricted to occurring in the scope of sentential negation; *Sum* and *af* can also occur in the scope of (1) two nominal negators: the bound noun *xoser* ‘lack’ (example 5a), and the prefix *i-* ‘un’ (example 5b) (2) the prepositional negator *bli* ‘without’ (example 6) and two adjectival complex negators - *asur* ‘forbidden’(example 7a), and *i-efsar* ‘impossible’, where the prefix *i-* functions as an adjectival negator (example 7b):

(5) a. *Xoser inyano be-Sum/af miktso-a metaskelet.*
    lack interest-his in-SUM/AF subject frustrating.
    His lack of interest in any subject is frustrating.

    b. *i-hiStatfutxa be-Sum/af Siur yaSpia al ha-tisyun Selxa.*
    nonattendance-your in-SUM/AF lesson affect on the grade your.
    Nonattendance at any lesson will affect your grade.

(6) *hi ba-a bli Sum/af matana.*
    she came without SUM/AF present.
    She came without any presents.

(7) a. *asur liktof Sum/af perax mugan.*
    not allowed to pick SUM/AF flower protected.
    It is forbidden to pick any protected flowers.
Notice the contrast between the grammaticality of *Sum and *af in the scope of *i-efsar and its ungrammaticality in the scope of bilti-efsari, both of which get the English translation impossible:

(8) a. *bilti-efsari lirot Sum-davar.
Impossible to-see SUM-thing.
It’s impossible to see anything.

Glinert (1987) claims that *bilti being an adjectival negator cannot negate anything beyond the adjectival constituent containing it, whence the ungrammaticality of (8a) where the NPI is situated outside the adjectival constituent containing bilti. Unlike bilti, *i in *i-efsar, is an idiomatic variant of the sentential negation lo, whence the grammaticality of (8b) where the NPI is situated within the sentential constituent containing i. Evidence that *i, unlike bilti, is a sentential negator is the fact that a sentential negator cannot be added to *i-efsar as it can to bilti-efsari, which shows that *i, unlike bilti, is an instance of sentence negation:

(9) a. *ze lo i-efsar.
it not impossible.
It’s not impossible.

b. ze lo bilti-efsari.
It not impossible.
It’s not impossible.
The data seems to show that *bilti* is a derivational negator which changes the meaning of the adjective it attaches to: it forms a new adjective with the reverse meaning; *i*- on the other hand seems to be an inflectional negator which reverses the relation between different words in the sentence as inflectional morphemes always do\(^1\).

1.3.2 **Licensing by non negative downward entailing operators**

In addition to the observations made in the literature, another important observation must be made, observed already in Levy (2001): Unlike *any*, *Sum* and *af* cannot be licensed by downward entailing operators which do not involve explicit negation in their meaning:

- **In the scope of downward entailing sentential adverbs**

  (10)  
  a. *Rarely* does he invite any friends.  
  b. *le-itim rexokot* hu mazmin Sum/af xaver.  
  Rarely he invites SUM/AF friend.

- **In the scope of downward entailing adversative predicates**

  (11)  
  a. *I doubt* you’ll find any daffodils in the summer.  
  b. *ani be-safek im timtsa* Sum/af narkis ba-kaitz.  
  I in-doubt if will found SUM/AF daffodil in the summer.

- **In the scope of downward entailing quantificational determiners**

  (12)  
  a. *Every* student who has any interest in semantics can register to this course.

\(^1\) Recall that *i*- also behaves as a nominal prefix negator. The following shows that when behaving as a nominal negator, *i*- does not behave as an inflectional negator as the sentential negator *lo* can be added:

\[ i-hiStatfut be-Sum/af Siur lo taSpia al ha-tisyun. \]

Nonattendance in-SUM/AF lesson not affect on the-grade.

Nonattendance at any lesson will affect your grade.
Every student who has any interest in semantics can register to this course.

The more restricted distribution of *Sum* and *af* in comparison to *any* is not a peculiar phenomena of *Sum* and *af* but is also a characteristic of some English NPIs. As Zwarts (1993) observes, there are different classes of NPIs – weak, strong and superstrong - which differ in the range of downward entailing contexts they can occur in. Weak NPIs are considered the least restricted in their distribution and superstrong NPIs are considered the most restricted in their distribution. Hence, despite the differences in distribution between *Sum* and *af* on the one hand and *any* on the other hand the reader should not doubt the appropriateness of treating *Sum* and *af* as the natural correlate of English *any*.

### 1.3.3 Summary

We have seen that there are two distributional differences between *Sum* and *af*. One distributional difference is that when licensed by a sentential negator, *Sum* and *af* can appear in either the subject or the object position while *any* can only appear in the object position. This shows that *Sum* and *af* can occur in the semantic scope of negation as determined at LF while *any* must occur in the syntactic scope of negation as determined at S-structure. The other distributional difference is that, unlike *any*, *Sum* and *af* cannot appear in non-negative environments. The data, therefore, shows that on the one hand *Sum* and *af* are less restricted in their distribution than *any*; they do not require a syntactic scopal relation with a sentential negator. On other hand *Sum* and *af* are more restricted in their distribution; their triggering expression must be a negator. They cannot be licensed by downward entailing operators which are not explicitly negative.
2. *Sum and af: are they synonymous?*

*Sum* and *af* seem equivalent on the basis of examples like the following:

(13) Eyn li Sum/af sefer.
Not have me SUM/AF book.
I don’t have any book.

However they are not. There is a set of distributional, semantic and pragmatic differences between them. First, as observed in the literature, *Sum* can freely occur with any type of noun—a singular count noun, a plural count noun and a mass noun. By contrast *af* is grammatically constrained to occur with singular nouns:

(14) a. eyn li Sum/af seara.
Not have to me SHUM/AF hair\textsubscript{sing}.
I don’t have any hair.

b. eyn li Sum/#af searot.
Not have to me SHUM/AF hairs.
I don’t have any hairs.

c. eyn li Sum/#af sear.
Not have to me SHUM/AF hair\textsubscript{mass}.
I don’t have any hair.

The contrast in the acceptability of *af* in 15 (a, b) on the one hand and 15 (c, d), on the other hand, shows that the constraint on the occurrence of *af* is semantic and not morphological:

Not have to me SHUM/AF bicycles.
I don’t have any bicycles.
b. Eyn li Sum/af miSkafaim.
   Not have to me SHUM/AF glasses.
   I don’t have any glasses.

c. ba-miSpaxa Seli eyn Sum/#af eynaim kxulot.
   In family my not have SHUM/AF eyes blue
   There aren’t any blue eyes in my family.

d. Eyn la-buba Sum/#af yadaim.
   Not have to the doll SHUM/AF hands.
   The doll hasn’t any hands.

