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Expressing ignorance with determiner phrases

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Doctor of Philosophy in Linguistics

by

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## ABSTRACT OF THE DISSERTATION

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Natural languages provide pairs of determiner phrases that are in some sense equivalent but that contrast in the ignorance inferences that they license. English provides *the-* and *whatever-*DPs – as in *the book she is holding* vs. *whatever book she is holding* – and *a-* and *some N or other-*DPs – as in *a book* vs. *some book or other*. Similarly contrasting pairs are found in Spanish, German, Japanese, Hebrew, etc. This dissertation considers two hypotheses about the grammatical difference between the members of these pairs. The first is that the ignorance-implying members encode the concept of ‘unsettled’ or ‘unknown’, and the second is that they encode a disjunction of contextually-determined identifying properties, with the assumption that pragmatic principles are obeyed producing ignorance inferences. Examining the meaning contribution of occurrences of these expressions in the scope of quantificational operators, the second hypothesis is found to be more empirically adequate. Various theories about the linguistically-privileged ways of knowing something or someone’s identity are reviewed and their applicability to the analysis of these determiner phrases is considered. Overall, this dissertation draws connections between previously distinct streams of empirical and theoretical work in the semantics of determiner phrases; it advances a new, unified account of ignorance-implying, ‘epistemic’ indefinites – previously analyzed as encoding (something like) a disjunction identifying properties – and ignorance-implying definites like *whatever-*DPs – previously regarded as encoding the concept of ‘unsettled’ or ‘unknown’.

The dissertation of Maayan Abenina-Adar is approved.

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# 1

## Introduction

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Language affords us many ways to express our ignorance. We can use an expression whose grammatically derived meaning implies something about its user's belief state. (1) is an obvious example. Speaker ignorance regarding what city Kim is in can be inferred from the literal meaning of (1), which is determined by the meanings of its parts and its syntactic composition.

(1) I am not certain what city Kim is in

We can also express our ignorance with language less directly, as B does in (2).

(2) A: What city is Kim in?

B: Kim is in North America

It would be natural to infer that B is not certain what city Kim is in, and that may even be something that B hopes to convey (especially when B's response has a particular intonation), but it is much less obvious that the literal meaning of B's utterance implies that, as it does not contain words like *I, know, certain, believe*, etc. An alternative explanation for the inference is given in Grice 1975.

According to Grice, language users hold normative assumptions about how conversations proceed, which often causes them to infer more from an utterance than 'what was said (in a favored

sense of the word)’. One such assumption is that language users are ‘cooperative’, in the sense that they obey the principle in (3); the maxims in (4a-b) partially describe what it means to be cooperative.

(3) The Cooperative Principle

Make your conversational contribution such as it is required, at the stage at which it occurs, by the accepted purpose or direction of the talk exchange in which you are engaged.

(4) a. Quantity

(i) Make your contribution as informative as required for the purposes of the exchange

(ii) Do not make your contribution more informative than is required

b. Quality

(i) Do not say what you believe to be false

(ii) Do not say that for which you lack adequate evidence

Here is how we can infer B’s ignorance with (the assumption that B obeys) Quantity and Quality, specifically clause (4a-i) and clause (4b-ii). We observe an utterance of *Kim is in North America*. We note that the utterance is not informative enough to fulfill the presumed purpose of the exchange (i.e. that B commits to an answer to what city Kim is in). We assume that B obeys (4a-i) and (4b-ii), and perhaps assume further that these are B’s deciding considerations in choosing between *Kim is in North America* and a city-level statement about Kim’s whereabouts. With all of these assumptions, we infer that B has adequate evidence to believe that Kim is in North America, but that no utterance fulfilling the information demands of the exchange would be compliant with (4b-ii); otherwise B would’ve made such an utterance, given (4a-i). In other words, for every North American city  $x$ , B does not have adequate evidence (i.e. is not certain) that Kim is in  $x$ .

That we hold these assumptions seems uncontroversial, and there is no reason to think that they do not play a role in how we use and understand language in conversation. What is less obvious is how a given set of linguistic observations should be explained – or what a given set of linguistic observations implies about language users’ linguistic knowledge – in light of the fact that so many

different knowledge sources are deployed in our use of language. This is evidenced by the myriad contrasting analyses for the semantics of disjunctive constructions, like (5), and in particular, the various explanations for the ignorance inferences that such constructions license regarding their individual disjuncts.

(5) Kim is in Ottawa or in Mexico City

One analysis holds that *or* has the standard truth functional meaning of the logical connective  $\vee$ , so that (5)'s overall meaning is that one of the disjuncts is true, and Gricean reasoning leads to ignorance inferences (as in Grice 1975, Gazdar 1979, Sauerland 2004, a.o.); assuming that Quantity and Quality are the deciding factors for the speaker's choice to use (5) over one of its more informative individual disjuncts, the speaker is inferred to lack evidence for *Kim is in Ottawa* and for *Kim is in Mexico City*.

A second analysis holds that *or* is a belief-related expression, forming a (possibly exhaustive) conjoined list of things that the speaker considers possible (as in Zimmermann 2000); the motivation for this analysis is the phenomenon of free choice permission i.e. the robust inference that in using (6) to grant permission, one also grants the permissions in (6a-b) (see Meyer (forthcoming) for an overview).

- (6) You can borrow my pen or (you can borrow) my pencil
- a. You can borrow my pen
  - b. You can borrow my pencil

If all *or* means is that at least one of its disjuncts is true, then one should not infer (6a) from (6). But according to Zimmermann, the inference follows from the idea that *or* forms a list of things that the speaker considers possible, together with certain logical principles of belief and permission. In short, if a person in authority considers it possible for some action to be permitted, then the authority can be inferred to be certain that that action is permitted, given that person's status as an authority. Note that, as Zimmermann discusses, further meaning components are needed to rule

out, e.g., that the speaker is actually certain that a particular disjunct in (5) is true.

A third analysis (Meyer 2013) holds that *or* has the standard truth functional meaning but that all assertively used declarative clauses, including disjunctive ones, contain an implicit speaker-belief expression, like *I am certain that...*, and possibly an implicit expression with a meaning like *only*'s; according to this analysis, (5) admits a parse whose literal meaning is that the only thing that the speaker is certain of is that one of the disjuncts is true i.e. that entails that *Kim is in Ottawa* and *Kim is in Mexico City* are not among the things the speaker is certain of. The primary motivation for this theory is the interpretation of disjunctions like (7), where one disjunct (i.e. *both*) asymmetrically entails another (*Kim visited Ottawa or Mexico City*).

(7) Kim visited Ottawa or Mexico City, or both

The fact that (7) is understood differently from *Kim visited Ottawa or Mexico City* despite their apparent logical equivalence is claimed to be a result of (7) admitting a parse with an implicit speaker-belief expression and two implicit *only*-like expressions. The meaning of this parse is that the only thing the speaker is certain of is that (i) Kim visited only one of the two cities, or (ii) Kim visited both.

Thus, there are seemingly obvious cases where what is said concerns the speaker's beliefs, as in (1), and seemingly obvious cases where what is said does not concern the speaker's beliefs but an inference about the speaker's beliefs is reliably made, as in (2). And then there are less obvious cases, like disjunctive constructions, where various theories about linguistically-determined, literal meaning are compared according to their empirical coverage. This dissertation studies a case that is also less obvious: ignorance inferences with determiner phrases.

## 1.1 Pairs of (in)definite determiner phrases

Consider the pair of underlined expressions in (8a-b).

- (8) a. The book Kim bought is over there on the shelf  
 b. Whatever book Kim bought is over there on the shelf

These underlined expressions are ‘determiner phrases’ (e.g. Abney 1987), members of a syntactic class whose prototypical members consist of a closed-class, functional vocabulary item, primarily occurring with nouns or noun phrases, called a ‘determiner’ (e.g. *the*), and a noun phrase like *book (that Kim bought)*. An expression belongs to this class if it has the syntactic distribution of a determiner phrase i.e. if it goes where prototypical determiner phrases go, like in the subject position of a clause whose main predicate is *is over there on the shelf*. The class includes quantificational expressions of various kinds (e.g. *every book, most books, few books, three books*), pronouns, proper names, etc., though they do not all obviously consist of a determiner and a noun phrase.

The determiner phrases in (8a-b) are both semantically definite i.e. they both entail that there exists a unique entity matching the description determined by their syntactic restrictor, *book Kim bought* (Russell 1905, Frege 1948). That these determiner phrases are definite is detectable by speakers’ judgments of an acceptability contrast in contexts that guarantee the existence of a unique such entity – i.e. contexts that ‘satisfy existence-uniqueness’ – versus contexts that do not. Thus, (8a-b) are potentially acceptable in a context like (9) but not in (10)<sup>1</sup>.

- (9) *Context: Kim bought exactly one book.*  
 a. The book Kim bought is over there on the shelf  
 b. Whatever book Kim bought is over there on the shelf
- (10) *Context: Kim bought {exactly two / no} books.*  
 a. #The book Kim bought is over there on the shelf  
 b. #Whatever book Kim bought is over there on the shelf

But *whatever book Kim bought* typically requires ignorance about the identity of the book that

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<sup>1</sup># indicates that the associated text is grammatical (i.e. part of the language) but odd/marked/‘infelicitous’ (often as made salient by comparison to a similar text, which is judged expected/unmarked/‘felicitous’) in the provided context, and \* indicates that the associated text is ungrammatical i.e. considered not to be part of the language.

Kim bought in a way that *the book that Kim bought* does not, as shown by their contrast in the context in (11); (11) satisfies existence-uniqueness but identifies the book that Kim bought (Elliott 1971: §4, Dayal 1997, a.o.).

(11) *Context: Kim bought exactly one book. It was War and Peace.*

- a. The book Kim bought is over there on the shelf
- b. #Whatever book Kim bought is over there on the shelf

The contextually-conditioned judgments reported throughout this work reflect statements by native speakers (including me, for English) to the effect of ‘I would prefer using (11a) over (11b) in this context’ or ‘I would expect my interlocutor to use (11a) rather than (11b) in this context’. I use *Context:* at times to indicate that the consultant can infer the following information from their direct perceptual field and at times to indicate that the consultant received an utterance or series of utterances leading up to the target sentence; with (11) (like most examples in this dissertation), it doesn’t make a difference for the reported judgments, but in some examples, only one of these construals makes sense. While using (11a) in (11) may be a little marked (especially compared to an alternative with *it*), it is clearly much less marked than (11b). I will call determiner phrases containing the determiner *the* ‘*the-DPs*’ and determiner phrases containing a WH-word with *ever* (*whatever, whoever, whichever*) ‘*whatever-DPs*’.

(12a-b) contains another example of a pair of contrasting determiner phrases. Both of the underlined determiner phrases are indefinite. By this I mean that they have existential import, in that (12a-b) are verified in any situation in which there exists at least one book that Kim bought and falsified in any situation in which there is no book that Kim bought.

- (12) a. Kim bought a book  
b. Kim bought some book or other

But they contrast in their compatibility with the continuation in (13) showing that (12b) requires ignorance about the identity of the individual who verifies the existential quantificational claim



(the ‘existential witness’) in a way that (12a) does not.

(13) (12a), #(12b)... Namely, *War & Peace*

I will call determiner phrases containing the determiner *a* ‘*a*-DPs’ and those containing *some N or other* ‘*some N or other*-DPs’.

What is the difference between the members of these pairs of determiner phrases? My use of the definite *the difference*... implies that I believe that there is a unique such difference i.e. that the difference between English *the*-DPs and *whatever*-DPs is the same difference as the one between English *a*-DPs and *some N or other*-DPs. This is a hypothesis I will explore in this dissertation.

## 1.2 Where does ignorance come from?

(14)-(15) also contain pairs of (in)definites that contrast in their ignorance requirements. This time, we would feel confident saying that the ignorance-requiring member of the pair grammatically encodes ignorance (it contains the words *I*, *not*, *certain*, etc.).

- (14) a. The book that Kim bought is on the shelf  
b. The book that Kim bought such that I am not certain what it is is on the shelf
- (15) a. Kim bought a book  
b. Kim bought a book such that I am not certain what it is

These stilted examples come quite close to paraphrasing how we often understand the more natural examples with *whatever*-DPs and *some N or other*-DPs – quite close because, as we saw, *whatever book Kim bought* requires the existence of a unique book that Kim bought, whereas *the book that Kim bought such that I am not certain what it is* does not, (16a-b).

- (16) *Context: Kim bought exactly two books*
- a. The book that Kim bought *such that I am not certain what it is* is on the shelf
  - b. #Whatever book Kim bought is on the shelf

An ignorance-requiring definite that brings us even closer to how we understand the *whatever*-DP is the underlined expression in (17). It requires the existence of a unique book that Kim bought, as shown by its infelicity in (16) vs. its potential felicity in (17).

- (17) *Context: Kim bought exactly one book*
- The book that Kim bought – which is such that I am not certain what it is – is on the shelf

Perhaps there is an underlying similarity between *whatever*- and *some N or other*-DPs and these stilted determiner phrases, with their ignorance-implicating *such that* relative clauses. In particular, perhaps the meaning that is contributed transparently by the relative clauses is lumped into the determiners *whatever* and *some... or other*. Such an analysis of *whatever*- and *some N or other*-DPs would imply that the grammar of English makes available determiners whose meaning modifies the reference of the determiner phrase to be among individuals whose identity the speaker is not certain about.

One potential objection is that the ignorance-requiring determiner phrases discussed initially do not contain *such that* relative clauses. But presumably, there are other linguistic means to convey something similar, e.g. in English, the adjectival passive participle *unknown* (Abusch & Rooth 1997). Furthermore, the range of meaning contrasts encoded in closed-class, functional morphology like determiners is quite broad. In many languages, there are determiners like *the* vs. *a* that induce a contrast in uniqueness requirements, but other determiner inventories in natural language encode meaning contrasts that are not found in an English-like system. In influential work, Matthewson 1996 et seq. shows this for St’át’imcets, whose determiners encode a contrast in what Matthewson terms ‘assertion of existence’. Gutiérrez & Matthewson 2012, using observations in Stell 1989, Gutiérrez 2011, show this for Nivacle. According to Gutiérrez & Matthewson, the determiners *xa* and *pa* in Nivacle “[encode] whether or not the speaker has had the best sensory

evidence for the existence of an individual, at some point in that individual’s lifespan” (pp. 63).

- (18) a. kaʔax ɬ-xa=beʔɬa                      tʃitaʔ  
 have F-BEST.SENS.DET=one elder.sister  
 ‘I have one elder sister’
- b. kaʔax ɬan ɬ-pa=beʔɬa                      tʃitaʔ  
 have REP F-NOT.BEST.SENS.DET=one elder.sister  
 ‘I have one elder sister’ (Gutiérrez & Matthewson 2012, (11a-b))

In [(18a)] the speaker has seen his sister before, whereas in [(18b)] the speaker never met her sister because “she fled from the family, got kidnapped, etc.”... Even if the speaker knows that the individual exists, she never had the chance to see her.

Perhaps *xa-* and *pa-*DPs in Nivacle contrast in the way described and analyzed by Gutiérrez & Matthewson, and, e.g., *whatever-* and *the-*DPs in English contrast in that the former semantically encodes an ignorance-related meaning, of the kind expressed with the stilted *such that* relative clause. The point of these examples is to show that it is very rarely the case that the linguist has an analytical/theoretical intuition about how an inference arises; although analytical intuitions about the source of ignorance inferences with expressions like *a book such that I am not certain what it is* apparently do exist, this is hardly true when examining closed-class, functional morphology.

I would give the same response to such an objection regarding the analysis of indefinite *some N or other-*DPs and point to the indefinite pronouns in (19) (Haspelmath 1997: §6.2.1); these are indefinites whose grammaticalization trajectory involves a compositionally transparent negative knowledge ascription, a highly compressed *je ne sais quoi*.

- (19) a. Middle High German  
*neizwer* ‘somebody’ < *ne weiz wer* ‘(I) don’t know who’
- b. Romanian (dialectal)  
*neştine* ‘some’ < *nescio quis* (Latin) ‘I don’t know who’
- c. Bulgarian (dialectal)  
*na(m)koj* ‘somebody’ < *ne znam koi* ‘I don’t know who’ (Haspelmath 1997: 131)

The methodological goal of this dissertation is to show how to independently evaluate the applicability of such a hypothesis in the semantic analysis of determiner phrases.

### 1.3 Summary of dissertation

This section briefly summarizes the content of the body chapters of this dissertation. In the main chapters §2 and §3, I spell out two accounts of *whatever-* and *some N or other-*DPs respectively, and in particular, of what distinguishes them from *the-* and *a-*DPs. The first account is the ‘modal account’, under which the ignorance inferences that *whatever-* and *some N or other-*DPs license, described above, are semantically encoded in the meanings of the determiner phrases. The modal account is based on the predominant accounts of *whatever-*DPs emerging from Dayal 1997 and, in the case of *some N or other-*DPs, establishes a parallelism with the meaning assigned to clausal disjunctions in Zimmermann 2000. It assigns *whatever-*DPs a presupposition that their referent’s identity is unsettled and assigns *some N or other-*DPs a restriction on their existential quantification to entities whose identity is unsettled. However, I argue in each of these chapters that the modal account has shortcomings, producing unattested meanings when these expressions occur in the scope of other quantificational operators. In short, the modal account is shown to incorrectly predict the scope of the modal implication in an example like (20), attributing it to the *whatever-* DP and therefore placing it in the scope of the universal quantifier denoted by *everybody*.

(20) Everybody<sub>i</sub> enjoyed whatever book they<sub>i</sub> bought

In fact, the modal implication of (20), in effect, scopes above the universal quantification; the attested contribution of *whatever* in (20) is that it is not known that for every relevant individual  $x$  quantified over by *everybody*, the book that  $x$  bought is  $C$ , for some relevant class of books  $C$  (observed in Lauer 2009). This fact precludes accounts of ignorance that identify the source of modal implications as the determiner phrase itself. Similar data and arguments are made regarding the analysis of *some N or other-*DPs.