In the examples above, *Sum and af* are attached to nouns that are morphologically marked as dual plurals by means of the Hebrew dual plural morpheme ‘ayim’; Ontologically, however, there is a difference between the a and b examples, on the one hand, and the c and d examples on the other hand. In a and b, *Sum and af* are attached to plural nouns which semantically denote singular individuals. In c and d *Sum and af* are attached to real dual plurals which semantically denote plural objects\(^2\). The fact that *af* is acceptable in a and b but not in c and d shows us that *af* does not require the noun it takes to be morphologically singular; it only requires it to be semantically singular.

The following data shows that *af* is even more restricted in its distribution. Contrast the acceptability of *Sum and af* in the following pair of sentences which are minimally different from one another in the common noun attached to *Sum/af* - in (16a) the noun is *vegetable* while in (16b) it is *moustache*. While *Sum and af* are both acceptable in (16a), only *Sum* is pragmatically felicitous in (16b), as observed also by Glinert (1989):

\(^2\) Evidence for drawing a distinction between real semantic plural duals like *eynaim* ‘eyes’ and morphological plural duals like *ofanaim* ‘bicycles’ is the fact that one can utter felicitously the statement in (a) but can’t utter felicitously the statement in (b) – in hearing (b), one would utter as a correction of (b) the corresponding statement in (c) where the word zugot ‘pairs’ is added:

\begin{itemize}
\item[a.] ani roa harbe eynaim bohot.
   I see many eyes bewildered.
   I see many bewildered eyes.
\item[b.] #la-yeled ha-ze yeS harbe ofanaim.
   This boy has many bicycles.
\item[c.] la-yeled ha-ze yeS harbe zugot ofanaim.
   This boy has many bicycles.
\end{itemize}
Glinert (1989) claims that the data shows that \emph{af} cannot attach to nouns that have only one individual in their extension; in Glinert’s terms, \emph{moustache} cannot have more than one individual in its extension and this is why \emph{af}, unlike \emph{Sum}, cannot attach to it. Let me try and make Glinert’s generalization more precise: if we treat all nouns as denoting relations, as Partee (1983/1987) does for all nouns that occur with genitives (inherently relational nouns such as \emph{mother} in \emph{John’s mother}, as well as contextually relational nouns such as \emph{team} in \emph{John’s team}), then, the data shows that \emph{af} cannot occur with those relational nouns that are presupposed to denote a function from individuals to unique individuals. \emph{Moustache} is presupposed be a functional noun from individuals to the unique individual mustache they each bear: \emph{moustache} pairs an individual with no more than one moustache at a given time interval (one cannot grow more than one moustache at a given time). Hence, \emph{af} cannot attach to it. By contrast, \emph{vegetable} is not presupposed to be a functional noun – it is a non functional relational noun which pairs an individual with any number of individual vegetables at a given time interval; hence \emph{af} can attach to it.

The interpretation of a noun can shift from a functional reading to a relational reading given the linguistic context in which it is used. Contrast (17) with (17b) which are minimally different from one another in that in (17a) the verb \emph{to have} is in the present form \emph{eyn ‘doesn’t have’} and in (17c), the same verb is in the past form \emph{lo haya ‘didn’t have’}:

\begin{enumerate}
\item \emph{Le-israel eyn Sum/#af melex.}
\item \emph{Le-israel eyn Sum/af melex.}
\end{enumerate}
In (17a) an occurrence of \textit{af} is unacceptable. This is because in (17a) the noun attached to \textit{af}, \textit{king}, is presupposed to denote a function from countries to the unique king they each bear. In (17b), where different time spans are considered, \textit{king} denotes a non functional relation which pairs a country with possibly more than one king; hence, an occurrence of \textit{af} is acceptable.

A non linguistic context can also shift the meaning of the noun from a function to a relation and accordingly render \textit{af} acceptable or nonacceptable. Imagine a tiny synagogue with only 10 members. In such a context we wouldn’t expect the synagogue to have more than one rabbi; hence, uttering (18a) with \textit{af} in this context is considered odd because \textit{rabbi} is associated with a functional interpretation under which it pairs a synagogue with a unique rabbi. Once, however, we change the context to a big synagogue, uttering (18a) with \textit{af} becomes felicitous, because then the possibility of the synagogue having more than one rabbi becomes pragmatically felicitous. Similarly uttering (18b) in monogamous societies where it is not the custom for a man to have more than one wife renders \textit{af} unacceptable because \textit{wife} under this context is associated with a functional interpretation under which it pairs a man with a unique wife. By contrast, uttering (18b) in polygamous societies renders \textit{af} felicitous because there is a possibility of having more than one wife.

\begin{equation}
\begin{array}{llllll}
\text{a.} & \text{eyn} & \text{la-bet-kneset} & \text{ha-ze} & \text{Sum/af} & \text{rav.} \\
& \text{not have} & \text{to the synagogue} & \text{this} & \text{SUM/AF} & \text{rabbi.} \\
\text{This synagogue doesn’t have any rabbi.}
\end{array}
\end{equation}

\begin{equation}
\begin{array}{llllll}
\text{b.} & \text{eyn} & \text{lo} & \text{Sum/af} & \text{iSa (Glinert 1989)} \\
& \text{not have} & \text{to him} & \text{SUM/AF} & \text{wife} \\
\text{He doesn’t have any wife.}^3
\end{array}
\end{equation}

\textsuperscript{3} There are two other differences between \textit{Sum} and \textit{af}, which are observed in (Glinert (1982a, 1989)); the first is that \textit{af-exad} and \textit{Sum-davar} corresponding to English \textit{anyone} and \textit{anything} (or \textit{no-one} and \textit{nothing} when preceding the negator) respectively are considered idiomatic expressions of the language. The
What the data seems to show is that *af* and *Sum* are sensitive to distinctions between nouns denoting individuals, nouns denoting sums of individuals, nouns denoting quantities and nouns denoting kinds. *Af*, which can only attach to singular nouns is used to say ’not even one individual x in N’ is such that p’. *Sum*, which can attach to any noun, is neutral; with singular nouns it can be used to say ’not a single individual x in N is such that p’; with plural nouns it is used to say that not the smallest sum x in N is such that p’; and with mass nouns it is used to say that not the least quantity x in N is such that p’:

(19) a. eyn li af seara al ha-roS.
Not have to me AF hair[sing] on the head.
I don’t have any hair on the head

‘I don’t have even one hair on my head’.

b. eyn li Sum seara al ha-roS.
Not have to me SHUM hair[sing] on the head.
I don’t have any hair on the head

*I don’t have even one hair on my head’ or ‘I don’t have any kind of hair on my head.

c. eyn li Sum searot al ha-roS.
Not have to me SHUM hairs on the head.
I don’t have any hairs on the head.

*I don’t have even the least number of hairs on my head.

alternatives, *shum-exad* and *af-davar* are considered vary rare in their use. The second is that *af* but not *Sum* can be modified by the numeral *exad ‘one’*

SHUM something / AF something lo kara.
Nothing happened.

b. lo kaniti *Sum/af sefer exad.
Not bought SHUM/AF book one
I didn’t buy a single book.

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It is now left to give a semantic interpretation of *Sum* and *af*, which will account for the distinctions between them. I start by assuming that *Sum* and *af*, like *any*, are wideners in Kadmon and Landman’s (1993) sense. But, I assume that *Sum* and *af* widen in different ways. In section 4 I draw on Link’s (1983) and Landman’s (1991) analysis of count, plural and mass nouns and Chierchia’s (1998) analysis of kinds in order to state precisely how *Sum* and *af* widen in different ways.

2.1 **A Kadmon and Landman based semantic theory of *Sum* and *af***

Let us review Kadmon and Landman’s account of *any*; Kadmon and Landman (1993) give a semantic account of *any* which provides a semantic explanation for the downward entailing constraint on the distribution of *any*. They propose that *any* is an indefinite determiner equivalent to *a* except that it has the function of widening the domain of individuals denoted by the noun as determined by *a* along a contextually determined dimension. Consider the following example uttered in a context where you have been told not to pick a rare flower.

(20) A: I didn’t pick a flower [where, *flower* = a contextually determined narrow domain of flowers- the set of protected flowers]

B: not even a ragwort?

A: No, I didn’t pick any flower [where *flower* = a contextually determined wider domain of flowers, the set of protected - non-protected flowers.]

When speaker A utters *I didn’t pick a flower*, the meaning of *flower* is taken to be a contextually restricted domain of flowers, the domain of protected flowers; in switching to the corresponding statement with *any*, speaker A instructs speaker B to consider a
wider construal of flowers; he instructs him to consider a domain of flowers which contains protected as well as non-protected flowers.

To account for the licensing of *any*, Kadmon and Landman introduce a semantic-pragmatic constraint; they suggest that *any* is licensed if the widening associated with *any* induces truth conditional strengthening of the statement in which it occurs in comparison to the statement with the corresponding indefinite determiner *a*. This will be the case if the wide interpretation associated with the statement with *any*, entails the corresponding narrower interpretation associated with the statement with *a*.

Given that the meaning of *any* is that of widening, the strengthening requirement on its licensing will only be satisfied in downward entailing contexts: only in downward entailing contexts which induce entailments downward from the statement with the more general expression to the statement with the less general expression will the widening associated with *any* (which makes an expression more general) create a stronger statement: this is why *any* is acceptable, for example, in negative but not affirmative statements:

(21)  a. I didn’t pick any flowers [some flower from the widest construal of flowers]. $\rightarrow$ I didn’t pick a flowers [some flower from the narrowest construal of flower].

       b. #I picked any flowers [some flower from the widest construal of flowers]. $\nrightarrow$

       I picked a flower [some flower from the narrowest construal of flower].

Intuitively, *Sum* and *af* look like *any* – they also seem to involve widening of the domain of the common noun and licensing by strengthening. One might thus assume that we can simply transfer the semantics of *any* onto *Sum* and *af*. However, as I show next, though *Sum* and *af* do seem to involve widening, the widening *Sum* and *af* invoke is not dimensional. This requires us to modify Kadmon and Landman’s theory in such a way that it accounts for the particular semantics of *Sum* and *af*. 
2.1.1 Differences between the semantics of *any* and *Sum* and *af*

As Kadmon and Landman show, the function of *any* is to widen the domain of quantification along a contextually given dimension. In the conversation given in (22), the use of *any* instructs the hearer to include even socks which are wet in the denotation of *socks*. Since widening of the domain by *any* is along a contextually determined dimension, the dry vs. wet sock dimension, the presence of dirty socks will not falsify the assertion of B in (22).

(22) A: Do you have dry socks?
    B: No. I don’t have any socks.

In Hebrew widening invoked by *Sum/af* cannot be understood as dimensional. Consider the conversation in (23) uttered in the context of a swimming-pool.

(23) a. A: Can you see someone with long hair and no cap?
    B: No, I can’t see any person without a bathing cap.

b. A: ata roe adam im sear arox uvli kova-yam?
   You see person with hair long and without cap-sea?
    B: lo, ani lo roa Sum/af adam bli kova-yam.
   No, I not see SUM/AF person without bathing-cap.
   I don’t see any person without a bathing-cap.

While in English the use of *any* indicates widening along the long vs. short hair dimension and, hence, the presence of bald people without a swimming cap will not falsify the claim, in Hebrew, the widening induced by *Sum* and *af* cannot be understood as dimensional. *Sum* and *af* widen the denotation of the common noun to include all individuals at the bathing area which were excluded prior to the use of *Sum* and *af* from the domain of quantification. Hence, in Hebrew bald people without a bathing cap can’t contextually remain outside the domain of quantification.

If *Sum* and *af* involve widening and yet the widening involved is not contextual widening along a particular dimension, the immediate question to be asked is what kind of
widening do we have in Hebrew? Given the differences in the type of nouns *Sum* and *af* select I claim that the kind of widening involved is semantic- one which is sensitive to the available domains of interpretations for NPs. Instead of sensitivity to contextually relevant individuals, we get sensitivity to the nature of the N.

- *af* + noun<sub>sing</sub>: *af* requires the noun to denote a set of singular atomic individuals and accordingly widens the nominal predicate to include each and every individual, even that one individual you might have thought irrelevant. This gives a ‘not a single’ effect.
- *Sum* + noun<sub>sing</sub>: *Sum* allows the noun to denote a set of individuals or a set of kinds and respectively widens the nominal predicate to include either each and every individual, even that individual you might have thought irrelevant, or each and every sub-kind , even that sub-kind you might have thought irrelevant.
- *Sum* + noun<sub>plural</sub>: *Sum* allows the noun to denote sets of sums of individuals and accordingly widens the nominal predicate to include every sum of individuals, even that minimal sum you might have thought irrelevant.
- *Sum* + noun<sub>mass</sub>: *Sum* allows the noun to denote sets of quantities and accordingly widens the nominal predicate to include each and every quantity, even that minimal quantity you might have thought irrelevant.

Let’s see now how *Sum* and *af* induce widening and strengthening by looking at the following examples.