Instead, the account of ignorance inferences that I endorse, which I call ‘the alternative-based

account’, analyzes both *whatever*- and *some N or other*-DPs as having a relatively general meaning and as conventionally evoking alternatives with more specific meanings. For instance, I propose that *whatever book Kim bought* is always evaluated relative to a set of book classes  $\{C_1, C_2, \dots\}$ . Intuitively, each class determines a ‘kind of book’ that Kim might have bought. Relative to this set, *whatever book Kim bought* simply denotes the unique book that Kim bought and presupposes that this book falls into one of the contextually determined classes i.e. that this book is a member of  $\bigcup\{C_1, C_2, \dots\}$ . Furthermore, I propose that it evokes a set of alternatives – one alternative for each class in  $\{C_1, C_2, \dots\}$ ; these alternatives also denote the unique book that Kim bought, but each one presupposes that the book belongs to some particular class  $C_n$  in  $\{C_1, C_2, \dots\}$ . Similarly, *some book or other* quantifies over books in  $\bigcup\{C_1, C_2, \dots\}$  and evokes alternatives – one alternative for each class in  $\{C_1, C_2, \dots\}$  – which existentially quantify over books in some particular class  $C_n$  in  $\{C_1, C_2, \dots\}$ . The assumption that pragmatic principles are upheld produces ignorance and other kinds of inferences<sup>2</sup>.

The idea that certain expressions conventionally evoke alternatives is found in Horn 1972 and is applied to the study of determiner phrases in Kadmon & Landman 1993, Krifka 1995, Lahiri 1998, Kratzer & Shimoyama 2002, Alonso-Ovalle & Menéndez-Benito 2010, Condoravdi 2015, Chierchia 2013, and others. The alternative-based account of *whatever*-DPs (based on Condoravdi 2008, 2015; Abenina-Adar 2019b) diverges from the predominant analyses of these determiner phrases emerging from Dayal 1997, which assign them an ignorance-related (or otherwise modal) meaning. On the other hand, the observations about the distribution of ignorance inferences that motivate a pragmatic account of *some N or other*-DPs are made in Kratzer & Shimoyama 2002 for German *irgendein*-DPs and in Alonso-Ovalle & Menéndez-Benito 2003, 2010 for Spanish *algún*-DPs, who spell out a pragmatic account which is the basis for the one I endorse. The main theoretical contribution of this work is to draw a connection from the analyses of the latter group of expressions – known as ‘epistemic indefinites’ – to *whatever*-DPs.

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<sup>2</sup>It is conceivable for the alternative-based account to be integrated into a grammatical theory of ignorance inferences as in Meyer 2013, where modal implications are conventionally determined by implicit belief-related expressions and exhaustification; I will not arbitrate between my espoused pragmatic account and this sort of semantic account of ignorance.

The presentation of the alternative-based account in §2 and §3 assigns to *whatever*- and *some N or other*-DPs the same underlying source of alternatives: disjunctions of domain restricting pro-forms (von Stechow 1994) i.e. ‘*C*-disjunctions’. It is assumed that for every structure  $\phi$ , if  $\phi$  contains a *C*-disjunction,  $\phi$  is associated with a set of pragmatic competitors including structures identical to  $\phi$  except that at least one *C*-disjunction in  $\phi$  has been replaced by one of its individual disjuncts. This assumption about alternatives is shown to generate a set of pragmatic competitors that deliver the attested inferences for the examined expressions, known as ‘partial ignorance’ inferences (Alonso-Ovalle & Menéndez-Benito 2010). That *some N or other*-DPs contain a disjunctive structure is obvious, but I propose that *whatever*-DPs contain such structures at logical form as well. As discussed in §2, this is not a necessary feature of the alternative-based analysis of *whatever*-DPs, though it is done here to highlight the empirical similarities in the kinds of ignorance inferences the examined expressions produce.

In §4, the concluding chapter, I discuss constraints on the ‘methods of identification’ that *what-ever*- and *some N or other*-DPs can be sensitive to. I speculate that certain ignorance-implicating (in)definite determiner phrases specifically convey ‘ostensional ignorance’<sup>3</sup> because they contain a domain-fixing expression that is D-linked, in the sense of Pesetsky 1987 and Maldonado 2020.

The rest of this chapter provides background on the assumed framework.

## 1.4 Background on the framework

### 1.4.1 Semantic composition

I assume that semantic interpretation proceeds and fits into a model of grammatical knowledge in the manner proposed in Heim & Kratzer 1998. In this framework, a grammar of a natural language associates expressions in that language with various syntactic representations, among them ‘logical forms’ (LFs). LFs are the input to the semantic component of the grammar, which is viewed as

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<sup>3</sup>‘Ostensional’ belongs to a family of words (including ‘demonstrative, deictic’) used to describe the linguistically privileged aspects of the notion of pointing, hypothesized to be part of the meaning of words like *this* and *that*. It derives from the Latin verb *ostendere*, meaning ‘to show’ or ‘to exhibit’ (something). ‘Ostensional ignorance’ means ignorance with respect to the things that are being ‘pointed at’ (in whatever sense of ‘point’ is linguistically significant).

a function, the ‘semantic interpretation function’, whose arguments are LFs and whose values are denotations. Denotations are given in a metalanguage<sup>4</sup>, and every denotation has a semantic type. The semantic types are specified in (21).

(21) Semantic types

- a.  $e$  is the semantic type of possible individuals<sup>5</sup>
- b.  $s$  is the semantic type of possible worlds
- c.  $t$  is the semantic type of the truth values True and False
- d. If and only if  $\sigma$  and  $\tau$  are semantic types,  $(\sigma, \tau)$  is the semantic type of functions whose arguments are of type  $\sigma$  and whose values are of type  $\tau$
- e. Nothing else is a semantic type
- f. For every semantic type  $\sigma$ ,  $D_\sigma$  is the set of all  $\sigma$ -type denotations

I assume Heim & Kratzer’s (1998) definition of the interpretation function,  $\llbracket \ ]$ , as in (22). Applied to an LF  $\alpha$ ,  $\llbracket \ ]$  determines a denotation for  $\alpha$  according to  $\alpha$ ’s form; if  $\alpha$  is a binary branching (i.e. non-terminal) node, then its interpretation is determined on the basis of its daughters and their interpretations by rules (22a-c), and if  $\alpha$  is a non-branching (i.e. terminal) node, then its interpretation is determined by the lexicon or by an assignment function, (22d-e)<sup>6</sup>.

(22) Rules of interpretation

- a. Function application rule (FA)

For every LF  $\alpha$  with  $\{\beta, \gamma\}$  as the set of its daughters and for every assignment  $g$ ,  $\llbracket \alpha \rrbracket^g$  is defined if  $\llbracket \beta \rrbracket^g$ ,  $\llbracket \gamma \rrbracket^g$ , and  $\llbracket \beta \rrbracket^g(\llbracket \gamma \rrbracket^g)$  are defined. In this case,  $\llbracket \alpha \rrbracket^g = \llbracket \beta \rrbracket^g(\llbracket \gamma \rrbracket^g)$

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<sup>4</sup>The metalanguage draws from set theory, English, and the logical symbols of first-order logic ( $\exists, \forall, \iota, \wedge, \vee, \rightarrow, \neg, \llbracket \ ]$ ). Following Heim & Kratzer 1998, a  $\lambda$ -function  $[\lambda x : A . B]$  is read as ‘the smallest function from the set  $\{x \mid A\}$  to  $B$ ’ or ‘the smallest function from the set  $\{x \mid A\}$  to True iff  $B$ ’. In the body of the dissertation, I will often just write out complex denotations in single quotes and in English, like ‘for every  $x \dots$ ’.

<sup>5</sup>After Kripke 1980, individuals are viewed as existing independently of worlds; any given possible world features a ‘cast’ drawn from  $D_e$ .  $D_e$  is the set of all possible individuals.

<sup>6</sup>An index is an ordered pair of a number and a semantic type, and a function  $g$  is an assignment iff  $g$ ’s arguments are indices and for every index  $i$  such that  $g(i)$  is defined,  $g(i)$  is a denotation whose type is  $i$ ’s second member.

b. Predicate modification rule (PM)

For every LF  $\alpha$  with  $\{\beta, \gamma\}$  as the set of its daughters and for every assignment  $g$ ,

$\llbracket \alpha \rrbracket^g$  is defined if  $\llbracket \beta \rrbracket^g$  and  $\llbracket \gamma \rrbracket^g$  are defined and  $\llbracket \beta \rrbracket^g, \llbracket \gamma \rrbracket^g \in D_{(e,t)}$ .

In this case,  $\llbracket \alpha \rrbracket^g = [\lambda x : x \in D_e \wedge \llbracket \beta \rrbracket^g(x) \text{ is defined} \wedge \llbracket \gamma \rrbracket^g(x) \text{ is defined} . \llbracket \beta \rrbracket^g(x) \wedge \llbracket \gamma \rrbracket^g(x)]$

c. Predicate abstraction rule (PA)

For every LF  $\alpha$  with  $\{i, \gamma\}$  as the set of its daughters, where  $i$  is the index  $\langle n, \sigma \rangle$ , and

for every assignment  $g$ ,  $\llbracket \alpha \rrbracket^g = [\lambda A : A \in D_\sigma \wedge \llbracket \gamma \rrbracket^{g^{i/A}}$  is defined.  $\llbracket \gamma \rrbracket^{g^{i/A}}$ ].

Modified assignments

For every assignment  $g$ , index  $i$ , and denotation  $A$ ,  $g^{i/A}$  is a (possibly) modified assignment such that  $g^{i/A}(i) = A$  and for every index  $j \neq i$ ,  $g^{i/A}(j)$  is defined iff  $g(j)$  is defined, and if defined,  $g^{i/A}(j) = g(j)$ .

d. Lexicon rule (L)

For every non-branching, terminal LF  $\alpha$  that does not bear an index and for every

assignment  $g$ ,  $\llbracket \alpha \rrbracket^g = \llbracket \alpha \rrbracket$  and  $\llbracket \alpha \rrbracket$  is given in the lexicon

e. Proforms and traces rule (P&T)

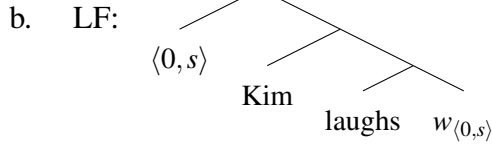
For every non-branching, terminal LF  $\alpha$  bearing index  $i$  and for every assignment  $g$ ,

$\llbracket \alpha_i \rrbracket^g$  is defined only if  $g(i)$  is defined, and if  $\llbracket \alpha_i \rrbracket^g$  is defined,  $\llbracket \alpha_i \rrbracket^g = g(i)$

(23) is an example of the kind of sentence-LFs that I assume. They are binary branching syntactic structures, broadly reflecting predicate-argument relations, and following Cresswell 1990, Percus 2000, von Stechow & Heim 2010, and others, LFs contain implicit proforms for possible worlds. At the topmost level of every declarative clause's LF, it is assumed that a possible world proform is abstracted over (i.e. the index of a possible world proform triggers the predicate abstraction rule), deriving a denotation that is an  $(s, t)$ -function i.e. a 'proposition'.



(23) a. Kim laughs



A bottom-up derivation of the LF's denotation is given in (24). The terminal nodes *Kim* and *laughs* have the lexically determined meanings in (24a), (24c). *Laughs*, the main functor in the sentence, denotes an  $(s, (e, t))$ -function, a 'property', whose first argument, the denotation of the world proform  $w_{\langle 0, s \rangle}$ , is abstracted over to derive the proposition in (24f).

(24) For every assignment  $g$

a.  $\llbracket \text{laughs} \rrbracket^g$   
 $= \llbracket \text{laughs} \rrbracket$   
 $= [\lambda w : w \in D_s . [\lambda x : x \in D_e . x \text{ laughs in } w]]$  by L

b.  $\llbracket w_{\langle 0, s \rangle} \rrbracket^g$   
 $= g(\langle 0, s \rangle)$   
 defined iff  $g(\langle 0, s \rangle)$  is defined by P&T

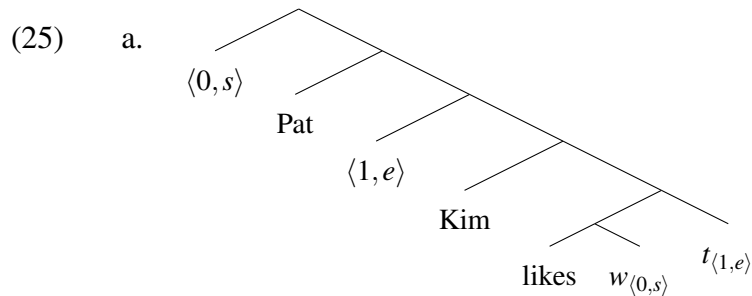
c.  $\llbracket \text{Kim} \rrbracket^g$   
 $= \text{Kim, a member of } D_e$  by L

d.  $\llbracket [\text{ laughs } w_{\langle 0, s \rangle} ] \rrbracket^g$   
 $= \llbracket \text{laughs} \rrbracket^g(\llbracket w_{\langle 0, s \rangle} \rrbracket^g)$  by FA  
 $= [\lambda w : w \in D_s . [\lambda x : x \in D_e . x \text{ laughs in } w]](g(\langle 0, s \rangle)) =$  by a., b.  
 $= [\lambda x : x \in D_e . x \text{ laughs in } g(\langle 0, s \rangle)]$  by simplification  
 defined iff  $g(\langle 0, s \rangle)$  is defined

- e.  $\llbracket \llbracket \text{Kim} \llbracket \text{laughs } w_{\langle 0, s \rangle} \rrbracket \rrbracket \rrbracket^g$   
 $= \llbracket \llbracket \text{laughs } w_{\langle 0, s \rangle} \rrbracket \rrbracket^g (\llbracket \text{Kim} \rrbracket^g)$  by FA  
 $= [\lambda x : x \in D_e . x \text{ laughs in } g(\langle 0, s \rangle)](\text{Kim})$  by c., d.  
 $= \text{True iff Kim laughs in } g(\langle 0, s \rangle)$  by simplification  
 $\text{defined iff } g(\langle 0, s \rangle) \text{ is defined}$
- f.  $\llbracket \llbracket \langle 0, s \rangle \llbracket \text{Kim} \llbracket \text{laughs } w_{\langle 0, s \rangle} \rrbracket \rrbracket \rrbracket \rrbracket^g$   
 $= [\lambda w : w \in D_s \wedge \llbracket \llbracket \text{Kim} \llbracket \text{laughs } w_{\langle 0, s \rangle} \rrbracket \rrbracket \rrbracket^{g^{(0, s)/w}}$  is defined.  $\llbracket \llbracket \text{Kim} \llbracket \text{laughs } w_{\langle 0, s \rangle} \rrbracket \rrbracket \rrbracket^{g^{(0, s)/w}}$  by PA  
 $= [\lambda w : w \in D_s . \text{Kim laughs in } w]$  by e., definition of modified assignment

Informally, predicate abstraction is an instruction to interpret a node whose daughter is an abstraction index as a function, whose argument is some  $A$  of the type specified by the index (type  $s$ , in (24f)) and whose value is the interpretation of the other node, except with the interpretation of every occurrence of the index replaced by  $A$ , given the definition of modified assignments. In this system, every predicate denotes a function from  $D_s$  and is sister to a world proform at LF. I reserve  $\langle 0, s \rangle$  as the index on world proforms that are in a matrix clause, which are bound by the main index deriving a propositional meaning for a declarative clause.

The predicate abstraction rule is used in Heim & Kratzer 1998 to interpret movement i.e. expressions that contain a filler-gap dependency. A topicalization construction like *Pat, Kim likes* could be a candidate for an expression interpreted with predicate abstraction at LF, as in (25). An implicit pronoun called a ‘trace’, which is co-indexed with the abstraction index that is the left daughter of the sister of *Pat*, appears in the position where *Pat* gets its interpretation as the individual liked by Kim. The way that (25a)’s meaning is represented in (25b) is meant to be suggestive of how the composition proceeds. The sister to *Pat* is interpreted by predicate abstraction as a function, characterizing the set of individuals that Kim likes. This function is applied to the interpretation of *Pat*. I’ve omitted a detailed derivation. I will often (informally/inaccurately) write that an expression like *Pat* ‘binds’ the trace  $t_{\langle 1, e \rangle}$  (it’s actually the index  $\langle 1, e \rangle$  that binds the variable that the trace denotes).

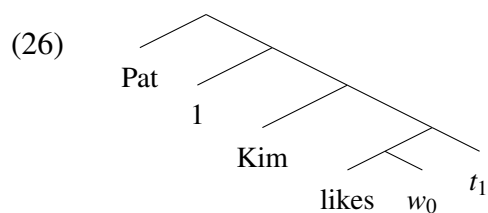


b. For every assignment  $g$ :

$$\begin{aligned} \llbracket (25a) \rrbracket^g &= [\lambda w : w \in D_s . [\lambda x : x \in D_s . \text{Kim likes } x \text{ in } w](\text{Pat})] \\ &= [\lambda w : w \in D_s . \text{Kim likes Pat in } w] \end{aligned}$$

After this, I will not discuss topicalization constructions, but I will discuss quantificational constructions, which will be analyzed as involving movement known as ‘quantifier raising’, interpreted by predicate abstraction; relative clauses like (*that*) *Kim bought* (as in *the book that Kim bought* or *whatever book Kim bought*) will also be interpreted by predicate abstraction.

Except in some limited cases, I will omit the type of any index if it is  $e$  or  $s$  and I will omit the matrix declarative world binder 0. Regular pronouns like *she*, *he*, *they*, *me*, etc. and implicit pronouns *pro* and *t* are the only proforms of type  $e$ , and implicit  $w$ -proforms are the only proforms of type  $s$ . The LF of an expression like *Pat*, *Kim likes* will typically look like (26). Among many other liberties that I allow myself (for the sake of making LFs readable), I will use forms of the predicates (e.g. *likes*, *liked*) that match the example discussed. The choices of form are not significant unless explicitly stated.



### 1.4.2 Presuppositions and beliefs

As is well known, not all inferences drawn from language have the same status. (27a-b) both entail that Kim has a cat, by virtue of the fact that *tabby cat* entails *cat*<sup>7</sup>.

- (27) a. Kim has a tabby cat  
b. Kim's cat is a tabby

But the so-called 'family of sentences' test (e.g. Chierchia & McConnell-Ginet 2000) in (28)-(29) reveals a difference. Both sentences in (28b) entail that Kim has a cat, whereas only the non-negated sentence in (28a) entails this.

- (28) a. (i) Kim has a tabby cat  
           $\Rightarrow$  Kim has a cat  
      (ii) Kim doesn't have a tabby cat  
           $\not\Rightarrow$  Kim has a cat  
b. (i) Kim's cat is a tabby  
       $\Rightarrow$  Kim has a cat  
      (ii) Kim's cat isn't a tabby  
           $\Rightarrow$  Kim has a cat

Similarly, asking (29b), unlike (29a), requires commitment to the proposition that Kim has a cat.

- (29) a. Does Kim have a tabby cat?  
b. Is Kim's cat a tabby?

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<sup>7</sup>More accurately, their denotations stand in the relation of generalized entailment, represented with  $\Rightarrow$  (von Stechow 1999). Material implication is represented with the standard  $\rightarrow$ .