When I utter *eyn li af seara* ‘I don’t have af hair<sub>sing</sub>’, I’m widening the denotation of the noun to include even that one hair the hearer may have thought the denotation of the noun doesn’t include. This gives a ‘not a single’ reading of the statement. Crucially, the widening doesn’t order the individuals along some contextually given dimension. The widening is a numerical widening- it adds all individual hairs which the hearer may have thought should be left outside. The following context is illustrative:
(24)  A: Aba Seli kere-ax.
    Father my bald
    My father is bald.
B: Mamash Ke-re-ax?
   Really bald
   Really bald?
A. keni, eyn lo af seara!
    Yes not have to him AF hair\textsuperscript{[sing]}
yes he doesn’t have any hair.

This induces strengthening: if I don’t have even one hair, then I don’t have two hairs or three.

While \textit{eyn li Sum sear} ‘I don’t have \textit{Sum} hair\textsuperscript{sing}’ can have the same reading as the one when \textit{af} is used, it can also have a kind reading. When I utter \textit{eyn li Sum sear} ‘I don’t have \textit{Sum} hair\textsuperscript{sing}’ under the kind reading, I am widening the domain of discourse to include all kinds of hairs which were excluded by the previous discourse up to uttering the statement with \textit{Sum}, say white hairs:

    To-grandfather my bald.
    My grandfather is bald.
B: eyn lo afilu Seara levana?
   Not have to him even white hair?
   Doesn’t he even have a white hair?
A: Lo eyn lo Sum/?af Seara.
   No, not have to him SUM/AF hair.
   No, he doesn’t have any hair.

This induces strengthening: if my grandfather doesn’t have a black hair, then he doesn’t have even a less commonly color hair at his age – a white one. Notice that under this context, which induces a kind reading of the noun, the use of \textit{af} would be inappropriate.
When I utter *eyn li shum se-arot* ‘I don’t have *Sum* hairs’, I am widening the domain of discourse to include hairs in the smallest amounts\(^4\)

(26) A: Aba Seli kere-ax.
Father my bald.
My father is bald.
B: eyn lo afilu searot sfurot?
Not have to him even hairs numbered?
Doesn’t he even have a few hairs?
A: Lo eyn lo Sum Searot.
No, not have SUM hairs.
No, he doesn’t have any hairs.

This induces strengthening: if I don’t have hairs in a small amount, then I don’t have hairs in a larger amount.

When I utter *eyn shum se-ar al ha-ritspa* ‘there isn’t any hair\(_{mass}\) on the floor’, I am widening the domain of discourse to include hair in the least quantity.

(27) A: YeS adayin se-ar al ha-ritspa?
Is there still hair on the floor?
Is there still hair on the floor?
B: lo eyn Sum se-ar al ha-ritspa.
no there isn’t Sum hair on the floor.
no, there isn’t any hair on the floor.

This induces strengthening: if there isn’t hair in a small quantity, then there isn’t hair in a larger quantity.

\(^4\) When I use the plural noun, there seems to be a presupposition that the hearer believes that the subject stands in relation to more than one individual with the common noun property.
3. **A formal account of the semantics of Sum and af**

3.1 **Non-kind readings of nouns**

According to Link (1983) and Landman (1991), both singular and plural nouns receive their denotation from an atomic domain of interpretation, containing atomic individuals and their plural sums. The domain can be represented by a Boolean semi-lattice structure ordered by a relation of sum. Diagram 1 illustrates the structure of a domain with 4 atoms.

**Figure 1**

```
\[
\begin{array}{cccccc}
& a+b+c+d & & & & \\
\hline
a+b+c & a+b+d & a+c+d & b+c+d & & \\
\hline
a+b & a+c & a+d & b+c & b+d & c+d \\
\hline
a & b & c & d & & \\
\end{array}
\]
```

The variables a, b, c, d stand for atomic individuals. They have only themselves as part. All other elements in the domain are non-atomic individuals. They are made up of sums of atomic individuals. For example, the non-atomic individual a+c+d is made up of the atomic individuals a, b and c. A singular predicate denotes the set of atomic individuals, i.e. the bottom line of diagram 1. A plural predicate denotes the set of atomic individuals closed under the sum operation, i.e. it takes its reference from the complete domain in diagram (1).

Suppose the lattice structure represents the denotation of *hair*, then the denotation of the singular noun *hair* would be the set given in (28a) and the denotation of the plural noun *hairs* would be the set given in (28b):

(28) a. \[ [\text{hair}] = \{a, b, c, d\} \]

b. \[ [\text{hairs}] = \{a, b, c, d, a+b, a+c, a+d, b+c, b+d, c+d, a+b+c, a+b+d, a+c+d, b+c+d, a+b+c+d\} \]
Mass predicates, on the other hand, take their reference from a domain of stuff - a non atomic domain of interpretation homomorphic to the atomic domain, which contains non atomic individuals - quantities - and their plural sums. Just as a plural predicate denotes the entire atomic domain, mass predicate denotes the entire non atomic domain, viz, a set of quantities closed under their sum operation.\(^5\) If we consider hair under its mass interpretation, then hair will denote the totality of hair and all its parts without any ontological commitment to what the parts are. Let’s turn back now to Sum and \(af\) and use this theory to formalize the effect of widening induced by Sum and \(af\). I start by looking at the non-kind readings.

Since \(af\) is constrained to apply to singular nouns which denote sets of atomic objects, \(af\) will have the function of widening the set of atoms to include the complete set of atoms that the noun can possibly denote:

\[
(29) \quad \text{Af} = \text{a function from atomic sets to atomic sets: } P^0_{\text{at}} \rightarrow \text{wid}(P^0_{\text{at}}),
\]

where \(P\) stands for property, \(at\) for atoms and \(o\) for objects

\[
[\text{AF N}] = \text{wid}(P^0_{\text{at}}) \text{ the widest atomic object interpretation of } P
\]

Accordingly, the denotation of a singular noun in the scope of \(af\) will be the complete set of individual atomic objects:

\[
(30) \quad [\text{AF HAIR}_{\text{singular}}] = \text{wid}\{x: x \in \text{HAIR}^0_{\text{at}}\} \quad \text{the set of atomic individual hairs}
\]

This will give the following representation for a statement with \(af\):

\[
(31) \quad \text{a. Eyn le Dan af seara.} \\
\quad \quad \text{Not have to Dan af hair.} \\
\quad \quad \text{Dan doesn’t have any hair}
\]

\(^5\) In contrast to link (1983) and Landman (1991), Chierchia (1998), Gillon (1992) and Rothstein (2007) all argue that the mass domain is atomic. The differences between the approaches are irrelevant for the purposes of this paper.
b. \( \neg \exists x: x \in \text{wid}(\text{hair}^o_{\text{af}})) \land \text{Have (Dan, x)} \)

\textit{It's not the case that there is an individual x which is a member of the} \textit{widest set of atomic hair objects}

By contrast, \textit{Sum} can freely apply to any type of noun, singular, plural or mass and, as \textit{af}, has the function of widening the denotation of the common noun. What is included depends on the form of the noun.