- (i) Generalized entailment,  $\Rightarrow$   
a. For every  $p, q \in D_t$ ,  $p \Rightarrow q$  iff  $p \rightarrow q$   
b. For every  $p, q \in D_{(\sigma, \tau)}$ ,  $p \Rightarrow q$  iff for every  $x \in D_\sigma$ ,  $p(x) \Rightarrow q(x)$

In the system that I assume, this difference stems from the fact that the proposition that Kim has a cat (in fact, exactly one cat) is a definedness condition on the meaning of the declaratives in (28b), but not of the declaratives in (28a). I will use the term ‘presupposition’ for definedness conditions<sup>8</sup>. See Abenina-Adar & Sharvit (forthcoming) for discussion and references on the presuppositions of interrogatives like (29a-b) in a semantic framework with definedness conditions.

The difference for the declaratives is shown in (30a-b); whereas (30a) is analyzed as a total function, defined for every possible world, (30b) is analyzed as a partial function, defined only for those possible worlds where there is exactly one  $x$  ( $\exists!x$ ) that is a cat that Kim has. This is reflected in the fact that between the colon and the period in the lambda term, there is more than just a specification of the type of the argument.

- (30) a.  $\llbracket \text{Kim has a tabby cat} \rrbracket = [ \lambda w : w \in D_s . \exists x [x \text{ is a tabby in } w \wedge$   
 $x \text{ is a cat in } w \wedge \text{Kim has } x \text{ in } w]]$
- b.  $\llbracket \text{Kim's cat is a tabby} \rrbracket = [ \lambda w : w \in D_s \wedge \underline{\exists!x [x \text{ is a cat in } w \wedge \text{Kim has } x \text{ in } w]} .$   
 $\iota x [x \text{ is a cat in } w \wedge \text{Kim has } x \text{ in } w] \text{ is a tabby in } w ]$

Declaratives acquire partial domains by containing particular expressions – such as *Kim's cat* – that are ‘presupposition triggers’; their lexically/grammatically determined meaning introduces partiality, which, through the rules of interpretation, contributes towards the containing declarative’s domain partiality or ‘projects’. That *Kim's cat* has this presupposition – i.e. an ‘existence-uniqueness’ presupposition – is based on the view on definiteness in Frege 1948, Strawson 1950, Heim 1991, and many other works (cf. Russell 1905). In the next chapter, I will present my assumed compositional analysis of *the-* and *whatever-*DPs, which also have such presuppositions.

(31) gives another example of a presupposition; since all of (31a-c) imply (/require commitment to) the proposition that Kim laughs, *know* presupposes that its complement is true i.e. is factive. *Certain* is not factive, (32). I will show the compositional details of how this presupposition arises,

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<sup>8</sup>In this, I depart from Karttunen 1973, Stalnaker 1974, and others, who use the term to refer to a more general group of language-related pragmatic felicity constraints, of which definedness conditions are only a part. I do not deny that there is something in common between linguistically determined definedness conditions and the other things to which they apply the term ‘presupposition’, but these will be the primary focus in my discussion of presuppositions.

since it will allow me to present my assumptions about belief-related expressions.

- (31) a. Pat knows that Kim laughs  
       $\Rightarrow$  Kim laughs  
      b. Pat doesn't know that Kim laughs  
       $\Rightarrow$  Kim laughs  
      c. Does Pat know that Kim laughs?

- (32) Pat is certain that Kim laughs  
       $\nRightarrow$  Kim laughs

Following Hintikka 1962, belief attributions with predicates like *know*, *be certain*, *believe*, etc. are analyzed as identifying a commonality among the possible worlds which the individual  $x$  to which a belief is attributed is unable rule out as being the reality that  $x$  occupies ( $x$ 's 'belief worlds'). Here is an example that may clarify what this means.

My beliefs, like everyone's, are not definitive about the way that things are. While I may have definitive beliefs about, e.g. my having eyebrows, my beliefs are not definitive enough to specify the exact number of my eyebrow hairs. If presented with two realistic depictions of my face, differing only in that I have one more eyebrow hair in picture 1 than I have in picture 2, I would say that for all I know, either one of these could be the true depiction of my face. This is one basis for distinguishing among the members of my belief worlds; some of them match picture 1 and others picture 2 in terms of the number of eyebrow hairs that I have. Given that there are infinitely many things, big and small, about which I don't have definitive opinions in this way, there are correspondingly infinitely many possible worlds that I would be unable to rule out as candidates for the world that I occupy. But this does not mean that any possible world is among my belief worlds. There are depictions of reality that I could confidently rule out, e.g. a picture where my eyebrows are non-existent or where I am non-existent. While there may be many ways of distinguishing among my belief worlds, there are also commonalities among them. Semantically, to attribute to someone a belief is to identify a commonality among their belief worlds, (33a-b).

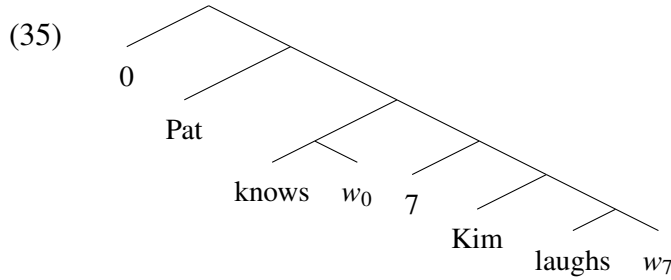
*Know*, which presupposes that what the subject knows is true, has the meaning in (33a), whereas *certain*, which does not, has the meaning in (33b) (these will be refined in later chapters).

- (33) a.  $\llbracket \text{know} \rrbracket = [\lambda w : w \in D_s. [\lambda p : p \in D_{(s,t)} \wedge \underline{p(w)}. [\lambda x : x \in D_e. \forall w' \in \text{BEL}(x)(w)[p(w')]]]]]$   
 b.  $\llbracket \text{certain} \rrbracket = [\lambda w : w \in D_s. [\lambda p : p \in D_{(s,t)}. [\lambda x : x \in D_e. \forall w' \in \text{BEL}(x)(w)[p(w')]]]]]$

(34) For every  $x \in D_e, w \in D_s$ :

$$\text{BEL}(x)(w) = \{w' \in D_s \mid \text{it is compatible with } x\text{'s beliefs in } w \text{ that } x \text{ occupies } w'\}$$

*Pat knows that Kim laughs* has the LF in (35); because of the way that predicate abstraction is defined, the definedness condition contributed by *know* limits the domain of the proposition derived.



For every assignment  $g$

- a.  $\llbracket [ [ 7 [ \text{Kim} [ \text{laughs-}w_7 ] ] ] ] \rrbracket^g$   
 $= [\lambda w : w \in D_s. \text{Kim laughs in } w]$  by PA, FAx2, L, P&T, simplification
- b.  $\llbracket [ \text{knows-}w_0 ] \rrbracket^g$   
 $= [\lambda w : w \in D_s. [\lambda p : p \in D_{(s,t)} \wedge p(w). [\lambda x : x \in D_e. \forall w' \in \text{BEL}(x)(w)[p(w')]]]]](g(0))$   
 by FA, L, P&T  
 $= [\lambda p : p \in D_{(s,t)} \wedge p(g(0)). [\lambda x : x \in D_e. \forall w' \in \text{BEL}(x)(g(0))[p(w')]]]$   
 defined iff  $g(0)$  is defined by simplification

- c.  $\llbracket [\text{Pat} [\text{knows-}w_0] [7 [\text{Kim} [\text{laughs-}w_7]]] ] \rrbracket^g$   
 $= \llbracket [\text{knows-}w_0] \rrbracket^g (\llbracket [7 [\text{Kim} [\text{laughs-}w_7]]] \rrbracket^g) (\llbracket \text{Pat} \rrbracket^g)$  by FA x 2  
 $= [\lambda p : p \in D_{(s,t)} \wedge p(g(0)) . [\lambda x : x \in D_e . \forall w' \in \text{BEL}(x)(g(0))[p(w')]]]$   
 $([\lambda w : w \in D_s . \text{Kim laughs in } w])(\text{Pat})$  by a., b., L  
 $= \text{True iff } \forall w' \in \text{BEL}(\text{Pat})(g(0))[\text{Kim laughs in } w']$   
defined iff  $g(0)$  is defined and Kim laughs in  $g(0)$  by simplification
- d.  $\llbracket [0 [\text{Pat} [\text{knows-}w_0] [7 [\text{Kim} [\text{laughs-}w_7]]] ] ] \rrbracket^g$   
 $= [\lambda w : w \in D_s \wedge \llbracket [\text{Pat} [\text{knows-}w_0] [7 [\text{Kim} [\text{laughs-}w_7]]] ] \rrbracket^{g^0/w}$  is defined.  
 $\llbracket [\text{Pat} [\text{knows-}w_0] [7 [\text{Kim} [\text{laughs-}w_7]]] ] \rrbracket^{g^0/w}]$   
by PA  
 $= [\lambda w : w \in D_s \wedge \underline{\text{Kim laughs in } w} . \forall w' \in \text{BEL}(\text{Pat})(w)[\text{Kim laughs in } w']]$   
by c., definition of modified assignment, simplification

To guarantee that the presupposition in (35) projects in the scope of negation, negation is given the meaning in (36a). It is specified for what is sometimes called its ‘heritage property’ (Karttunen & Peters 1979), which in the current framework is just a presupposition (i.e. definedness condition). Applied to the meaning derived from (35), we get the partial function in (36b).

- (36) a.  $\llbracket \text{not} \rrbracket = [\lambda p : p \in D_{(s,t)} . [\lambda w : w \in D_s \wedge p(w) \text{ is defined} . \neg p(w)]]$   
b.  $[\lambda w : w \in D_s \wedge \text{Kim laughs in } w . \neg \forall w' \in \text{BEL}(\text{Pat})(w)[\text{Kim laughs in } w']]$

*Pat is certain that Kim laughs* has an LF parallel to the one in (35), except the function that is derived from the LF, given in (37), is total, given *certain*’s lexical entry<sup>9</sup>.

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<sup>9</sup>This is oversimplifying; both *Pat is certain that Kim laughs* and *Pat isn’t certain that Kim laughs* imply that Pat considers it possible that Kim laughs (Lahiri 2002), which would be a natural thing to encode as a definedness condition (among many, many other things e.g. that Pat is sentient). I only indicate the definedness conditions that relate to the inferences I am interested in explaining and will often give lexical entries in the following format:

- (i) For every  $w \in D_s$ ,  $p \in D_{(s,t)}$ ,  $x \in D_e$ :  
 $(\llbracket \text{certain} \rrbracket(w)(p)(x) \text{ is defined only if } \dots)$ . If defined,  $\llbracket \text{certain} \rrbracket(w)(p)(x) = \dots$

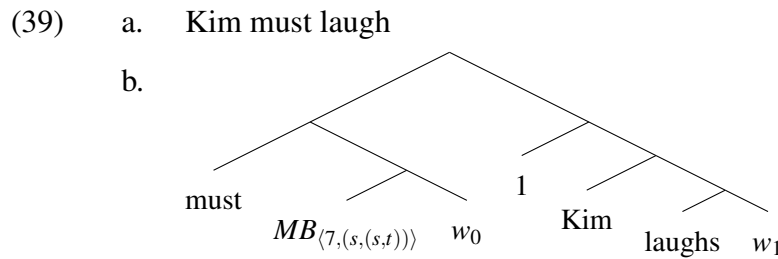


(37)  $[\lambda w : w \in D_s. \neg \forall w' \in \text{BEL}(\text{Pat})(w)[\text{Kim laughs in } w']]$

Certain other expressions like modal auxiliaries (*can*, *may*, *must*, etc.) are commonly analyzed as denoting relations among sets of possibilities, like *certain* and *know*. For instance, *must* can be given the lexical entry in (38). The main difference between *must* and *know* is that the set of worlds among which a *must* statement identifies a commonality is not determined by the lexical meaning of *must*; it does not necessarily make reference to a particular individual's beliefs.

(38) For every  $MB \in D_{(s,t)}$ ,  $p \in D_{(s,t)}$ :  
 If defined,  $[[\text{must}]](MB)(p) = \text{True}$  iff  $\forall w' \in MB[p(w')]$

Instead, the LF of a *must* statement contains an implicit proform for a denotation of type  $(s, (s,t))$ ,  $MB_{\langle 7, (s, (s,t)) \rangle}$ , whose extension is *must*'s quantificational domain (von Stechow & Heim 2010).



$MB_{\langle 7, (s, (s,t)) \rangle}$  is assigned to what is called a ‘modal base function’ or ‘accessibility relation’, with different utterance contexts making salient different such functions (Kratzer 1977, 1981, 2012 – see also Hacquard 2010). It can be assigned to the function in (40a), a kind of ‘deontic’ (rule-oriented) or ‘teleological’ (goal-oriented) modal base function, in which case *Kim must laugh* is used to express something like *it is required that Kim laugh in order for the movie scene to be memorable*. Alternatively, it can be assigned to the function in (40b), a kind of ‘epistemic’ (belief/knowledge-oriented) or stereotypical modal base function, in which case *Kim must laugh* is used to express something like *surely, Kim laughs*. These are two of the many meanings that *Kim must laugh* can be used to express.



$MB_{\langle 7, \langle s, \langle s, t \rangle \rangle \rangle}$  (and later, also property proforms of type  $\langle s, \langle e, t \rangle \rangle$ ).

Finally, I assume that language users' pragmatic knowledge includes certain conditions on what constitutes felicitous exchange; they know certain 'specifications of correct play', in Lewis's (1979) terms. Specifically, I will assume the pragmatic 'Bridge Principle' (Stalnaker 1974, Guerzoni 2003, a.o.), which I have formulated as a felicity condition in (42a), and the 'Appropriateness Condition' (Stalnaker 1970, Heim & Kratzer 1998, a.o.), similarly formulated in (42b).

(42) For every utterance context  $c$  and for every declarative LF  $\phi$ :

a. Bridge Principle

$\phi$  is felicitous in  $c$  only if  $CK_c \subseteq \{w \in D_s \mid \llbracket \phi \rrbracket^{g_c}(w)$  is defined}

b. Appropriateness Condition

$\phi$  is felicitous in  $c$  only if for every free proform  $\alpha$  in  $\phi$ ,  $\llbracket \alpha \rrbracket^{g_c}$  is defined

The first principle rules out using *Mary knows that it's raining* if it is not already established that it is raining. It explains the oddness of (43).

(43) #It's possible that it isn't raining. However, Mary knows that it's raining.

In general, barring accommodation<sup>11</sup>, a presupposition needs to be satisfied by common knowledge among the interlocutors. Since the first sentence, on the intended reading, indicates that it is not common knowledge that it is raining, the second sentence violates the Bridge Principle. It's a 'presupposition failure'.

The second principle is meant to explain an intuition expressed by Stalnaker (1970) in this

b. There is an assignment  $g$  such that  $\llbracket \psi \rrbracket^g$  is defined and  $\llbracket \alpha \rrbracket^g$  is undefined

$she_{\langle 1, e \rangle}$  is free in  $[ \langle 0, s \rangle [ she_{\langle 1, e \rangle} \text{ laughs-}w_{\langle 0, s \rangle} ] ]$ , because there is no sub-LF containing  $she_{\langle 1, e \rangle}$  that could be defined under any assignment when  $she_{\langle 1, e \rangle}$  is undefined.  $w_{\langle 0, s \rangle}$  is not free in this LF, as there is a sub-LF (namely, the whole tree) that is defined relative to the assignment, e.g.,  $[ \langle 1, e \rangle / \text{Kim}, \langle 3, e \rangle / \text{Pat} ]$  even though  $\llbracket w_{\langle 0, s \rangle} \rrbracket^{[ \langle 1, e \rangle / \text{Kim}, \langle 3, e \rangle / \text{Pat} ]}$  is undefined.

<sup>11</sup>The process by which  $CK_c$  is unassumingly brought up to speed as a reaction to a presupposition, as in *Sorry I'm late, my cat had a medical emergency* when it is not yet established that the speaker has a cat.

quote: “When you say ‘We shall overcome,’ I need to know who you are, and for whom you are speaking. If you say ‘That is a great painting,’ I need to know what you are looking at, or pointing to, or perhaps what you referred to in your previous utterance” (pp. 276). Generally, free occurrences of certain proforms, including *we* and *that*, are felicitous only if it is agreed upon by the interlocutors who or what is being discussed. Consider the fact that on every occasion on which it rains, there is something that could be felicitously referred to with *it* or *that* that is being rained on. Nonetheless, you can’t freely add *it* or *that*, as the exchange in (44) shows.

(44) *Context: A and B are in different countries. They’re talking over the phone.*

A: How’s the weather over there?

B: It’s raining (#on { it / this / that })

The Appropriateness Condition is intended to rule out B’s response with free proforms<sup>12</sup>. Over the course of this work, certain other pragmatic principles will be introduced and motivated.

In the framework assumed, a semantic inference licensed by an expression  $\phi$  is any proposition which is entailed (via generalized entailment) by the denotation resulting from the application of the interpretation function to  $\phi$ . A merely pragmatic inference resulting from the use of  $\phi$  is an inference which is not entailed by the denotation resulting from the application of the interpretation function to  $\phi$  but which arises by the assumption that principles (like Gricean Quantity or Quality, the Bridge Principle, or the Appropriateness Condition) are obeyed.

With all of these assumptions in place, I begin to consider what the grammatical difference between *the-* and *whatever-*DPs is, which, together with the pragmatic principles, can explain their ignorance-related contrasts (and other kinds of contrasts).

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<sup>12</sup>There are felicitous violations of the Appropriateness Condition, e.g. cases of ‘diagonalization’, where a free proform is treated as felicitous despite uncertainty about its reference (Stalnaker 1978). The following, taken from a homework question in Heim’s (2004) ‘Lecture notes on indexicality’, provides an example: ‘In the fairy-tale “The Wolf and the Seven Little Goats,” the little goats are home alone when the wolf knocks on the door and says: “Open the door, my dear little goats! I am your mother.” . . .’.

*I am your mother* is felicitous to the goats (i.e. can be actively entertained) despite their uncertainty about who *I* refers to. *I* can apparently be ‘diagonalized’ i.e. treated as a description for the current speaker, whoever that may be. But generally, if the reference of free proforms like *I* is not sufficiently established, it is judged to be unclear what content has been expressed.

## 2

### Whatever-DPs and the distribution of ignorance requirements

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*Whatever*-DPs in particular syntactic configurations exhibit requirements that *the*-DPs do not but that cannot be characterized as a requirement for ignorance about the identity of the referent. (1a-b) is an example; *everybody* binds into the restrictor of the definites.