(32) \textit{Sum: function from any nominal denotation to wid(P)}

\[ \llbracket \text{SUM N} \rrbracket = \text{wid(P)} \] \textit{the widest interpretation of P:}

If \textit{Sum} applies to a singular noun, \textit{Sum} widens the denotation of the noun to include the complete set of atomic individual objects as in 44. This will give the following representation for a statement with \textit{Sum} attached to a singular noun under an atomic reading:

(33) a. Eyn le Dan Sum seara.
\textit{Not have} to Dan Sum hairs.
\textit{Dan doesn't have any hair}

b. \( \neg \exists x: x \in \text{wid}(\text{hair}^o_{\text{af}})) \land \text{Have (Dan, x)} \)

When \textit{Sum} applies to a plural noun which denotes a set of sums of atomic individual objects, \textit{Sum} widens the set to include the complete set of sums of atomic individual objects:

(34) \[ \llbracket \text{SUM hair}_{\text{plural}} \rrbracket = \text{wid}\{x: x \in \text{HAIR}^o_{\text{plural}}\} \] \textit{the set of atomic individual hairs closed under sum.}

This will give the following representation for a statement with \textit{Sum} attached to a plural noun:

(35) a. Eyn le Dan Sum searot.
\textit{Not have} to Dan Sum hairs.
\textit{Dan doesn't have any hair}
It's not the case that there is an individual $x$ which is a member of the widest set of sums of atomic hair objects.

When $\text{Sum}$ applies to a mass noun which denotes a set of (non-atomic) chunks of hair stuff and their plural sums, $\text{Sum}$ widens the set to include the complete set of non-atomic individual objects and their plural sums.

\[
\text{[SUM HAIR}_{\text{mass}}] = \text{wid}\{x: x \in \text{SEAR}_{\text{mass}}^0\} \text{ the set of chunks of hair stuff closed under sum}
\]

This gives the following representation for a statement with $\text{Sum}$ attached to a plural noun:

\[
(36) \quad \neg \exists x: x \in \text{wid}([\text{hair}_{\text{plural}}^0]) \land \text{Have (Dan, x)}
\]

I now turn to look at the other reading available for a singular noun under the scope of $\text{Sum}$—this is a predicative reading over kinds. We will make explicit how $\text{Sum}$ behaves with this reading using Chierchia’s (1998) and Carlson’s (1977) theory of kinds.

### 3.2 Kind readings of nouns

Chierchia perceives kinds as individuals like you and me, only that their spatiotemporal realization is discontinuous. They are associated with the totality of their instances in the world. For example the hair-kind is identified with the totality of hair instances in any world— they are functions from worlds into the sum of all instances of the kind. Chierchia shifts to a kind interpretation of a noun through the type shifting function $\cap$ and back to a predicate interpretation of a noun through the type shifting function $\cup$ as follows: If $P$ is a
predicate then \( \cap P \) is the corresponding kind denoting an individual \( d \). If \( d \) is a kind then \( \cup P \) will be the corresponding predicate. \( \cap \) is a nominalizing function; it turns a predicate at type \(<e,t>\) into a kind at type \( e \) by taking the largest member of its extension, the member true of all its atomic parts and treating it as a singular individual. \( \cup \) is a predicativizing function; it turns a kind interpretation at type \( e \) into a predicate at type \(<e,t>\) by shifting from the abstract individual to all the individual members and sum of individuals it is made of.

Let’s turn to \( \text{Sum} \) and \( \text{af} \), recall that \( \text{af} \) cannot occur with singular nouns like moustache or wife when they contextually denote functional nouns;

\begin{equation}
\text{eyn lo Sum/#af safam/iSa.}
\end{equation}

Not have to him \( \text{SHUM/AF} \) moustache/wife.

He isn’t growing any moustache

There would be no communicative point of using \( \text{af} \) which means not even a single one if in any way one cannot stand in relation to more than one individual in the set denoted by the noun: one cannot have more than one moustache or have (in monogamous societies) more than one wife. \( \text{Sum} \) on the other hand can be used with such functional nouns because it can be used under a kind reading. Under this reading \( \text{he’s not growing Sum moustache} \) means that the individual subject is not growing any kind of moustache, not a not a thin one, not a bushy one, not a bristly one and so on; and \( \text{he doesn’t have Sum wife} \) means that the individual subject does not have any kind of wife, say, not a rich one, not a well educated one, not one who has been married before and so on. This shows that \( \text{Sum} \), unlike \( \text{af} \), induces a reading for singular nouns which takes its reference from a domain of kinds. Under this reading, a singular noun denotes a set of subkinds; in \( \text{eyn li Sum safam} \), for example, \( \text{safam} \) denotes a set of moustache kinds and \( \text{Sum} \) widens the set to include the complete set of moustache kinds.
Krifka 1995 observes that in English bare plurals can denote a set of subkinds ‘The Labrador and the Spaniel are dogs’. What we see from the interaction of Sum with functional nouns like moustache and wife is that singular nouns at least in Hebrew can can range over kinds too\(^6\). Moustache\(_\text{sing}\) under a kind interpretation can denote as well as the moustache-subkinds at type e, a predicate at type \(<e,t>\) ranging over all sub-moustache kinds – a thin moustache kind, a bushy moustache kind, a French moustache kind and so on. Now, since each element in a Boolean semi lattice is itself the supremum of a Boolean semi lattice which is a subpart of the matrix lattice, Chierchia’s theory allows kind formation to apply to any element of the lattice. This will then give us a domain of subkinds. Since Boolean semi-lattices are isomorphic to the powerset, each element will be associated with a property determining what kind of subkind it is. This I claim gives the following denotation for a singular noun under a kind interpretation:

\[(39) \quad \text{moustache}_{\text{kind}} = \{\bigcap y \in y \subseteq a+b+c+d}\] \(\text{The set of individual moustache subkinds}\)

Treating common nouns as denoting sets of individual level kinds is analogous to the semantics proposed for kind of N in Carlson (1977). As Carlson observes, an NP of the form ‘this kind of CN’ denotes any subordinate kind that is lexically entered. For example, ‘this kind of hair’ can contextually be understood as denoting the curly kind of hair.

\[(40) \quad \text{I have this kind of hair when I don’t use a hair dryer (pointing at some hair style in a magazine)}\]

This leads Carlson to treat kinds as functions from noun meanings into their subkinds (41a). Accordingly, ‘kind of CN’ comes out as denoting a function from individual kinds into truth values. For example, kind of hair would be translated as in (42b) which is an interpretation of kinds which follows elegantly under my representation.