- (1) a. Everybody<sub>*i*</sub> enjoyed whatever book they<sub>*i*</sub> bought  
b. Everybody<sub>*i*</sub> enjoyed the book they<sub>*i*</sub> bought

As observed in Lauer 2009, (1a) can be used in an utterance context where it is common knowledge that the individuals quantified over by *everybody* bought different books and for every individual *x* quantified over by *everybody*, the identity of the book that *x* bought is common knowledge, as in (2); in this respect, it is no different from the *the*-DP in (1b)<sup>1</sup>.

- (2) *Context: The book that Kim bought is War & Peace, The book that Pat bought is Anna Karenina, and the book that Lee bought is Resurrection.*  
a. Everybody<sub>*i*</sub> enjoyed whatever book they<sub>*i*</sub> bought  
b. Everybody<sub>*i*</sub> enjoyed the book they<sub>*i*</sub> bought

---

<sup>1</sup>If the reader has trouble with singular *they*, the following can be used to make the same point: *Kim's book<sub>*i*</sub> contains whatever bookmark it<sub>*i*</sub> comes with* vs. *Every book<sub>*i*</sub> contains whatever bookmark it<sub>*i*</sub> comes with*.

The main purpose of this chapter is to show how the acceptability of (2a) in (2) is challenging for accounts of *whatever*-DPs' ignorance inferences that identify the *whatever*-DP as the semantic source of a modal implication. Such accounts incorrectly predict the relative scope of the universal quantifier and the modal implication. I will present such an account, called 'the modal account', which is based on the semantics assigned to *whatever*-DPs in Dayal 1997, von Stechow 2000, a.o.

I will also show, contrastingly, that the requirements follow from what I call the alternative-based account. According to the alternative-based account, *whatever*-DPs conventionally evoke alternatives that denote the same referent but carry stronger identifying presuppositions about the referent than the *whatever*-DP does. The pragmatic principle of Maximize Presupposition (Heim 1991, Sauerland 2008, a.o.), presented in this chapter, imposes a requirement for common knowledge not to entail any alternative's identifying presupposition, producing an ignorance requirement in unembedded contexts. The same pragmatic principle applies to uses of *whatever*-DP bound into by *everybody*; given *everybody*'s presupposition, *everybody<sub>i</sub> enjoyed whatever book they<sub>i</sub> bought* presupposes 'for every person  $x$ , the book  $x$  bought is *War & Peace*, *Anna Karenina*, or *Resurrection*' (supposing that these are the relevant classes of books). It has alternatives determined on the basis of the *whatever*-DP presupposing 'for every person  $x$ , the book  $x$  bought is *War & Peace*', 'for every person  $x$ , the book  $x$  bought is *Anna Karenina*', and 'for every person  $x$ , the book  $x$  bought is *Resurrection*' respectively. The Maximize Presupposition-induced constraint is satisfied by the utterance context in (2) – no alternative's stronger presupposition is common knowledge – but not the one in (3), where it is common knowledge that for every person  $x$ , the book  $x$  bought is *War & Peace*.

- (3) *Context: The book that Kim bought is War & Peace, The book that Pat bought is War & Peace, and the book that Lee bought is War & Peace.*
- a. #*Everybody<sub>i</sub> enjoyed whatever book they<sub>i</sub> bought*
  - b. *Everybody<sub>i</sub> enjoyed the book they<sub>i</sub> bought*

This chapter is organized as follows. §2.1 justifies identifying *whatever*-DPs as 'definite' and elab-

orates on what definiteness is assumed to consist in; it also provides background on what quantificational contextual restriction effects are and how they are assumed arise, adopting a particular proposal in von Stechow 1994, which is later applied to the analysis of *whatever*-DPs. §2.2 presents the modal account of *whatever*-DPs, according to which they carry a presupposition that the identity of their referent is unknown, and shows how it accounts for the basic pattern of ignorance requirements presented in the introduction; this section also describes the analytical similarity established by the modal account with definite determiner phrases with nonrestrictive relative clauses like *which is such that I am not certain what it is* and the empirical insights resulting from comparing the two kinds of expressions. §2.3 presents the contrasting alternative-based account and shows how it accounts for the basic pattern of ignorance requirements. §2.4 elaborates on how the quantificational example above speaks in favor of the alternative-based account over the modal account and provides an additional conceptual argument in favor of the the alternative-based account, stemming from examples where *whatever*-DPs imply variation over a non-epistemic, sentence-internal modal base. §2.5 contrasts the alternative-based account with two other accounts of *whatever*-DPs, namely the ‘unconditional account’ and the ‘postsuppositional account’. §2.6 concludes the chapter with a discussion of further empirical applications of the alternative-based account and of future avenues of exploration.

## 2.1 Assumptions about definiteness

### 2.1.1 Uniqueness and homogeneity

In a discussion of the syntactic composition of free relatives, Bresnan & Grimshaw 1978 mention in passing about (4a-b) that “the interpretation of the bound morpheme *-ever* of free relatives seems to involve universal quantification in the domain specified by the *wh*-phrase” (pp. 335).

- (4) a. I’ll buy what he is selling
- b. I’ll buy whatever he is selling

Universal and definite force are not incompatible, given the accepted view that definites are a kind of universal. But *the*-DPs, canonical definites, exhibit characteristics that set them apart from other universals as definites, and *whatever*-DPs exhibit the same characteristics. First, as discussed in the previous chapter, *the*- and *whatever*-DPs presuppose existence-uniqueness with singular count restrictors, whereas *every*-DPs do not (though they do presuppose existence – Heim & Kratzer 1998: §6 for discussion and references).

- (5) *Context: Kim bought three books.*
- a. #Whatever book she bought is over there on the shelf
  - b. #The book she bought is over there on the shelf
  - c. Every book she bought is over there on the shelf

Plural *the*- and *whatever*-DP like in (6a-b) are fine in the context in (5), however, and the statements in (6a-b) are generally taken to require all of the books she bought to be on the shelf. Are the DPs in (6a-b) not definite universals but merely universals, like *every book she bought*?

- (6) a. Whatever books she bought are over there on the shelf  
b. The books she bought are over there on the shelf

Plural *the*-DPs (and plural pronouns, demonstratives, etc.) exhibit a property that distinguishes them from ordinary universals like *every book she bought* or *all (of) the books she bought*, namely, ‘homogeneity’. As discussed in Fodor 1970, Löbner 1985, and others (see Križ 2019 for recent discussion), on the view that plural *the*-DPs are ordinary universals like *every*-/all (of the)-DPs, the negations of simple sentences containing plural *the*-DPs do not have the expected truth conditions. Whereas (7b(i-ii)) are intuitively and expectedly complementary, (7a(i-ii)) are not intuitively complementary. In general, plural *the*-DPs, on the one hand, and *all*- and *every*-DPs, on the other, contribute a different meaning in entailment-reversing environments as evidenced by the fact that Kim’s denial in (8a) excludes even just some of the books being on the shelf (cf. (8b)). ‘Homogeneity’ refers to the ‘all-or-nothing’ character that plural definites exhibit.



- (7) a. (i) Kim read the books she bought  
Paraphrase: She read all of them  
(ii) Kim didn't read the books she bought  
Paraphrase: She read none of them
- b. (i) Kim read every book she bought  
(ii) Kim didn't read every book she bought
- (8) a. Kim denied that the books she bought are on the shelf  
b. Kim denied that every book she bought is on the shelf

As observed in Dayal 1997 (also Dayal 1995: 201), plural *whatever*-DPs exhibit homogeneity; this is shown, e.g., by the contrasts between (9a-b) vs. (9c-d) as continuations of (9).

- (9) Kim is addressing some of the client's questions, but...
- a. she isn't addressing all of the questions that the client has  
b. she isn't addressing every question that the client has  
c. #she isn't addressing the questions that the client has  
d. #she isn't addressing whatever questions the client has

The same holds for non-count singular *the*- and *whatever*-DPs vs. ordinary universals like *all of the*-DPs; it follows from (10a(i)), (10b(i)), (10c(i)) that everything that we could truly describe as sand that Kim bought was carried by Kim, but (10a(ii)) and (10b(ii)) are generally taken to mean that Kim carried none of the sand she bought (cf. (10c(ii))).

- (10) a. (i) Kim carried the sand that she bought  
(ii) Kim didn't carry the sand that she bought
- b. (i) Kim carried whatever sand she bought  
(ii) Kim didn't carry whatever sand she bought
- c. (i) Kim carried all of the sand she bought  
(ii) Kim didn't carry all of the sand she bought

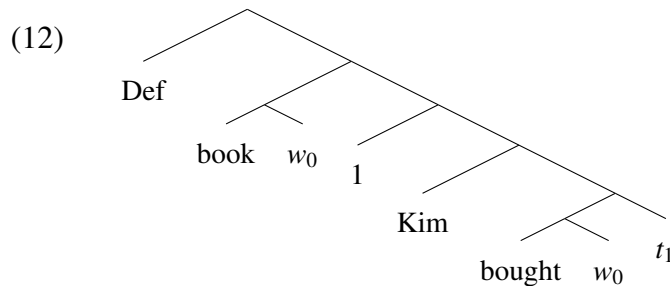
Thus, while I do not disagree with Bresnan & Grimshaw’s (1978) assessment of the quantificational force of *whatever*-DPs, existence-uniqueness with count singulars and homogeneity with non-counts and plurals suggest that *whatever*-DPs are more specifically definites. More sophisticated arguments for the definite force of *whatever*-DPs involve modification with *almost* and weak NPI-licensing (Jacobson 1995: 480, Tredinnick 2005: 52-60 – see Šimík (forthcoming) for an overview). Following Jacobson 1995, Dayal 1997, and Tredinnick 2005, I will take for granted that *whatever*-DPs and *the*-DPs are both definites. For now, I focus on singular *whatever*- and *the*-DPs, returning to plurals at the end of the chapter.

### 2.1.2 Syntax-semantics of definites

(11) gives the primary definite determiner denotation that I will assume.

$$(11) \quad \llbracket \text{Def} \rrbracket = [\lambda P : P \in D_{(e,t)} \wedge \exists! x [P(x)] . \iota x [P(x)]]$$

The LF of the *the*-DP *the book Kim bought* is given in (12); the LF representation of a relative clause (*that*) *Kim bought* is the sub-LF [ 1 [ Kim [ bought- $w_0$   $t_1$  ] ] ], interpreted by the predicate abstraction rule. (13) is a derivation of its meaning.



(13) For every assignment  $g$

a.  $\llbracket \text{bought} \rrbracket^g = [\lambda w : w \in D_s . [\lambda x : x \in D_e . [\lambda y : y \in D_e . y \text{ bought } x \text{ in } w]]]$  by L

b.  $\llbracket \text{bought-}w_0 \rrbracket^g = [\lambda x : x \in D_e . [\lambda y : y \in D_e . y \text{ bought } x \text{ in } g(0)]]$

defined iff  $g(0)$  is defined

by P&T, FA

- c.  $\llbracket [\text{bought-}w_0 t_1] \rrbracket^g = [\lambda y : y \in D_e. y \text{ bought } g(1) \text{ in } g(0)]$   
defined iff  $g(0)$  and  $g(1)$  are defined by P&T, FA
- d.  $\llbracket [\text{Kim} [\text{bought-}w_0 t_1]] \rrbracket^g = \text{True}$  iff Kim bought  $g(1)$  in  $g(0)$   
defined iff  $g(0)$  and  $g(1)$  are defined by L, c., FA
- e.  $\llbracket [1 [\text{Kim} [\text{bought-}w_0 t_1]]] \rrbracket^g$   
 $= [\lambda y : y \in D_e \wedge \llbracket [\text{Kim} [\text{bought-}w_0 t_1]] \rrbracket^{g^{1/y}}$  is defined.  $\llbracket [\text{Kim} [\text{bought-}w_0 t_1]] \rrbracket^{g^{1/y}}$   
by PA  
 $= [\lambda y : y \in D_e \wedge g(0) \text{ is defined} . \text{Kim bought } y \text{ in } g(0)]$   
by d., definition of modified assignment
- f.  $\llbracket [\text{book}] \rrbracket^g = [\lambda w : w \in D_s . [\lambda x : x \in D_e. x \text{ is a book in } w]]$  by L
- g.  $\llbracket [\text{book-}w_0] \rrbracket^g = [\lambda x : x \in D_e . x \text{ is a book in } g(0)]$   
defined iff  $g(0)$  is defined by P&T, FA
- h.  $\llbracket [1 [\text{book-}w_0 [1 [\text{Kim} [\text{bought-}w_0 t_1]]]] \rrbracket^g$   
 $= [\lambda z : z \in D_e \wedge \llbracket [\text{book-}w_0] \rrbracket^g(z) \text{ is defined} \wedge \llbracket [1 [\text{Kim} [\text{bought-}w_0 t_1]]] \rrbracket^g(z) \text{ is}$   
defined.  $\llbracket [\text{book-}w_0] \rrbracket^g(z) \wedge \llbracket [1 [\text{Kim} [\text{bought-}w_0 t_1]]] \rrbracket^g(z)$  by PM  
 $= [\lambda z : z \in D_e \wedge g(0) \text{ is defined} . z \text{ is a book in } g(0) \wedge \text{Kim bought } z \text{ in } g(0)]$   
defined iff  $g(0)$  is defined by e., g., simplification
- i.  $\llbracket [\text{Def} [\text{book-}w_0 [1 [\text{Kim} [\text{bought-}w_0 t_1]]]] \rrbracket^g$   
 $= \llbracket [\text{Def}] \rrbracket^g(\llbracket [1 [\text{book-}w_0 [1 [\text{Kim} [\text{bought-}w_0 t_1]]]] \rrbracket^g)$  by FA  
 $= [\lambda P : P \in D_{(e,t)} \wedge \exists !x[P(x)] . \iota x[P(x)]](\llbracket [\lambda z : z \in D_e \wedge g(0) \text{ is defined} . z \text{ is a book in}$   
 $g(0) \wedge \text{Kim bought } z \text{ in } g(0)] \rrbracket^g)$  by L, h.  
 $= \iota x[x \text{ is a book in } g(0) \wedge \text{Kim bought } x \text{ in } g(0)]$   
defined iff  $g(0)$  is defined and  $\exists !x[x \text{ is a book in } g(0) \wedge \text{Kim bought } x \text{ in } g(0)]$

This is an ordinary Frege-Strawson definite denotation, presupposing the existence of a unique entity satisfying the description determined by the syntactic restrictor of the definite DP and, when defined, denoting the unique entity satisfying this description. This is not the only theory of definiteness (cf. the competing familiarity-based theory in Kamp 1981, Heim 1982, a.o.), but as far as I can tell, the hypotheses that I consider for the source of the ignorance implications do not crucially depend on which conception of definiteness is adopted.

### 2.1.3 Sources of contextual restriction effects

This section discusses what contextual restriction effects are and how they have been proposed to arise. In particular, I will present the theory, due to von Stechow 1994, that at least certain contextual restriction effects are the result of quantificational expressions containing implicit ‘C’-proforms of functional types, such as properties or relations. This is not an uncontroversial idea, so I will summarize some of the objections to it as well. The analysis I develop for *whatever*- and *some N or other*-DPs crucially involves disjunctions of property-proforms, so to the extent that it is considered successful, it can be seen as lending indirect support to this theory.

Consider (14a-d) as a text i.e. a sequence of conversational moves. After hearing (14a), we are inclined to understand the quantificational and definite determiner phrases in (14b-d) as saying something about individuals at or related to the mentioned party (Westerståhl 1985, von Stechow 1994). As a result, (14b) might be true even though obviously not every person out there in the world had fun, (14c) might be false even though obviously someone out there in the world didn’t show up, and (14d) might be felicitous even though there is obviously more than one cake out there in the world.

- (14)
- a. I had a party last night
  - b. Everybody had fun
  - c. Somebody didn’t show up
  - d. The cake was great

The theory of situation semantics, which has been applied to a broad range of linguistic phenomena beyond such effects, provides one way of understanding how these judgments arise; I will focus on the explanation provided by a ‘possibilistic situation semantics’, according to which expressions receive an interpretation relative to spatiotemporal parts of possible worlds called situations (see Kratzer 2017 for an overview and references)<sup>2</sup>. The explanation is as follows: by certain principles of discourse, (14a) establishes a so-called ‘topic situation’ (Barwise & Perry 1983), a small part of the world that is up for discussion, and the quantificational claims made by (14b-c) are intuitively restricted and reference with the definite in (14d) is well-defined because (14b-d) are claims about the same topic situation. Thus, (14b), for example, is not literally a claim about everybody in existence but rather everybody who is part of the topic situation established by (14a).

There is evidence for additional sources of restriction, however, as in (15).

(15) Everybody is asleep and is being monitored by a research assistant (Soames 1986: 357)

The conjunction in (15) is presumably about a topic situation, but *everybody* cannot be quantifying over every person that that situation contains; otherwise, given that no person can both be asleep and monitor, (15) would be felt to be contradictory, which it isn’t. This shows that *everyone* has a way of acquiring a restricted domain that is not necessarily co-extensive with the domain that the topic situation supplies. A situation-semantic solution is to say that *everyone* (and *a research assistant*) can be evaluated relative to a ‘resource situation’ (Cooper 1996, a.o.) i.e. a salient situation other than the topic situation (for *everyone* in (15), perhaps a situation containing just the test subjects in the larger, topic experiment situation). According to Elbourne 2002, 2016, Büring 2004, Keshet 2008, Schwarz 2009, 2012, and others, situation proforms are syntactically represented as part of the determiner phrase, specifically as the first argument of a determiner, which then combines with the intension of its restrictor. A syntax-semantics for a definite that is

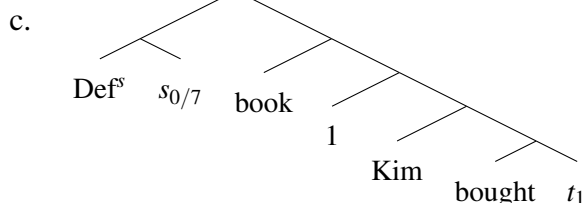
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<sup>2</sup> A perspicuous way to relate the current possible world semantics to a possibilistic situation semantics is to assume, as in Kratzer 1989, that  $D_e \cup D_s$  is partially ordered by the ‘part-of’ relation,  $\sqsubseteq$ , satisfying at least the following two conditions: (i) There is no  $x \in D_e$  such that there is an  $s \in D_s$  such that  $s \sqsubseteq x$ , and (ii) For every  $s \in D_s$ , there is exactly one  $w \in D_s$  such that  $s \sqsubseteq w$  and if there is a  $w' \in D_s$  such that  $w \sqsubseteq w'$ , then  $w = w'$ .

more faithful to these works, involving the situation-relative definite determiner,  $\text{Def}^s$ , is in (16)<sup>3</sup>. The indexing options for the situation proform are flexible (see Fodor 1970, Enç 1981, Percus 2000, a.o. for earlier claims for the intensional independence of argumental determiner phrases).