\(^6\) We will return to this difference between English and Hebrew in the final section.
(42)  

a. $\lambda Q \lambda x^k [\forall z^0 (R'(z, x) \rightarrow ^\forall Q(z))]$

\text{‘a function from properties into their subkinds s.t for every individual object z realizing a subkind x, it must be the case that z has $Q'$.\textquoteleft}.

b. $(\lambda x^k [\forall z^0 (R'(z, x) \rightarrow \text{hair}(z))]$

\text{a function from subkinds into truth values s.t for every individual z realizing a hair subkind, it is the case that z has the hair property.}\textquoteleft

Let\’s turn now to formalize the widening induced by \textit{Sum} under a kind interpretation of the noun. If \textit{Sum} applies to a singular noun, \textit{Sum} widens the denotation of the noun to include the complete set of individual kinds:

(43) $\llbracket \text{SUM MOUSTACHE$_{\text{sing}}$} \rrbracket = \text{wid}\{x: x \in \text{HAIR}^k\} = \{\bigcap a, \bigcap b, \bigcap a+b, \bigcap b+c, \ldots, \bigcap a+b+c, \bigcap a+b+c+d, \ldots\}$

\text{where $^k$ stands for the domain of kinds.}\textquoteleft

The set of individual moustache-kinds

This gives the following representation for a statement with \textit{Sum} attached to a singular noun under a kind reading:

(44) a. Eyn le Dan Sum safam.

\text{Not have to Dan Sum moustache.}\textquoteleft

Dan doesn\’t have any moustache.

b. $\neg \exists x^k: x^k \in \text{wid}\{x: x \in \text{MOUSTACHE}^k\} \land \exists y R(y, x^k) \text{ and saw}(I, y)$

\text{It\’s not the case that there is an individual x which is a member of the widest set of atomic moustache kinds and I saw a realization of one of those subkinds.}\textquoteleft

3.3 \textbf{Summary}

We see that like \textit{any}, \textit{Sum} and \textit{af} are wideners licensed by strengthening, but the widening involved is one which is sensitive to the interpretation of the noun rather than one which is sensitive to contextually relevant dimensions. We also see that nouns under
a kind reading can be interpreted as well as arguments at type e as predicates over kinds at type <e, t>.

4. **A derived prediction**

Under Chierchia’s theory of kinds, if P is a mass or plural predicate then ∩P, its kind, will be defined since the denotation of a mass or plural predicate has a maximal element from which a kind can be constructed. Bare singular nouns (denoting non-singular sets), on the other hand, cannot have a kind interpretation under Chierchia’s theory. This is because kinds under his theory are only associated with maximal elements (viz, with the member of the extension of p which includes all others as parts) and there are no maximal elements in the set denotation of singular nouns (denoting non-singular sets) from which a kind can be constructed. Chierchia's theory of kinds is supported by the fact that there is no bare singular reference to kinds in English; in English, bare NP reference to kinds is allowed only when the noun is mass or plural but not when it is singular. Consider as evidence the following examples from Krifka et al (1995) containing predicates favoring a kind referring interpretation of the argument:

(45)  
- a. Dinosaurs are extinct.
- b. * Dinosaur is extinct.

(46)  
- a. German teenagers watch six hours of TV daily.
- b. * German teenager watches six hours of TV daily.

Krifka et al (1995) observe that in English NPs can also range over kinds. They call NPs under this use ‘taxonomic kind referring NPs’. As they note, among those NPs that can range over kinds, we find bare plurals. This is what we would naturally expect if bare plurals can refer to kinds and the predicate kind reading is derived from the argument kind reading. In (47a), the predicate *dogs* ranges over kinds of dogs and in (47b), the predicate *whales* ranges over kinds of whales:

(47)  
- a. The Labrador and the Spaniel are dogs.
- b. There are whales facing extinction: the blue whale and the fin whale.
The analysis of nouns I propose argues that singular nouns in Hebrew can be interpreted as predicates over kinds. Assuming that the predicate kind reading is derived from argument kind readings, we would expect to get bare singul ars denoting kinds in Hebrew. As observed in Levy (2001) and Doron (2003), the prediction is borne out. The Hebrew equivalent sentences of (45b) and (46b) are grammatical:

(48) a. Dinosaur hi xaya mukxedet.
    Dinosaur is animal extinct.
    Dinosaurss are extinct.

b. Naar german tsofe ba-televizia SeS saot be-yom.
    teenager german watches in-television six hours in-day.
    German teenagers watch six hours of TV daily.

This supports Doron’s (2003) attempt to adapt Chierchia’s (1998) theory to languages like Hebrew containing bare singulars referring to kinds.

Finally, notice, that since in English there is no bare singular reference to kinds, we would not expect singular nouns to range over kinds. This prediction is also borne out. In the following sentences the singular noun can’t be interpreted as a predicate ranging over kinds. The sentences in (49a, b) can only mean the same as ‘I don’t have a girlfriend’ and ‘the synagogue doesn’t have a rabbi’ respectively.

(59) a. I don’t have any girlfriend.

b. This synagogue doesn’t have any rabbi.

We have established a difference between Hebrew and English nominals: in Hebrew bare singulars can refer to kinds as arguments at type e and as predicates at type <e,t>. In English though bare plurals can refer to kinds, bare singulars can’t.

Let us turn now and examine Hebrew polarity kol.
5. **Hebrew polarity Kol**

As noted in section 1.1, Hebrew has another polarity item called *kol* which, unlike Hebrew *Sum* and *af* has been noted to be associated with an NPI use on which it is equivalent to Hebrew *Sum* and *af* (example 60) and an FCI use on which it is equivalent to FC *any* (example 61) (Doron and Mittwoch 1986, Glinert 1987):

(60) Eyn li kol/Sum/af tsorex ba-ze.  
    Not have to me KOL/SUM/AF need in this  
    I don’t have any need of this

(61) Ata yaxol la-lexet le- kol makom Setirtse.  
    You can go to KOL place that you want.  
    You can go to any place that you want.

It is important to note that *kol* also functions as a universal quantifier on which it is equivalent to English *all* or *each/every*. This is in fact its most frequent use:

(62) Kol yeled kibel maxasev.  
    KOL child got computer.  
    Every child got a computer.

The presence of *kol* as an item which behaves as a polarity item and as a universal quantifier poses following questions:

1. What distributional and nominal constraints are associated with NPI *kol* and FC *kol*?

2. How many *kols* do we have? Given the presence of quantificational *kol*, there are 3 likely possibilities I will explore: (1) *kol* is lexically unambiguous, viz, *kol* on all its three uses is seen as a reflex of a universal quantifier (2) *kol* is lexically ambiguous, NPI *kol* is seen as a reflex of an existential quantifier and FC *kol* is seen as a reflex of a universal quantifier on a par with universal *kol*.
and (3) quantificational *kol* is universal and NPI *kol* and FC *kol* are seen as reflexes of the same lexical item.