(16) a.  $\llbracket \text{Def}^s \rrbracket = [\lambda s : s \in D_s . [\lambda P : P \in D_{(s,(e,t))} \wedge \exists !x [P(s)(x)] . \iota x [P(s)(x)]]]$

b. The book that Kim bought



The situation-semantic analysis of definites and other kinds of quantificational expressions provides one possible explanation for contextual restriction effects.

An additional source of contextual restriction effects is proposed in von Stechow 1994, namely, unpronounced, function-type proforms, like properties (type  $(s, (e, t))$ ) or relations (type  $(s, (e, (e, t)))$ ), appearing in determiner phrases. Relational proforms are motivated by readings of sentences like (17) (Heim 1991: §1.4.2, von Stechow 1994: 30).

(17) Only one class was so bad that no student passed

Speaking in terms of verification procedures, to determine whether (17) is true, we need to inspect the relevant classes to decide if only one of them exceeded a certain threshold of badness. But the salient reading of (17) is one where a class's badness is determined only by its own students'

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<sup>3</sup>This LF should be read with the assumptions in footnote 2 and lexical entries like (i) for the content words. The LF requires the expected intensional PM rule, (ii).

(i)  $\llbracket \text{book} \rrbracket = [\lambda s : s \in D_s . [\lambda x : x \in D_e \wedge x \sqsubseteq s . x \text{ is a book in } s]]$

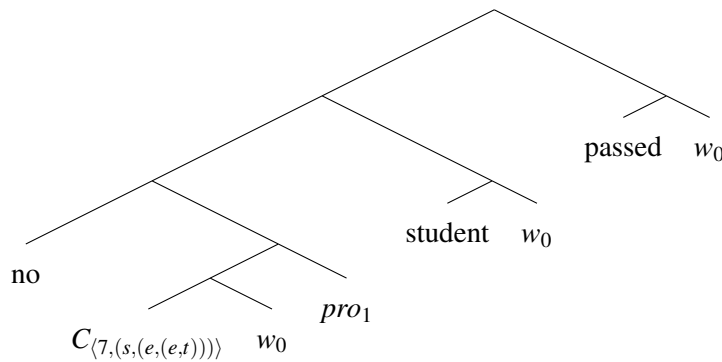
(ii) If  $\alpha$  is an LF with  $\{\beta, \gamma\}$  as the set of its daughter, then for every assignment  $g$ ,  $\llbracket \alpha \rrbracket^g$  is defined if  $\llbracket \beta \rrbracket^g$  and  $\llbracket \gamma \rrbracket^g$  are defined and  $\llbracket \beta \rrbracket^g, \llbracket \gamma \rrbracket^g \in D_{(s,(e,t))}$ . In this case,  $\llbracket \alpha \rrbracket^g = [\lambda s : s \in D_s . [\lambda x : x \in D_e \wedge \llbracket \beta \rrbracket^g(s)(x) \text{ is defined} \wedge \llbracket \gamma \rrbracket^g(s)(x) \text{ is defined} . \llbracket \beta \rrbracket^g(s)(x) \wedge \llbracket \gamma \rrbracket^g(s)(x)]]]$

performances. (17) says that only one class  $x$  was so bad that no student in  $x$  passed, in spite of the fact that the overt linguistic material in the threshold-determining clause is just *no student passed*. To account for this reading, *no student passed* can be assigned the von Fintel-inspired LF in (18); a relational proform which takes a pronoun  $pro_1$  bound by *only one class* is part of the restriction in the determiner phrase *no student*. A plausible value for  $C_{\langle 7,(s,(e,(e,t))) \rangle}$  to be assigned is the relation  $[\lambda w : w \in D_s . [\lambda x : x \in D_e . [\lambda y : y \in D_e . y \text{ attends } x \text{ in } w]]]$ .

- (18) a. For every  $C, P, Q \in D_{(e,t)}$ :  
 If defined,  $\llbracket \text{no} \rrbracket (C)(P)(Q) = \text{True}$  iff  $\neg \exists x [C(x) \wedge P(x) \wedge Q(x)]$

b. No student passed

c.



Another case where higher type, functional restrictors have been invoked is in accounting for WH-interrogatives containing focus-sensitive particles like *only* and *even*, like (19a-b) (Abenina-Adar & Sharvit 2018, forthcoming).

- (19) a. Who only ate the cake<sup>F</sup>?  
 b. Who even ate the cake<sup>F</sup>?

(19a-b) admit readings where the contributions of *only* and *even* vary across each possible answer, in accordance with which value fills in for the WH-phrase. On these readings, a response to (19a) like *Kim only ate the cake<sup>F</sup>* implies that Kim did not eat anything other than the cake without implying anything about what people other than Kim did not eat; similarly, a response to (19b) like *Pat even ate the cake<sup>F</sup>* may imply (by presupposition) that the cake was the least expected thing for

Pat to eat, without implying anything about the relative expectedness of Pat’s eating the cake and, e.g., Kim’s eating the pie. Adopting a theory where *only* and *even* are propositional, ‘one-place’ operators that take a focus-determined, contextually-restricted set of propositional alternatives (after Rooth 1992, a.o.), Abenina-Adar & Sharvit propose that the described readings arise because the focus particles may take functional contextual restrictors of type  $(e, ((s, t), t))$ , with the  $e$  argument bound by the WH-phrase. These are two kinds of data that are used to motivate additional grammatical means for contextual restriction i.e. in addition to what a situation semantics with flexible indexing on argumental DPs provides.

The claim that implicit, higher-type proforms are used in natural language quantificational restriction is not uncontroversial. There are arguments that positing such proforms predicts untested readings. Kratzer 2004 claims that the contrast in (20a-b) regarding who is being unreasonable is somewhat surprising if A’s first utterance in (20a) admits a parse where *most linguists* is implicitly restricted with a property-type proform roughly meaning *phonologist*.

- (20) a. A: Lisa is a phonologist. Most linguists would agree with what she said.  
 B: You’re wrong. Syntacticians and semanticists wouldn’t.  
 A: #I was only talking about phonologists, of course.
- b. A: Lisa is a phonologist. Most such linguists would agree with what she said.  
 B: #You’re wrong. Syntacticians and semanticists wouldn’t.

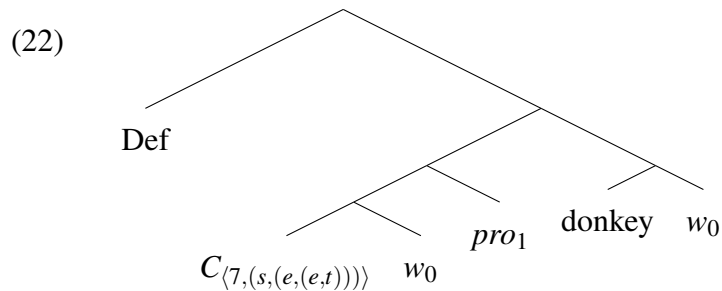
However, it is possible that the position that A expresses in (20a) is judged unreasonable for reasons other than *most linguist*’s inability to be restricted implicitly with a property proform meaning *phonologist*. For instance, the use of the noun *linguist* when *phonologist* is salient and roughly as short may strongly suggest that whatever restriction *linguist* takes is not simply *phonologist*; if A were only talking about phonologists, why did A not say *most phonologists*?

Another argument against free insertion of relational proforms comes from Elbourne 2016: 21, who shows that there is a contrast in the readings made available by sentences like (21a-b).



- (21) a. In this village, if a farmer owns a donkey, he feeds the donkey and the priest feeds the donkey too
- b. In this village, if a farmer owns a donkey, he feeds the donkey and the priest feeds the donkey he owns too

*The donkey that he owns* in the second conjunct of the consequent (21b) contains an overt relational expression, *owns*, with a bound pronoun argument, *he*, and it allows a ‘sloppy reading’, from which it follows that the village priest feeds his own donkey; this is in addition to the ‘strict reading’, from which it follows that the village priest feeds farmers’ donkeys. In contrast, (21a) allows only a strict reading. This is unexpected for those analyses of so-called ‘donkey anaphora’ that crucially make use of relational proforms taking bound pronouns as arguments (e.g. Berman 1987, Heim 1990). The LF of *the donkey* that is to be ruled out is in (22), where  $C_{\langle 7,(s,(e,(e,t))) \rangle}$  is assigned the relation  $[\lambda w : w \in D_s . [\lambda x : x \in D_e . [\lambda y : y \in D_e . y \text{ owns } x \text{ in } w]]]$ <sup>4</sup>.



I agree with Elbourne’s claim that the distribution of relational proforms must be constrained, but it is conceivable that *the donkey* in (21a) is an anaphoric definite (Heim 1982), that only essentially pronominal descriptions forbid such restrictions, and that (22) is actually an admissible ordinary (uniqueness) definite LF for *the donkey*.

A third argument against a particular implementation of *C*-proforms in analyzing relational anaphora is given in Schwarz 2009: §6.1.3. ‘Relational anaphora’ in German is when the un-

<sup>4</sup>(22) implies that *C*-variable restriction with definites is intersective at the level of the NP; alternatively, we might redefine *Def* as in (i), in the spirit of von Stechow 1994, and have  $C_{\langle 7,(s,(e,(e,t))) \rangle-w_0-pro_1}$  be a sister to *Def*.

(i)  $[[\text{Def}]] = [\lambda C : C \in D_{(e,t)} . [\lambda P : P \in D_{(e,t)} \wedge \exists! y [C(y) \wedge P(y)]. \iota y [C(y) \wedge P(y)]]]$

contracted definite article is licensed without previous mention of an individual having the noun-related property; as Schwarz shows (building on previous works on Germanic article inventories), uncontracted definites are usually licensed only in strongly anaphoric contexts (e.g. with previous mention of a discourse referent). Schwarz finds that relational anaphora is highly constrained by the choice of the lexical noun head in the definite. Thus, while the uncontracted form of the definite *the author* in (23a) is licensed by previous mention of a novel, the uncontracted form of the definite *the novelist* in (23b) is not.

- (23) a. Hans entdeckte in der Bibliothek einen Roman über den Hudson. Dabei  
 Hans discovered in the library a novel about the Hudson. In the process  
 fiel ihm ein, dass er vor langer Zeit einmal einen Vortrag  
 remembered he<sub>dat</sub> PART that he a long time ago once a lecture  
 von dem Autor besucht hatte.  
 by the.strong author attended had  
 ‘Hans discovered a novel about the Hudson in the library. In the process, he remem-  
 bered that he had attended a lecture by the author long ago.’
- b. #Hans entdeckte in der Bibliothek einen Roman über den Hudson. Dabei  
 Hans discovered in the library a novel about the Hudson. In the process  
 fiel ihm ein, dass er vor langer Zeit einmal einen Vortrag  
 remembered he<sub>dat</sub> PART that he a long time ago once a lecture  
 von dem Schriftsteller besucht hatte.  
 by the.strong novelist attended had  
 ‘Hans discovered a novel about the Hudson in the library. In the process, he remem-  
 bered that he had attended a lecture by the novelist long ago.’

(Schwarz 2009: 246-248)

Schwarz’s argument relies on the common assumption that *author* but not *novelist* has a relational meaning (cf. well-known English contrasts like *the author of the novel* vs. *?the novelist of the novel*, where postnominal *of*-possessors partially diagnose relational noun meaning). According to Schwarz, if relational proforms were freely available, then *novelist* could be interpreted as *novelist who wrote the book Hans discovered*, overgenerating (23b). But if only individual proforms are available, then (23a) will be correctly predicted to have an anaphoric reading, wherein the relatum argument of *author* is resolved to the previously mentioned book, but this reading will be

impossible for because *novelist* has no such individual-type argument. See Schwarz 2009: §6 for more details.

Kratzer, Elbourne, and Schwarz advocate for situation-semantic analyses of covarying interpretations of quantificational domains, of the kind exemplified by *only one class was so bad that no student passed*, and either implicitly or explicitly deny the availability of higher type implicit proforms for contextual restriction altogether. Another relevant work is Landman 2006, which argues that all proforms (implicit or explicit) have an individual, non-functional type, even overt expressions that one might be theoretically inclined to call ‘property proforms’ like *such* in (24) (Landman 2006: §2) or *such linguists* back in (20b).

- (24) a. Nice<sub>i</sub> people ... Such<sub>i</sub> people ...  
b. Big<sub>i</sub> dogs ... Such<sub>i</sub> dogs ...  
c. Strange<sub>i</sub> ideas ... Such<sub>i</sub> ideas ...

Clearly, if higher type implicit or explicit proforms are grammatically available, the theory of such proforms must guarantee that their distribution is appropriately constrained. Nonetheless, in providing an account of *whatever*-DPs and other ignorance-requiring DP, I will assume that their LFs contain property proforms of type  $(s, (e, t))$ , following von Stechow. I intend for these proforms to correspond to particular morphosyntactic forms and as such not to count as implicit, though the precise relation between the LFs I posit and the morphosyntactic form is unfortunately left vague. Finally, though I assume that these proforms are of property-type, I am optimistic that Landman’s analysis of expressions like ‘kind *such*’ may be extended so as to allow all of the following discussion to be recast without property proforms, though again the details are left for future work.

Having established that *whatever*-DPs are definites and equipped with a view on what definiteness consists in, I turn to two different proposals for the meaning of *whatever*-DPs, focusing on what sort of explanation they provide for ignorance requirements.

## 2.2 The modal account

The first hypothesis I entertain is that *whatever*-DPs semantically encode a presupposition that the referent's identity varies across a set of possible worlds provided by a contextually-determined modal base function. The analysis I consider is primarily based on the analysis in Dayal 1997, specifically the version called 'Analysis-N' in von Stechow 2000, though it draws insights from Heller & Wolter 2011, Condoravdi 2008, 2015, and Lauer 2009.

In (25), I give a simplified presentation of the meaning of a *whatever*-DP under the modal account (i.e. a *whatever*<sup>MA</sup>-DP). I am assuming that it is being evaluated in an utterance context where the relevant modal base is  $CK_c$  i.e. what common knowledge among the conversational participants provides (though how exactly the value of the modal base should be determined and the challenge this poses for the modal account will be discussed below).

- (25) *Whatever*<sup>MA</sup> book Kim bought
- a. Denotes: 'The book Kim bought'
  - b. Presupposes: 'It is common knowledge that the book Kim bought is  $C_1$  or  $C_2$  (... or  $C_n$ ), but it is not common knowledge that it is  $C_1$ , and it is not common knowledge that it is  $C_2$  (... and it is not common knowledge that it is  $C_n$ )'

In more detail, the LFs of *whatever*<sup>MA</sup>-DPs contain the expression *unsettled*, defined in (26). *Unsettled* takes a world, a sequence of at least two properties, which I will call 'identifiers', and a modal base and returns a function characterizing the set of individuals  $x$ , among the individuals identifiable across the modal base, such that there is no identifier that reliably holds of  $x$  across the modal base. The term 'identifier' as a description of the properties is meant to evoke the fact that the properties must characterize non-empty, mutually disjoint sets of individuals at every world in the modal base. In the logical space that the modal base provides, the properties are ways of distinguishing among individuals.

- (26) For every  $w \in D_s, C_1 \dots C_n \in D_{(s,(e,t))}$  ( $n \geq 2$ ),  $MB \in D_{(s,t)}$ :
- $\llbracket \text{unsettled} \rrbracket(w)(C_1) \dots (C_n)(MB)$  is defined only if
- a.  $MB \neq \emptyset$
  - b.  $\forall w' \in MB, \forall C \in \{C_1, \dots, C_n\}$ 
    - (i)  $\exists x[C(w')(x)]$
    - (ii)  $\neg \exists C' \in \{C_1, \dots, C_n\}[C \neq C' \wedge \exists x[C(w')(x) \wedge C'(w')(x)]]$

If defined, then for every  $x \in D_e$ :

$\llbracket \text{unsettled} \rrbracket(w)(C_1) \dots (C_n)(MB)(x)$  is defined only if

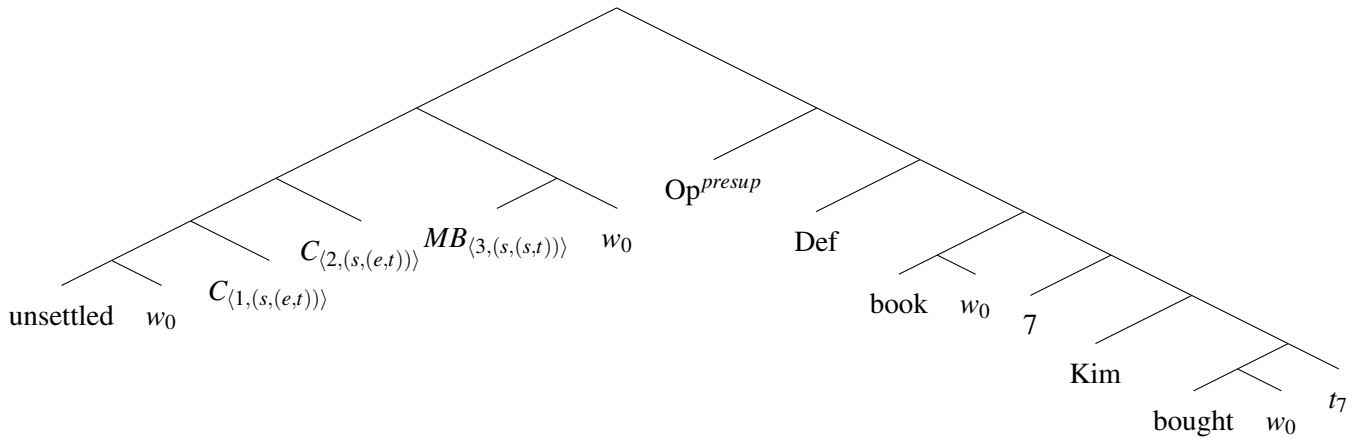
$\forall w' \in MB[\exists C \in \{C_1, \dots, C_n\}[C(w')(x)]]$ .

If defined,  $\llbracket \text{unsettled} \rrbracket(w)(C_1) \dots (C_n)(MB)(x) = \text{True}$  iff

$\neg \exists C \in \{C_1, \dots, C_n\}[\forall w' \in MB[C(w')(x)]]$

An LF for a *whatever*<sup>MA</sup>-DP is given in (27); the right side of the tree contains an ordinary definite sub-LF, and  $\text{Op}^{\text{presup}}$ , defined in (28), contributes the presupposition that the definite referent has the *unsettled*-property.