3. How if at all does the particular distribution of *kol* provide support in favor of a unified analysis of *any*?

We will now address each of these questions:

5.1 **Distributional and nominal constraints associated with NPI *kol* and FC *kol***

On its NPI use *kol* is on the one hand more restricted than *Sum* and *af*: it is only used in formal registers with a restricted set of nouns, mainly abstract nouns, count or mass. Contrast the acceptability of *kol* in (63a) where *kol* is attached to abstract nouns with its acceptability in (63b) where it is attached to a non abstract noun; note that *Sum* and *af* are acceptable with both kinds of nouns.

(63) a. Lo hūgSa kol/Sum/af ha-tsaa.
    No offer was submitted.

    I don’t have any book.

On the other hand NPI *kol* is less restricted than *Sum* and *af*: As English *any*, it can appear in non negative downward entailing contexts. Consider the following downward entailing contexts. All of them license *kol* but render *Sum* and *af* unacceptable:

- **In the scope of downward entailing sentential adverbs**

  (64) le-itim rexokot hu mabia kol/*Sum/*af hitmagdut le-driSotai
      rarely he express KOL/SUM/AF objection to demands-my.
      
      *Rarely* does he express any objection to my demands
**In the scope of downward entailing adversative predicates**

(65) ani be-safek im timtsa kol/*Sum/*af keSer beyn hamikrim

I in-doubt if will find KOL/SUM/AF connection between cases.

I doubt you’ll find any connection between the cases.

**In the scope of downward entailing quantificational determiners**

(66) kol talmid Se-yeSlo kol/*Sum/*af inyan be-Semantica.

Every pupil that-has to him KOL/SUM/AF interest in-semantics.

yaxol lehiraSem la-kurs ha-ze.

Can register to the course this.

*Every* student who has any interest in semantics can register to this course.

On its FC use, *kol* parallels FC *any* and is licensed in a wide range of those environments licensing FC *any*. Among the contexts licensing FC *Kol* we most frequently find the following:

a. **Modal contexts expressing deontic possibility (example 62 repeated in 67a) or epistemic possibility (example 67b), but not ones expressing deontic necessity (example 68a) or epistemic necessity (example 68b)**

(67) a. Ata yaxol la-lexet le-kol makom Setirtse .

You can to go to-KOL place you will want.

You can go to any place you want.

b. hu asooy le-hagia be-xol rega

He may to arrive in any moment

He may arrive any moment

(68) a. #Ata xayav la-lexet le-kol makom .

You must to go to-KOL place

You must go to any place.
b. #hu xayav le-hagia be-xol rega
   he must to arrive in any moment
He must arrive any moment.

b. Future contexts when used in a generic or modal sense

(69) a. ani a-ane al kol Se-ela be-sof ha-Siur.
    I will answer on KOL question in end the lesson
    I will answer any question by the end of this hour.

c. Generics contexts

(70) a. Kol yeled yode-a et ze
    kol child knows d.o marker that
    Any child knows that

Unlike any, FC kol is marginal in imperatives (example 71a) and in subtrigged cases (example 71b). The sentences in (71) are only acceptable under a universal interpretation of kol. I leave this problem for further research⁷:

(71) a. ?ktof kol perax.
    Pick KOL flower.
    Pick any flower

b. #Madadeti kol simla Se-hayta Sam.
    tried on I KOL dress that was there.
    I tried on any dress that was there

⁷Notice that the sentences in (71) are rendered acceptable under an FC reading when the common noun is followed by Sehu ‘whatsoever’.

a. ktof kol perax Sehu.
    Pick KOL flower whatsoever.

b. Pick any flower.
    Madadeti kol simla Sehie se-hayta Sam.
    tried on I KOL dress whatsoever that was there.
    I tried on any dress that was there.
5.2 The quantificational force of kol

In section (4) we offered a semantic account of Sum and af which treats them on a par with any as non quantificational modifiers which induce widening and are licensed by strengthening. Since the most fundamental use of Hebrew kol is as a universal quantifier, treating kol as non quantificational across all its 3 uses is clearly not possible. There are 3 alternative possibilites (1) kol on all its three uses is seen as a reflex of a universal quantifier (2) NPI kol is seen as a reflex of an existential quantifier and FC kol is seen as a reflex of a universal quantifier on a par with universal kol and (3) quantificational kol is universal and NPI kol and FC kol are seen as reflexes of the same lexical item.

Elegantly, if we want a uniform theory of kol, we should strive to treat kol as a universal quantifier on all its uses. Can all 3 uses of kol be reduced to universal quantifiers? As the following data shows, this is empirically impossible; there is evidence in favor of treating kol on its NPI use as an existential quantifier.

First, the existential flavor of NPI kol is supported by the interaction of NPI kol with existential there and with so called ‘A-adverbs’ like absolutely and almost (Horn 1972); existential there constructions are known to license existentials but to reject universals, A-adverbs are known to be compatible with universals and rule out existentials. As the following examples shows kol is licensed in a ‘there’ construction (example 72) and is not compatible with A-adverbs (example 73)

(72) ani be-safek im yeS kol keSer beyn hamikrim.
     I in-doubt if there KOL connection between cases.
     I doubt there is any connection between the cases.

(73) #kol talmid Se-yeSto kimat kol inyan be-Semantica.
     every pupil that-hasto him almost KOL interest in-semantics.
     yaxol lehiraSem la-kurs ha-ze.
     can register to the course this.
     Every student who has almost any interest in semantics can register to this course.
Second, even though it has been suggested that in negative contexts NPI any can be interpreted as a wide scope universal, intentional negative contexts show this can’t be the case (see chapter 1); as the following example shows kol cannot be interpreted as a wide scope universal in intentional negative contexts any more than any can:

(74) a. lo hugSa kol/Sum/af ha-tsaa.  
  not submit (past, passive form) KOL/SUM/AF harm_{count}  
  no offer was submitted.

(74a) expresses the meaning ‘it’s not the case that ∃ x x is an offer and it was submitted’ but not the meaning ‘∀ x x is an offer and it was not submitted’.

If we look at non-negative triggering environments for kol, we see that these are environments which like intentional negative contexts don’t allow kol to be interpreted as a wide scope universal quantifier:

(75) ani be-safek im timtsa kol/*Sum/*af keSer beyn hamikrim  
  I in-doubt if will find KOL/SUM/AF connection between cases.  
  I doubt you’ll find any connection between the cases.

(76) kol talmid Se-yeSlo kol/*Sum/*af inyan be-Semantica.  
  every pupil that-hasto him KOL/SUM/AF interest in-semantics.  
  yaxol lehiraSem la-kurs ha-ze.  
  can register to the course this.  
  Every student who has any interest in semantics can register to this course

Example (75) only expresses the meaning ‘I doubt there is some connection between the cases; It can not have an interpretation under which kol is interpreted as a universal quantifier which takes wide scope with respect to its trigger to give the interpretation ‘every connection between the cases is such that I doubt you will find it’. Example (76) only means ‘every pupil who has some interest in semantics can register to this course’
and not ‘for every interest in semantics every student who has it can register to this course’.

We see that NPI kol can’t be seen as an instance of a universal quantifier. Let us examine the second possibility: NPI kol is a reflex of an existential quantifier and FC kol is a reflex of a universal quantifier on a par with universal kol. Can we treat FC kol as an extension of universal kol?

The following data show that FC kol cannot be interpreted as a universal any more than NPI kol can. To represent adequately the meaning of modal sentences with FC kol under a universal interpretation of kol, we would need to treat FC kol as a wide scope universal quantifier over individuals denoted by the common noun, (just as we would have to treat FC any, had we interpreted as universal. see chapter 3 for a through discussion). This is evidenced by the following example (77a), which can only be represented as (77b), not as (77c):

(77) a. Atayaxol le-hitxaten im-kol iSa Setirtse.
    You can to marry with-KOL woman you will want.
    You can marry any woman you want.

    b. $\forall x \left[ \text{English woman}(x) \rightarrow \Diamond \left[ \text{marry}(\text{you}, x) \right] \right]$
    Paraphrase: every English woman is such that it is deontically possible that you marry her.

    c. $\Diamond \forall x \left[ \text{English woman}(x) \rightarrow \text{marry}(\text{you}, x) \right]$
    Paraphrase: it is deontically possible that every English woman is such that you marry her.

If kol were indeed a wide scope universal it would be able to take scope over negation, but it can’t, just as we saw any can’t (see chapter 3, example 12). (78a) can only be paraphrased as (78b), where, it is interpreted as taking scope under negation. It cannot be interpreted as (78c), where, it is interpreted as taking scope over negation:
I conclude that FC kol can’t be treated as a universal on its FC use no more than NPI kol can. This seems to show that we have no choice but to assume the last possibility postulated that the quantificational kol is universal while kol on its NPI and FC use are the same lexical item.

We assume that analogous to any and Sum/af, NPI kol and FC kol are indefinites with no particular quantificational force attached to them, but like all indefinites, are bound by a quantifier otherwise provided by the context. This is because a close look at the environments licensing FCI kol shows that though deontic and epistemic possibility statements favor an existential interpretation of an occurrence of an FC kol in their scope (example 79a, b), future statements and generic environments favor a universal reading of an any-NP occurring in their scope (example 80a, b).
b. hu asooy le-hagia be-xol rega
he may to arrive in any moment
he may arrive any moment
Paraphrase: *he will arrive at some moment, any moment is a potential arrival time*

(80) a. ani a-ane al kol Se-ela be-sof ha-Siur.
I will answer on KOL question in end the lesson
I will answer any question by the end of this hour.
Paraphrase: *all contextually relevant questions are such that I will answer them at the end of the lesson.*

b. Kol yeled yode-a et ze
kol child knows d.o marker that
Any child knows that.
Paraphrase: *all children in contextually relevant situations know that*

I thus suggest to treat *kol* on a par with *Sum*/*af* and *any* as an indefinite which is licensed by strengthening and has the function of widening. Unlike *Sum* and *af*, which are licensed only in explicitly negative environments, *kol* is licensed generally in downward entailing environments. We will explore the implications of this in the final section.

5.3 **How does kol Support the claim of this dissertation?**

We have argued throughout this dissertation that FC *any* is an instance of an indefinite which, like NPI *any*, is licensed in environments which cause the statement on the wide interpretation induced by *any* to be stronger then the statement on the narrow interpretation induced by *a*. This will typically be the case in downward entailing environments. In this chapter, we saw that *Sum, af* and *kol* on a par with *any* can be analyzed as indefinites which have the function of widening and are licensed by strengthening,
We saw, however, that there are two striking differences between *Sum* and *af* on the one hand and *kol* on the other hand. (1) *Sum* and *af* can only appear in explicit negative environments while *kol* can also appear in non-negative downward entailing environments. This supports Zwarts’ (1993) observation that there are different classes of NPIs – weak, strong and superstrong - which differ in the range of downward entailing contexts they can occur in. and (2) many typical FC environments. This raises the following questions: why does *kol* have a free choice interpretation like *any* has while *Sum* and *af* don’t and what is the connection between the two striking differences mentioned?

In the context of this dissertation, the answer to both questions follows straightforwardly. We have shown that the free choice environments in which *any* can appear are naturally analyzable as downward entailing on a more general interpretation of downward entailing although they are not explicitly negative. I suggest that *Sum* and *af* do not occur in FC environments because they are licensed only in explicitly negative environments, not in a wider variety of downward entailing environments. *Kol*, on the other hand, like *any*, is downward entailing on a less restricted definition of downward entailment as we saw in examples (64-66). The constraints which allow a wide distribution of *kol* as an NPI allows it to appear in FC environments as well, just as the wide distribution of *any* as an NPI allows it to appear in FC environments.

In this dissertation, I have argued that giving a Kadmon and Landman interpretation of *any* in FC environments is possible, and that it is preferred on ground of simplicity and because it explains the similar behavior of NPI and FC *any* with respect to phenomena such as conjunction *or*. Here we see that the contrast between *Sum* and *af* on the one hand and *kol* on the other provides independent support for a single interpretation of *any*-type items. If FC environments are in fact downward entailing and only if this is the case, can we explain this contrast naturally: since FC environment are downward entailing but not explicitly negative, then only items which are weak in Zwart’s sense should appear in FC contexts. The Hebrew data bears this out.
To sum up, Hebrew provides evidence that the possibility of a free choice use of a polarity item is strongly related to its distribution on its NPI use. We can hypothesize that only when a negative polarity item appears in a wider set of downward entailing environments, can it appear in FC environments which, as we have argued extensively throughout this dissertation are downward entailing on a less restricted definition of downward entailment.

We can state the following general condition on the availability of a free choice interpretation for a polarity item:

*Whenever a polarity item is not licensed in non negative downward environments, it won’t be licensed in FC environments since these environments are downward entailing on a broad sense*.8

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8 This is a necessary, though not a sufficient condition. There is a weaker second prediction which is that a polarity item licensed in non negative downward entailing environments can in principle be licensed in an FC environment. But, this is only a tendency not a principle since other elements may interfere. For example, as observed in Giannakidou 1999, so called nonemphatic polarity items in Greek can occur in a much wider set of downward entailing environments than their emphatic PI counterparts. Nonetheless, nonemphatics (like their emphatic counterparts) are not admitted in FC environments.
References