- (27) *Whatever*<sup>MA</sup> book Kim bought



- (28)  $\llbracket \text{Op}^{\text{presup}} \rrbracket = [\lambda x : x \in D_e . [\lambda P : P \in D_{(e,t)} \wedge P(x) . x]]$

The syntax of this free-relative LF is based on an analysis of free-relative clauses, going back to Groos & Van Riemsdijk 1981 and advanced more recently in Caponigro 2003 et seq., as consisting of an implicit determiner combining with a WH-clause CP, formed by movement of a WH-phrase to the CP's left edge. This CP is shifted by *Def*, after Jacobson 1995, Caponigro 2003, and others. The ordinary definite sub-LF – i.e. the right half of the tree – corresponds to this structure. After Dayal 1997, von Stechow 2000, and others, the main difference between an ordinary definite like a *the*-DP and a *whatever*<sup>MA</sup>-DP is the modal, ‘unsettled’ presupposition.

The meaning derived from (27) can be used to explain the infelicity of (29) in an utterance context where it is previously established that the book Kim bought is *War & Peace*.

- (29)     *Context: The book Kim bought is War & Peace*  
           #Whatever book Kim bought is over there on the shelf

Suppose that *The book that Kim bought is War & Peace* in part determines what would count as identifying the book that Kim bought (i.e. constrains possible values for the *C*-proforms). In particular, it establishes that one of the identifiers is the property  $[\lambda w : w \in D_s . [\lambda x : x \in D_e . x \text{ is W\&P in } w]]^5$ . (29) is a presupposition failure in an utterance context *c* when the salient modal base function returns  $CK_c$ , the speaker<sub>*c*</sub>'s information state, or the addressee<sub>*c*</sub>'s information state, assuming all participants in *c* accept that the book that Kim bought is *War & Peace*.

(30a-b), based on examples in Heller & Wolter 2011 and Abenina-Adar 2019b, shows that there is no single way of identifying the referent that is relevant in every context.

- (30)     a.     *Context: The book that Kim bought is War & Peace*  
           #Whatever book she bought is the one that I'll read

---

<sup>5</sup> W&P, AK, and R are in the metalanguage and represent members of  $D_e$ ; these are respectively the denotations assumed for the proper names *War & Peace*, *Anna Karenina*, and *Resurrection*. ‘*x* is W&P in *w*’ is intended to be read in an indexical way: ‘*x* has properties in *w* that W&P has uniquely at *w'*, for every  $w' \in CK_c$ ’.

- b. *Context: There are two copies of War & Peace – one on the left and one on the right. Kim bought one and Pat bought the other. I like Kim more.*

Whatever book Kim bought is the one that I'll read

If all the context supplies by way of identifying books is *is War & Peace*, then knowing that the book that *whatever book Kim bought* refers to is *War & Peace* will typically render it infelicitous, (30a); on the other hand, if the utterance context supplies some other salient way of identifying books, as in (30b), which supplies ‘the book on the left’ and ‘the book on the right’, then knowing that the referent is *War & Peace* may be irrelevant in determining the *whatever*-DP’s felicity.

The main difference between my modal account and the analyses in Dayal and von Stechow is that the content of *unsettled* depends on what values are assigned to the identifiers. For comparison, (31) provides the meaning assigned to *whatever* in von Stechow 2000 (Analysis-N).

- (31) For every  $w \in D_s$ ,  $MB \in D_{(s,t)}$ ,  $P \in D_{(s,(e,t))}$  :
- $\llbracket \text{whatever}^{\text{Dayal/von Stechow}} \rrbracket(w)(MB)(P)$  is defined only if
- $\exists w', w'' \in MB[\text{Ix}[P(x)(w')] \neq \text{Ix}[P(x)(w'')]]$ .
- If defined,  $\llbracket \text{whatever}^{\text{Dayal/von Stechow}} \rrbracket(w)(MB)(P) = \text{Ix}[P(w)(x)]$

(31) requires the intension of the definite that the *whatever*-DP denotes to be non-rigid across the modal base. As pointed out in Heller 2005 and Heller & Wolter 2011, the notion of identity that (31) appeals to is somewhat at odds with the fact that *whatever*-DPs can be used felicitously to refer to entities or objects that have been referred to with a so-called ‘rigid designator’ i.e. an expression whose denotation does not vary across possible worlds. Demonstrative pronouns like *that* are commonly thought to be rigid designators (Kaplan 1989).

- (32) *Context: A and B are looking at a cover pot containing the dish that Lee is cooking.*
- A: Lee is cooking that.
- B: Interesting. Whatever dish he is cooking smells good.

Likewise, as pointed out by the same authors and Condoravdi 2008, *whatever*-DPs can be rendered infelicitous by property ascriptions which in principle allow for the intension of the definite to be non-rigid; the salient *soup*-ascription in (33) is an example.

(33) *Context: A and B know that Lee is over in the other room, cooking a dish.*

A: Lee is cooking a soup.

B: #Interesting. Whatever dish he is cooking smells good.

While the modal account I have presented does not fully explain these facts (because I have not made any concrete suggestions about how identifiers are determined – a question I will return to in §4), there is no expectation that rigid designation of an individual precludes using a *whatever*-DP to refer to it and there is an expectation that salient property ascriptions may rule out using a *whatever*-DP, even if the referent is not rigidly designated.

A final remark about the modal account concerns the context dependence of the determination of the modal base. The account admits a lot of flexibility in whose beliefs are relevant, but this appears to be needed. For example, (34) is felicitous in the provided context, in which the addressee plausibly knows what book they are reading. This shows that there are ignorance-uses of *whatever*-DPs that are exclusively speaker-oriented.

(34) *Context: I see you reading a book*

Whatever book you are reading looks interesting

As observed in von Stechow 2000, There are also ignorance uses that are exclusively addressee-oriented, (35a), and as observed in Lauer 2009, there are ignorance uses that are conversation-oriented, where every interlocutor has an opinion on the identity of the *whatever*-DP's referent, but there is no common knowledge, (35b). (35a) exemplifies what is sometimes called a 'teasing' reading, and (35b) exemplifies what is sometimes called a 'disagreement' or 'irrelevance' reading.

(35) a. Here's a hint: whatever book I got you for your birthday was written in Russian



- b. A: The book that Kim bought is *War & Peace*  
 B: No, it's *Anna Karenina*  
 A: In any case, whatever book she bought is over there on the shelf

All of these variations on who has to be ignorant can be explained by appealing to different values for the proform supplying a modal base function in different contexts. One potential objection is that by leaving the value of the modal base function to context, the modal account does not rule out readings on which a *whatever*-DP implies, e.g., that it is deontically possible for the referent to be different things. The infelicity of (36) suggests that the *whatever*-DP in this example cannot have that reading.

- (36) *Context: Kim was granted permission to buy War & Peace and she was granted permission to buy Anna Karenina. The book that she ended up buying was War & Peace.*  
 #Whatever book she bought is over there on the shelf

One possible response is that, as a modal expression, *unsettled* imposes semantically encoded constraints on the kinds of modal base functions it accepts, a pervasive phenomenon with natural language modal expressions (e.g. Kratzer 1977, 1981, 2012). Consider the adjectival passive *unknown*, which can only be used to talk about beliefs, but isn't keyed to a particular individual's beliefs. While understanding what these constraints are may prove difficult, I will assume that the modal account may be supplemented with such constraints to rule out (36). In §2.4, I will discuss readings of *whatever*-DPs that have been claimed to involve a non-epistemic modal base, such as the generic sentence *whatever book Kim buys is (always) expensive*, and show that independently of the constraints needed to rule out a deontic modal base in (36), the modal account must also be supplemented with constraints that rule out unattested readings when occurring with a quantificational adverb; in contrast, the alternative-based account to be presented shortly does not need such supplementation.

### 2.2.1 Such that I am not certain what it is

Before moving on to the alternative-based account of ignorance inferences, this section highlights the analytical similarity that the modal account establishes between *whatever*-DPs and definites like in (37a). (37a) contains a nonrestrictive clause, which I take to contribute a meaning like that of (37b), only in a not-at-issue way, as in, e.g., Potts 2004.

- (37) a. The book that Kim bought – which (by the way) is such that I am not certain what it is – is over there on the shelf  
b. I am not certain what the book that Kim bought is

The primary purpose of comparing *whatever*-DPs to definites like (37a) is to show that they differ in the qualitative ‘flavors’ of ignorance that license their use, a fact which will remain an open puzzle for both accounts that I entertain until §4; the end of this section provides one example of such a difference. I discuss (37a) now to present my assumed syntax-semantics of interrogative clauses, which is a crucial part of an alternative account of *whatever*-DPs – the unconditional account – discussed later in this chapter.

(37b) is a negative certainty ascription with an embedded constituent interrogative clause whose questioned constituent is the syntactic complement of the copular verb *is* (*what<sub>i</sub> the book that Kim bought is t<sub>i</sub>*)<sup>6</sup>. At least since Higgins 1973, copular constructions are recognized as coming in more than one type, a major distinction being specificational vs. predicational. According to Higgins 1973, in a specificational copular clause, “the subject [i.e. the precopular DP] in some way delimits a domain and the specificational predicate [i.e. the copula plus the postcopular constituent]

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<sup>6</sup>As discussed in Percus 2003, a corresponding main clause interrogative – *what is the book that Kim bought?* – is structurally ambiguous between the two parses schematized in (i)-(ii).

- (i) What<sub>i</sub> is<sub>Aux</sub> the book that Kim bought t<sub>Aux</sub> t<sub>i</sub>? postcopular-WH  
(ii) What<sub>i</sub> t<sub>i</sub> is<sub>Aux</sub> the book that Kim bought? precopular-WH

However, *what the book that Kim bought is* is not structurally ambiguous in this way because there is no subject-auxiliary inversion in embedded interrogatives.

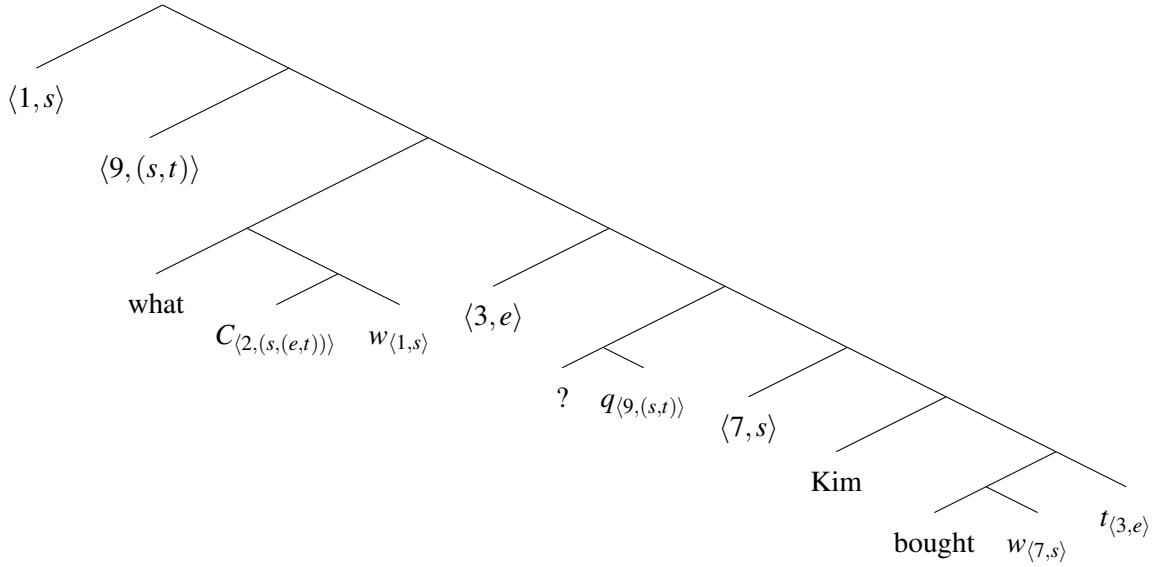
determines a member of that domain” (pp. 132). In contrast, in a predicational copular clause, the denotation of the postcopular constituent is predicated of the subject’s denotation. (38a) lines up to the intuitive characterization of specificational clauses and (38b), to the predicational one; the more significant reason for positing a distinction among copular clauses is contrasts among copular clause with respect to connectivity effects – see Higgins 1973.

- (38) a. The book that Kim bought is *War & Peace* intuitively specificational  
 b. The book that Kim bought is { boring / on the shelf } intuitively predicational

Frana 2010, 2017, building especially on Heim 1979 and Romero 2005, provides an analysis accounting for the differences between so-called ‘concealed questions’ like *the capital of Canada* and corresponding copular interrogative clauses like *what the capital of Canada is*. I will sketch a meaning that is expressible with *I am not certain what the book that Kim bought is*, supposing Frana’s account of copular interrogatives.

First, I assume the semantics for interrogative clauses in Hamblin 1973, where they are analyzed as denoting intensions of sets of propositions (intuitively, possible answers). I take this meaning to be derived from an LF of the kind proposed in Karttunen 1977; a WH-phrase binds a proform in the proposition-denoting constituent that is the root of the question-denotation. The set-creating morpheme ? and a proposition proform  $q_{\langle 9, (s,t) \rangle}$ , which is abstracted over, produce a proposition-set question-denotation (cf. Karttunen’s Proto-Question and WH-Quantification rules). An LF for the interrogative *what did Kim buy?/what Kim bought is* given in (39).

(39)



a.  $\llbracket ? \rrbracket = [\lambda q : q \in D_{(s,t)} \cdot [\lambda p : p \in D_{(s,t)} \cdot p = q]]$

b. For every  $C, Q \in D_{(e,t)}$  :

If defined,  $\llbracket \text{what} \rrbracket(C)(Q) = \text{True}$  iff  $\exists x[C(x) \wedge Q(x)]$

c. For every assignment  $g$  and for every  $w \in D_s$ :

$\llbracket (39) \rrbracket^g(w)$  is defined only if  $g(\langle 2, (s, (e, t)) \rangle)$  is defined.

If defined,  $\llbracket (39) \rrbracket^g(w) =$

$$\{p \in D_{(s,t)} \mid \exists x[g(\langle 2, (s, (e, t)) \rangle)(w)(x) \wedge p = [\lambda w : w \in D_s. \text{Kim bought } x \text{ in } w]]\}$$

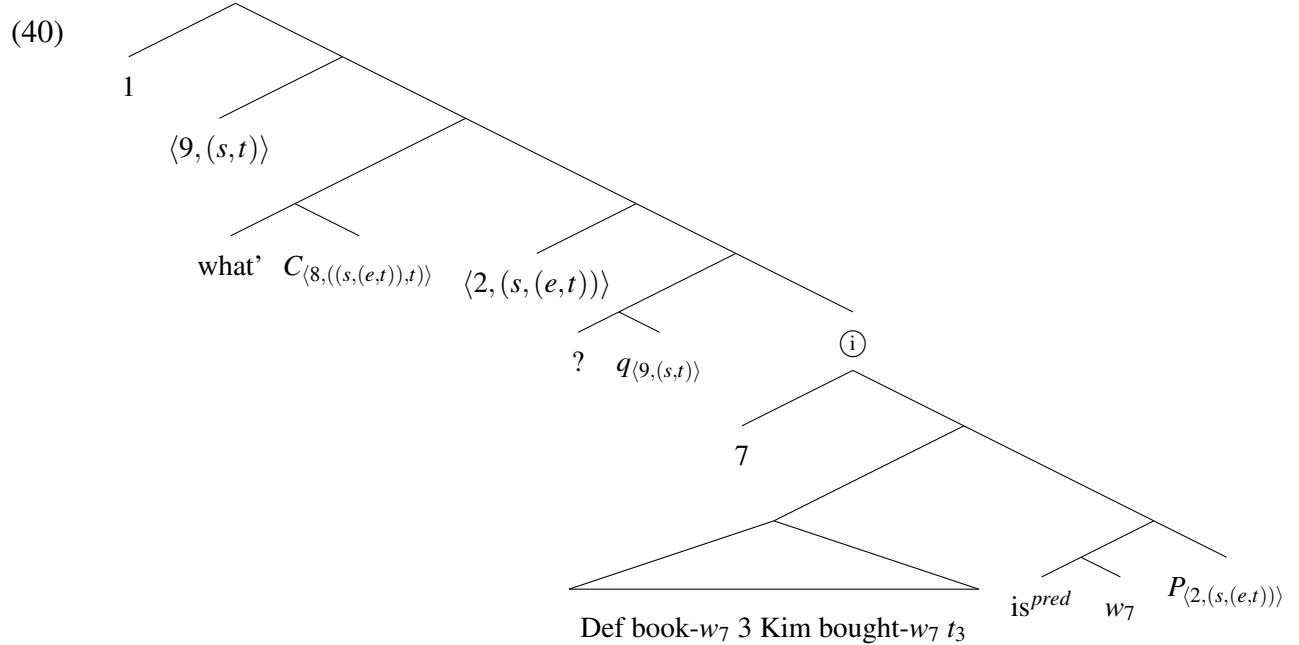
I now turn to interrogatives where *what* is related to a gap in the postcopular position. I assume that the copular verb has several LF representations, including a predicational operator  $is^{pred}$ , which predicates the postcopular constituent of the subject, generally following Partee 1986b. Further, I assume that *what* has a variant *what'* that existentially quantifies over properties and that binds a property type trace in the postcopular position<sup>7</sup>. The interrogative clause *what the book that*

<sup>7</sup>This departs from Frana's analysis in at least two ways. The first is that Frana assumes a Groenendijk & Stokhof 1984-semantics for interrogatives as propositional concepts. I adopt a Hamblin semantics for consistency with later discussion on interrogative clauses (as far as I can tell, this is not a substantive difference). The second difference is that Frana analyzes *who* in her example, *who our favorite candidate is*, as quantifying over individual concepts, and the type-shifting operation in (i) producing the property-denotation required by the predicational copula.

(i)  $\llbracket \text{Shift}^{(s,e) \rightarrow (s,(e,t))} \rrbracket = [\lambda i : i \in D_{(s,e)} \cdot [\lambda w : w \in D_s \wedge i(w) \text{ is defined} \cdot [\lambda x : x \in D_e \cdot x = i(w)]]]$

Frana's proposal is much closer in spirit to the way predicate-relativization is conceived in Partee 1986a. Frana's

*Kim bought is* can have the LF and meaning below. ① is the root of the question, denoting a proposition of the form ‘ $P$ (the book Kim bought)’; the possible answers to the question, differing in what property  $P$  is, are determined by the value assigned to  $C_{\langle 8, ((s, (e, t)), t) \rangle}$ , which could be a set containing the properties in (40e-f), or other properties.



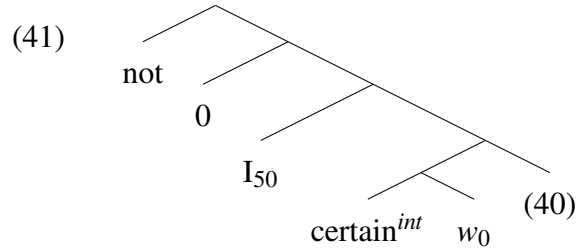
- a.  $\llbracket \text{is}^{pred} \rrbracket = [\lambda w : w \in D_s . [\lambda P : P \in D_{(s, (e, t))} . [\lambda x : x \in D_e \wedge P(w)(x) \text{ is defined} . P(w)(x)]]]$
- b. For every  $C, R \in D_{((s, (e, t)), t)}$ :  
If defined,  $\llbracket \text{what}' \rrbracket(C)(R) = \text{True iff } \exists P[C(P) \wedge R(P)]$
- c. For every assignment  $g$  and for every  $w \in D_s$ :  
 $\llbracket (40) \rrbracket^g(w)$  is defined only if  $g(\langle 8, ((s, (e, t)), t) \rangle)$  is defined.  
If defined,  $\llbracket (40) \rrbracket^g(w) =$   
 $\{p \in D_{(s, t)} \mid \exists P[g(\langle 8, ((s, (e, t)), t) \rangle)(P) \wedge p = \text{'P(The book Kim bought)'}]\}$
- d.  $[\lambda w : w \in D_s . [\lambda x : x \in D_e . x \text{ is W\&P in } w]]$ ,  
 $[\lambda w : w \in D_s . [\lambda x : x \in D_e . x \text{ is AK in } w]]$ ,

---

tentative reason for an individual concept analysis is that *who* cannot generally be responded to with an adjective like *smart* (Frana 2010, footnote 8). But on one reading of *what<sub>i</sub> is<sub>Aux</sub> our favorite candidate t<sub>Aux</sub> t<sub>i</sub>?*, it expects a reply like *smart*, so there is no parallel reason for assuming *what'* can't quantify directly over properties (though there are perhaps other reasons e.g. constraints on proform/trace-types as in Landman 2006, which I am setting aside in this work). I follow Frana in assuming that *what'* can quantify over properties that are shifted from individual concepts and it is what I intend when I write, e.g.,  $x$  is W&P in  $w$  (see footnote 5).

- [ $\lambda w : w \in D_s . [\lambda x : x \in D_e . x \text{ is R in } w]$ ]
- e. [ $\lambda w : w \in D_s . [\lambda x : x \in D_e . x \text{ is boring in } w]$ ],  
 [ $\lambda w : w \in D_s . [\lambda x : x \in D_e . x \text{ is interesting in } w]$ ]

Finally, the structure in (40) may be embedded under the interrogative taking version of *certain*<sup>int</sup> (compositionally different but semantically equivalent ways of composing an interrogative with *certain* are found in Lahiri 2002, Spector & Egré 2015, a.o.), which is then negated. *Certain*<sup>int</sup> takes a question-intension and an individual and introduces a presupposition that the individual's beliefs satisfy Dayal's (1996) Answerhood (the requirement for there to be a logically strongest true answer). If defined, it requires the individual to believe a possible answer in the question extension at the evaluation world. For simplicity (cf. Kaplan 1989, Heim 2004), I am treating indexicals like *I* as having an index with a special status; *I*<sub>50</sub> is never bound, and for every utterance context *c* where *g*<sub>*c*</sub>(50) is defined, *g*<sub>*c*</sub>(50) = Speaker<sub>*c*</sub>.



- a. For every  $w \in D_s, Q \in D_{(s,((s,t),t))}, x \in D_e$  :  
 $\llbracket \text{certain}^{int} \rrbracket (w)(Q)(x)$  is defined only if  
 $\forall w' \in \text{BEL}(x)(w)[\exists p \in Q(w')[p(w') \wedge \forall q \in Q(w')[q(w') \rightarrow p \Rightarrow q]]$ .  
 If defined,  $\llbracket \text{certain}^{int} \rrbracket (w)(Q)(x) = \text{True}$  iff  $\exists p \in Q(w)[\forall w' \in \text{BEL}(x)(w)[p(w')]]$
- b.  $\llbracket \text{not} \rrbracket = [\lambda p : p \in D_{(s,t)} . [\lambda w : w \in D_s \wedge p(w) \text{ is defined. } p(w) = \text{False}]]$

When (40) is embedded in (41), the combination of presupposition and assertion is almost identical to what was encoded as a presupposition under the modal account of *whatever*-DPs. *Whatever*<sup>MA</sup>-DPs presuppose predicational ignorance, with the relevant properties being supplied by the various identifier proforms.

One question that the similar treatment of (42a-b) raises is whether the two are actually alike.

- (42) a. Whatever book Kim bought  
 b. The book Kim bought – which is such that I am not certain what it is

The difference between them that this chapter is concerned with is made obvious by (43a-b); (43b) commits the speaker to the claim that for every relevant individual  $x$ , the speaker is not certain what the book that  $x$  bought is. (43a) does not, as we have seen (discussed further below). In general, the fact that the modal account assigns *whatever*-DPs a modal implication leads to undergeneration problems relating to (43a), incorrectly ruling it out in contexts where it actually is felicitous. It also leads to certain overgeneration problems that I will describe. In both cases, the issue is that the *whatever*-DP introduces modality on its own.

- (43) a. Everybody<sub>*i*</sub> enjoyed whatever book they<sub>*i*</sub> bought  
 b. Everybody<sub>*i*</sub> enjoyed the book they<sub>*i*</sub> bought – which is such that I am not certain what it is

While the alternative-based account of *whatever*-DPs that I present does not face the same problems, it fares no better at accounting for the following fact. The use of a *whatever*-DP like in (44a) cannot be justified by ignorance regarding whether the book Kim bought is, e.g., boring, interesting, or neither, even if boring, interesting, or neither is a very salient way of distinguishing among books in the context. In this respect, it differs from the *the*-DP in (44b).

- (44) *Context: Kim bought War & Peace. Is War & Peace boring, interesting, or neither?*

Let's read the back cover to find out!...

- a. #Whatever book Kim bought is over there on the shelf  
 b. The book that Kim bought – which is such that I am not certain what it is – is over there on the shelf

This difference in the methods of identification that the two constructions are sensitive to does not follow from anything discussed so far – there is no obvious reason that the identifiers involved in the meaning the *whatever*-DP couldn't be the meanings of *boring*, *interesting*, and *neither boring*

*nor interesting*. I will return to discuss the question of how to constrain identifiers for *whatever*- and *some N or other*-DPs together in §4. That *whatever*-DPs are quite restricted in the kinds of ignorance that license their use is observed and analyzed by Heller & Wolter 2011.

### 2.3 The alternative-based account

The alternative-based account has two main components. The first is that *whatever*-DPs, unlike *the*-DPs, necessarily carry a presupposition identifying the definite referent in a contextually-determined way. The second is that *whatever*-DPs, unlike *the*-DPs, necessarily evoke alternatives that identify the definite referent in one way among a set of more specific, pairwise incompatible, contextually-determined ways of identifying the definite referent. Given the *whatever*<sup>AA</sup>-DP's meaning and the meanings of its alternatives, a pragmatic constraint called Maximize Presupposition is relevant in determining whether using the *whatever*<sup>AA</sup>-DP is felicitous. Ignorance is one way that its use might be licensed. The alternative-based account is primarily based on the analysis of *whatever*-DPs in Abenina-Adar 2019b: §3, though the claim that *whatever*-DPs evoke alternatives is made in Condoravdi 2008, 2015.

(45) shows a sample denotation of a *whatever*-DP denotation under the alternative-based account (i.e. a *whatever*<sup>AA</sup>-DP) and (46) shows the denotations of the alternatives that it evokes. Following Katzir 2007, I assume that 'alternative' refers to a relation that holds in an utterance context between two linguistic structures. For every utterance context  $c$ , a grammatically constrained, contextually-guided process, partially described below, determines for every structure  $\phi$  a set of alternatives for processes of pragmatic reasoning,  $\text{ALT}_c(\phi)$ . I will represent the alternatives to the *whatever*<sup>AA</sup>-DPs as abstract LFs, i.e.  $\psi$ s, and will return to discuss their pronunciation shortly.

- (45) Whatever<sup>AA</sup> book Kim bought
- a. Denotes: 'The book Kim bought'
  - b. Presupposes: 'The book Kim bought is  $C_1$  or  $C_2$  (... or  $C_n$ )'



- (46) For every utterance context  $c$ ,  $\text{ALT}_c((45)) \supseteq \{\psi_1, \psi_2, \dots, \psi_n\}$  such that
- a.  $\psi_1$ 
    - (i) Denotes: ‘The book Kim bought’
    - (ii) Presupposes: ‘The book Kim bought is  $C_1$ ’
  - b.  $\psi_2$ 
    - (i) Denotes: ‘The book Kim bought’
    - (ii) Presupposes: ‘The book Kim bought is  $C_2$ ’
  - c.  $\dots \psi_n$ 
    - (i) Denotes: ‘The book Kim bought’
    - (ii) Presupposes: ‘The book Kim bought is  $C_n$ ’

In more detail, under the alternative-based account, *whatever*<sup>AA</sup>-DPs’ LFs contain the expression  $or^C$ , a disjoiner of  $C$ -proforms, defined in (47); unlike a regular disjunctive word like *or*,  $or^C$  requires its arguments to characterize non-empty and mutually disjoint sets.

- (47) For every  $C_1 \dots C_n \in D_{(e,t)}$  ( $n \geq 2$ ):
- $\llbracket or^C \rrbracket(C_1) \dots (C_n)$  is defined iff  $\forall C \in \{C_1, \dots, C_n\}$
- a.  $\exists x[C(x)]$
  - b.  $\neg \exists C' \in \{C_1, \dots, C_n\} [C' \neq C \wedge \exists x[C(x) \wedge C'(x)]]$

If defined, then for every  $x \in D_e$ :

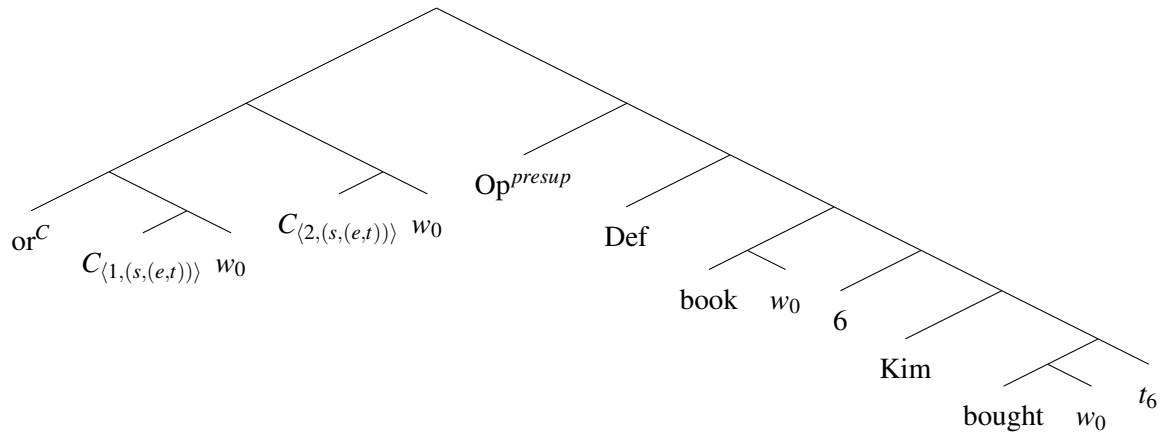
$$\llbracket or^C \rrbracket(C_1) \dots (C_n)(x) = \text{True iff } \exists C \in \{C_1, \dots, C_n\} [C(x)]$$

The LF of a *whatever*-DP under the alternative-based account is very similar to the modal account’s LF except that  $or^C$  replaces *unsettled*. The ordinary definite sub-LF on the right side of the tree in (48) denotes the book that Kim bought, and a  $C$ -disjunction replaces *unsettled* and its arguments.  $\text{Op}^{\text{presup}}$  contributes the presupposition ‘The book Kim bought is  $C_1$  or  $C_2$  ( $\dots$  or  $C_n$ )’<sup>8</sup>.

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<sup>8</sup>*Unsettled* is modal, so it takes  $C$ -proform intensions;  $or^C$  is non-modal, so it takes extensions.

(48) Whatever<sup>AA</sup> book Kim bought



The LF in (48) gets associated with alternatives as a result of the following two assumptions concerning  $ALT_c$  (based on Sauerland 2004, Katzir 2007). The first is that regardless of the context, a  $C$ -disjunction competes with its individual disjuncts, as spelled out in (49) ( $\psi_1$ , etc. stands for the full disjunct sub-LF i.e. constituent whose daughters are the property and world proforms). The second is that the alternatives to a binary-branching LF include all structures derivable by substituting its daughters with their respective alternatives.

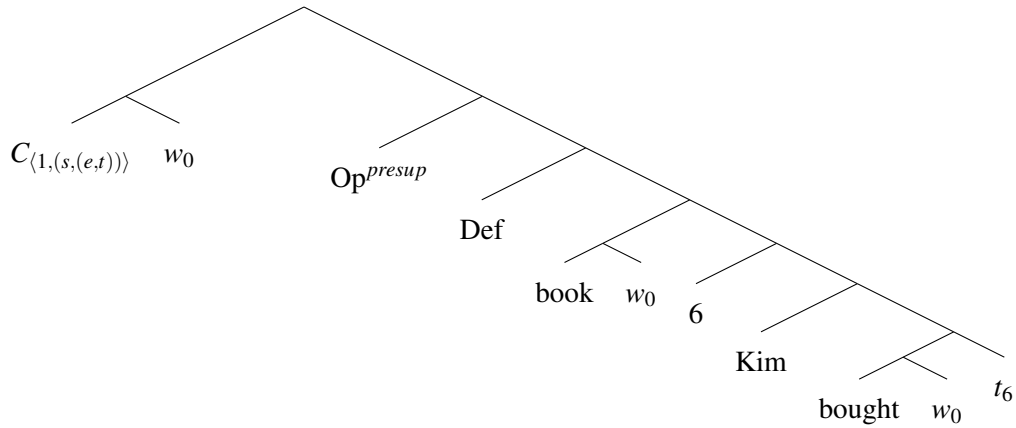
(49) Assumptions about  $ALT_c$

For every utterance context  $c$  and for every LF  $\phi$ :

- a. If  $\phi$  is a maximal disjunctive LF of the form  $[ [ \dots [ [ or^C \psi_1 ] \psi_2 ] \dots ] \psi_n ]$ ,  
then  $ALT_c(\phi) \supseteq \{ \psi_1, \psi_2, \dots, \psi_n \}$
- b. If  $\phi$  is a non-terminal, binary-branching LF of the form  $[ \alpha \beta ]$ ,  
then  $ALT_c(\phi) \supseteq \{ [ \alpha' \beta' ] \mid \alpha' \in ALT_c(\alpha) \wedge \beta' \in ALT_c(\beta) \}$

Given (49), for every utterance context  $c$ , the LFs in (50a-b) are in  $ALT_c((48))$ .

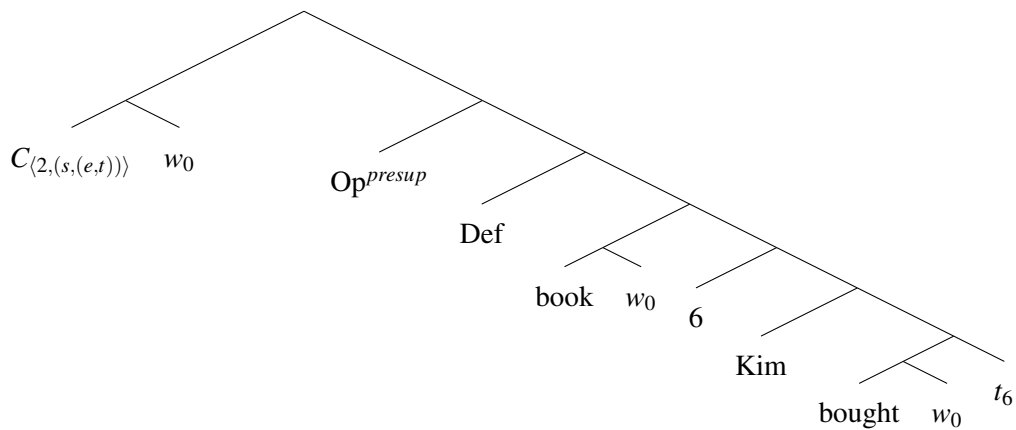
(50) a.



(i) Denotes: 'The book Kim bought'

(ii) Presupposes: 'The book Kim bought is  $C_1$ '

b.



(i) Denotes: 'The book Kim bought'

(ii) Presupposes: 'The book Kim bought is  $C_2$ '

### 2.3.1 Three notes on whatever-DPs' alternatives

Before moving on to explain how the alternative-based account explains ignorance inferences, this subsection addresses three potential questions and/or objections: (i) Why are these particular alternatives assumed? (ii) How are these alternatives pronounced?, and (iii) Does the alternative-based analysis require commitment to the claim that there is a disjunction at some level of representation of *whatever*-DPs?

Regarding (i), as in other works on determiner phrases' linguistic representations that employ the notion of alternatives (e.g. Kadmon & Landman 1993, Krifka 1995, Lahiri 1998, Kratzer & Shimoyama 2002, Alonso-Ovalle & Menéndez-Benito 2010, Condoravdi 2015, Chierchia 2013),

the alternatives are stipulated; while there may be principled, grammatically determined constraints on alternative sets (e.g. Fox & Katzir 2011), the particular alternatives that an expression is proposed to evoke should be thought of as one of its conventionally, linguistically determined properties (in addition to its truth conditional content, its heritage property, etc.). My proposal for the alternative sets associated with *whatever*-DPs is partially justified in §2.5.1, where I consider and dismiss a richer alternative set, derived by assuming that a *C*-disjunction competes with all of the possible disjunctions of its individual disjuncts i.e. with its ‘subdomain alternatives’. The relevant consideration for choosing between these two alternative sets is whether *whatever*-DPs carry a partial or total ignorance requirement (Alonso-Ovalle & Menéndez-Benito 2010). I provide tentative evidence that they have partial ignorance requirements.

Regarding (ii) – How are these alternatives pronounced? – I will first point out that there is some independent justification for the claim that there are presuppositional property ascriptions of the kind that *Op<sup>presup</sup>* brings about, which comes from the phenomenon of nonrestrictive adjectival modification (Bolinger 1967, Larson & Marušič 2004, Umbach 2006, Morzycki 2008, Leffel 2014 a.o.). This phenomenon is discussed in connection to examples like (51a-b) based on Bolinger 1967.

- (51) a. I saw a deadly cobra  
b. My amazing spouse helped me make it

In a context where cobras are known to be deadly and the speaker is known to have only one spouse, *deadly* and *amazing* are nonrestrictive, that is, the reference of the containing determiner phrases is the same whether these adjectives are present or not. Based on such examples, it is not clear whether ‘nonrestrictive’ refers to a grammatical property of these modifiers or a property of their use in particular contexts like the one described – see Leffel 2014: §3 for extensive discussion of working linguists’ use of the term. Evidence in favor of analyzing at least certain cases of nonrestrictive modification as a grammatical phenomenon comes from syntactic structures that enforce a nonrestrictive reading. For example, in certain Romance languages including Italian, an intersective adjective-noun pairing like *sofisticati* + *amici* (‘sophisticated friends’) allows two

word orders. When the adjective appears prenominal, it is necessarily nonrestrictive, whereas when it appears postnominally, it can be restrictive or nonrestrictive (Morzycki 2008, Cinque 2010, a.o.). Thus, (52a), unlike (52b), entails that Maria's friends are sophisticated and is infelicitous in response to the *quali*-question in (53) in the same way that the unmodified definite plural in (52c) is.

- (52) a. I sofisticati amici di Maria sono andati alla festa  
 the sophisticated friends of Maria have gone to.the party  
 Roughly: 'Maria's friends, who are sophisticated, went to the party'
- b. Gli amici sofisticati di Maria sono andati alla festa  
 the friends sophisticated of Maria have gone to.the party  
 'Maria's sophisticated friends went to the party'
- c. Gli amici di Maria sono andati alla festa  
 the friends of Maria have gone to.the party  
 'Maria's friends went to the party'

- (53) A: Quali amici di Maria sono andati alla festa?  
 which friends of Maria have gone to.the party  
 'Which of Maria's friends went to the party?'

B: #(52a) / ✓(52b) / #(52c)

(Abenina-Adar & Mantenuto 2020)

*I sofisticati amici di Maria*, 'Maria's friends, who are sophisticated', in (52a) is a good candidate for an expression to be analyzed as containing an adjective in the position where it is interpreted as the argument of *Op<sup>presup</sup>*. Returning to the pronunciation of alternatives, given that *C*-proforms are unpronounced, the expected pronunciation of the alternatives to *whatever book Kim bought* would be expressions like *the book Kim bought*. It is conceivable that an expression like *War & Peace* is systematically preferred over an expression like *the book Kim bought*, on the suggested parse, given their referential equivalence when the presuppositionally ascribed property is  $[\lambda w : w \in D_s . [\lambda x : x \in D_e . x \text{ is W\&P in } w]]$ . As for free relative clauses that lack a sortal noun head, such as *whoever Kim saw* or *whatever Kim saw*, I assume that their alternatives may have pronunciations like *the person Kim saw* and *what Kim saw*, which are presumably ways to pronounce the relevant

definites with presuppositional property ascriptions, though again, *Pat* and *War & Peace* may be systematically preferred, referentially equivalent expressions.

Finally, regarding (iii) – Does the alternative-based analysis require commitment to the claim that there is a disjunction at some level of representation of *whatever*-DPs? – the answer is negative. *Whatever*-DPs can instead be analyzed as containing an alternative-evoking terminal node, as in Condoravdi 2008, 2015 and Abenina-Adar 2019b (following precedents in the literature on free choice and polarity like Kadmon & Landman 1993, Krifka 1995, Lahiri 1998, Chierchia 2013, a.o.). For example, in Abenina-Adar 2019b, I adopt the common assumption that *ever* is an alternative-evoking expression and propose that at LF, it occupies a position where it is interpreted like the  $(e, t)$ -argument of  $\text{Op}^{\text{presup}}$ ; viewing *ever* as a possible pronunciation for a disjunction of *C*-proforms reconciles these two proposals. I have opted for the current implementation to maintain uniformity with the LFs of *some* *N or other*-DPs, discussed in §3.

I have presented all of the alternative-based account’s assumptions concerning the grammatical representation of *whatever*<sup>AA</sup>-DPs; a *whatever*<sup>AA</sup>-DP denotes some referent, presupposing something relatively general about its identity, and as a result of assumptions about  $\text{ALT}_c$ , it always has LFs among its alternatives that denote the same referent but that presuppositionally identify the referent more precisely. I take (54) to be an utterance context that induces an assignment of values to *C*-proforms like in (55). Given that (54a-b) receive equivalent truth conditions and the identifying presupposition of the *whatever*<sup>AA</sup>-DP is satisfied (‘it’s *War & Peace*’ entails ‘it’s *War & Peace, Anna Karenina, or Resurrection*’), what accounts for the oddness of (54a)?

(54) *Context: Kim bought a book at a speciality Tolstoy shop that only sells War & Peace, Anna Karenina, and Resurrection. The book that Kim bought is War & Peace.*

- a. #Whatever book she bought is over there on the shelf
- b. The book she bought is over there on the shelf

(55)  $[\lambda w : w \in D_s . [\lambda x : x \in D_e . x \text{ is W\&P in } w]]$ ,  
 $[\lambda w : w \in D_s . [\lambda x : x \in D_e . x \text{ is AK in } w]]$ ,  
 $[\lambda w : w \in D_s . [\lambda x : x \in D_e . x \text{ is R in } w]]$

### 2.3.2 Infelicity by Maximize Presupposition violation

Hawkins 1978 and Heim 1991 note that indefinites are worse than definites in contexts like (56a-b).

- (56) a. I will go to the beach today because {#a / the} sun is shining  
b. A: There was exactly one plant on my desk.  
B: I know. I watered {#a / the} plant on your desk

Both the (i)-type and the (ii)-type deductions in (57a-b) sound valid, showing that with the uniqueness premises in the (ii)-type (which are common knowledge in the contexts of (56a-b)), the two statements are equivalent.

- (57) a. (i) The sun is shining  
Therefore, a sun is shining  
(ii) A sun is shining  
There is exactly one sun  
Therefore, the sun is shining  
b. (i) I watered the plant on your desk  
Therefore, I watered a plant on your desk  
(ii) I watered a plant on your desk  
There was exactly one plant on your desk  
Therefore, I watered the plant on your desk

What is wrong with B's using *a sun* to convey that the sun is shining and what is wrong with B's using *a plant on your desk* to convey that B watered the plant? Heim 1991 considers several possible reasons why indefinites might be odd in these contexts. One of these is that indefinites carry an anti-uniqueness presupposition, i.e. a presupposition that there is more than one entity of the kind described by *a*'s restrictor. This would make the use of the *a*-DPs a presupposition failure in the above examples. However, Heim notes that examples like *Yesterday, I caught a 20ft catfish*

can be felicitous even if we don't take for granted that there is more than one 20ft catfish, nor do we spontaneously accommodate this information after accepting the statement, suggesting that an anti-uniqueness presupposition is too strong. The validity of (57a-b) suggests the same thing.

The approach Heim takes is to propose a new pragmatic principle, requiring speakers who intend to convey a message to use the presuppositionally strongest alternative to convey that message. The principle is commonly called 'Maximize Presupposition'; (58) is the formulation I assume, after Sauerland 2008.

(58) Maximize Presupposition

For every utterance context  $c$  and for every declarative LF  $\phi$ ,  $\phi$  is felicitous in  $c$  only if there is no  $\psi \in \text{ALT}_c(\phi)$  such that

- a.  $CK_c \subseteq \{w \in D_s \mid \llbracket \psi \rrbracket^{g_c}(w) \text{ is defined}\}$
- b.  $\{w \in D_s \mid \llbracket \psi \rrbracket^{g_c}(w) \text{ is defined}\} \subset \{w \in D_s \mid \llbracket \phi \rrbracket^{g_c}(w) \text{ is defined}\}$
- c.  $\{w \in CK_c \mid \llbracket \psi \rrbracket^{g_c}(w)\} = \{w \in CK_c \mid \llbracket \phi \rrbracket^{g_c}(w)\}$

This version of Maximize Presupposition is formulated as a felicity condition, like the Bridge Principle and the Appropriateness Condition, unlike Heim's original formulation as a Gricean maxim (i.e. a defeasible assumption about cooperative conversation practices). This is because, as many works on Maximize Presupposition have pointed out, apparent violations of Maximize Presupposition do not lead to the effects expected under a Gricean maxim construal; whereas obvious violations (or 'floutings') of other Gricean maxims lead to additional inferences, obvious violations of Maximize Presupposition like *a sun is shining* lead to infelicity<sup>9</sup>.

A different approach to the data is explored in Hawkins 1991. According to Hawkins, *a*-DPs are infelicitous because they pragmatically convey (rather than presuppose) anti-uniqueness, which may clash with contextually supplied information. Adopting a 'Russellian' view, where *the*-DPs are used to assert existence-uniqueness, he proposes that a comparison between *a* and *the* produces

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<sup>9</sup>For discussion of this point, see Lauer 2016, which argues against the felicity-condition construal of Maximize Presupposition and proposes (in an optimization-based pragmatics) that Maximize Presupposition is a selfish preference speakers happen to have, which may trade off with other preferences to produce attested felicitous 'violations'.



an obviously false Quantity-based implicature. Heim questions this analysis, because once the contextually supplied information that there is only one sun/plant are taken into account, Quantity, which cares about alternatives' relative informativeness, does not distinguish between *the* and *a*. But more recently, Magri 2009a, 2009b proposes based on different facts that Quantity implicatures are computed mandatorily, without recourse to contextually supplied information. Perhaps this line of explanation could be made compatible with the Fregean, presuppositional view of uniqueness adopted here once presupposition accommodation is factored into Quantity-based reasoning, as in Schlenker 2012, Leahy 2016.

I do not have anything to contribute the question of how Maximize Presupposition should be formulated. I merely show that an account of Maximize Presupposition-effects that explains cases like *#a / the sun is shining* is applicable in determining the felicity of a sentence containing a *whatever*<sup>AA</sup>-DP. This is because the syntax-semantics that the alternative-based account assigns a *whatever*<sup>AA</sup>-DP involves an alternative-evoking part (the *C*-disjunction), and the alternatives for a *whatever*<sup>AA</sup>-DP determined on the basis of its *C*-disjunction denote the same thing but presuppose something stronger. The use of a *whatever*<sup>AA</sup>-DP in an utterance context that satisfies one of its alternatives' presuppositions violates Maximize Presupposition and has the same status as, e.g., *a sun is shining*. Note that the violation of Maximize Presupposition does not depend on the assignment of values to the *C*-proforms. Every *whatever*<sup>AA</sup>-DP LF with *C*-proforms that meet *or*<sup>C</sup>'s requirements ends up with a set of alternatives that interact with Maximize Presupposition to determine its felicity.

The alternative-based account provides a different explanation for the apparent flexibility in who has to be ignorant. Recall that  $CK_c$  in the definition of Maximize Presupposition represents what the interlocutors take for granted with one another. The use of *whatever book Kim bought is over there on the shelf* complies with Maximize Presupposition so long as the interlocutors do not collectively take for granted which relevant identifying property the referent has. All of the contexts in (59a-c) satisfy the Maximize Presupposition-derived requirements of their *whatever*<sup>AA</sup>-DPs. The speaker's ignorance in (59a), the addressee's ignorance in (59b), and the lack of agreement between speaker and addressee in (59c) all guarantee a lack of common knowledge.

- (59) a. *Context: I see you reading a book*  
 Whatever book you are reading looks interesting
- b. Here is a hint: whatever book I bought you was originally written in Russian
- c. A: The book that Kim bought is *War & Peace*  
 B: No, it's *Anna Karenina*  
 A: In any case, whatever book she bought is over there on the shelf

Furthermore, the alternative-based account does not have to appeal to constraints on modal flavor to rule out deontic readings with examples like *whatever book Kim bought is over there on the shelf*; the *whatever*<sup>AA</sup>-DP does not, on its own, introduce any modality.

## 2.4 Challenges for the modal account

This section presents some of the test cases that can be used to distinguish between accounts. It elaborates on the incorrect predictions made by the modal account for *whatever*-DPs that are bound into by *every*, and it presents a conceptual argument based on the interpretation of *whatever*-DPs in the scope of *always*, like *whatever book Kim buys is always expensive*, favoring the alternative-based account.

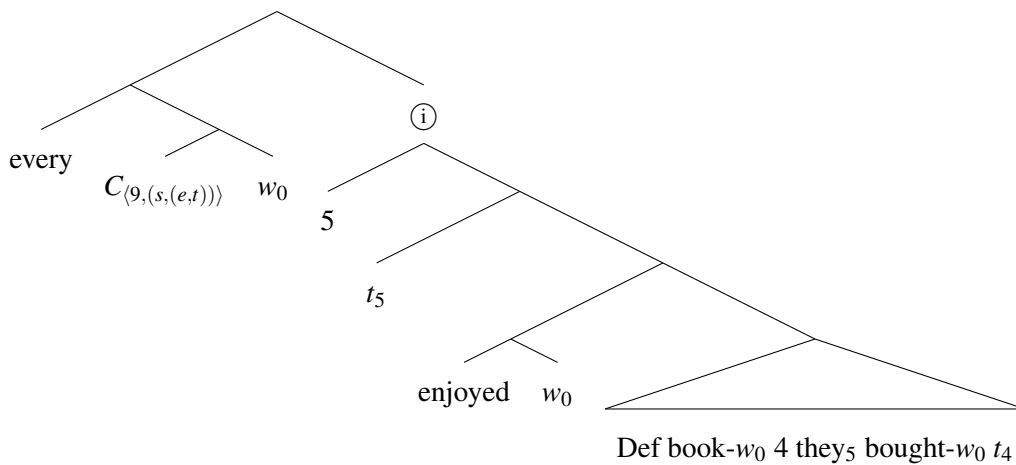
To understand the challenge posed to the modal account by *whatever*-DPs that are bound into by *every*-DPs, we need to understand how presuppositions are integrated into universally-quantified statements. Given uncontroversial judgments about sentences like (60), universally-quantified statements are commonly held to project universal presuppositions (see Heim 1983 – also Chemla 2009 for recent experimental evidence). This means that they presuppose that every individual in the set quantified over by the universal, which must be non-empty, satisfies the presuppositions of its nuclear scope. This presupposition is captured by the lexical entry in (61), a static encoding of the heritage property of *every* in dynamic semantics.

- (60) Every nation<sub>i</sub> cherishes its<sub>i</sub> king  
 Presupposes: ‘For every nation *x*, *x* has exactly one king’

- (61) For every  $P, Q \in D_{(e,t)}$ :  
 $\llbracket \text{every} \rrbracket(P)(Q)$  is defined only if  $\exists x[P(x)] \wedge \forall x[P(x) \rightarrow Q(x)]$  is defined].  
 If defined,  $\llbracket \text{every} \rrbracket(P)(Q) = \text{True}$  iff  $\forall x[P(x) \rightarrow Q(x)]$ .

(62) gives an LF for *everybody<sub>i</sub> enjoyed the book they<sub>i</sub> bought* with a *the*-DP; *every*'s contextual restrictor supplies *every*'s *P*-argument and  $\textcircled{i}$ , an LF formed by the syntactic operation of quantifier raising and interpreted by predicate abstraction, supplies the *Q*-argument. Given the definition of predicate abstraction,  $\textcircled{i}$  denotes the partial function in (63), defined only for individuals who bought exactly one book in the world of evaluation. *Every*'s presupposition is that this function is defined for every individual that *every* quantifies over – that is, for every  $C_9$ -individual  $x$ ,  $x$  bought exactly one book. (62) intuitively presupposes this.

- (62) Everybody enjoyed the book they bought



- Denotes: 'For every  $C_9$ -individual  $x$ ,  $x$  enjoyed the book  $x$  bought'
- Presupposes: 'For every  $C_9$ -individual  $x$ ,  $x$  bought exactly one book'

- (63) For every assignment  $g$ ,

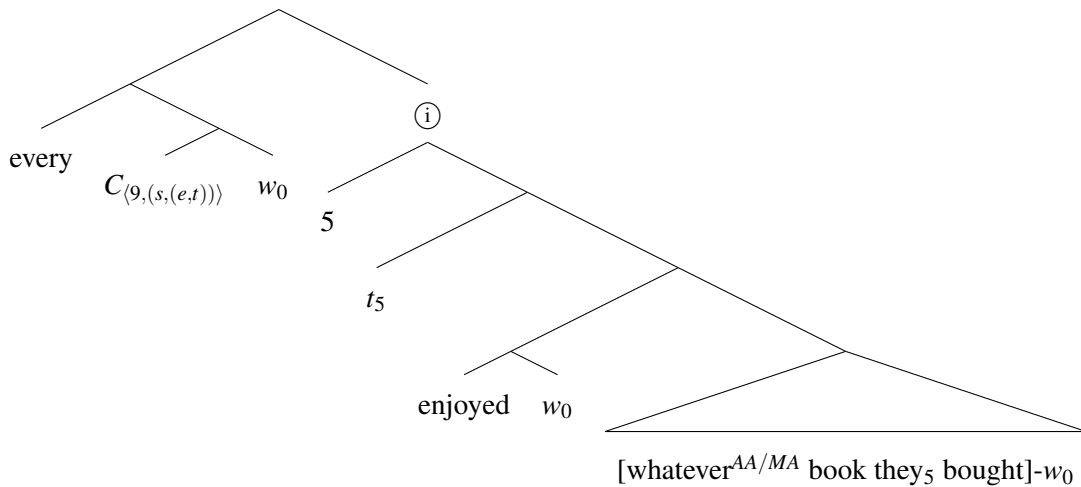
$$\llbracket \textcircled{i} \rrbracket^g = [\lambda x : x \in D_e \wedge \exists! y [y \text{ is a book in } g(0) \wedge x \text{ bought } y \text{ in } g(0)]]$$

$$x \text{ enjoyed } t y [y \text{ is a book in } g(0) \wedge x \text{ bought } y \text{ in } g(0)] \text{ in } g(0)]$$

(64) gives the LF I assume for *everybody<sub>i</sub> enjoyed whatever book they<sub>i</sub> bought*; *every*'s *P*-argument is supplied by a contextual restrictor proform and its *Q*-argument is the partial function that  $\textcircled{i}$

denotes. I intend for [whatever<sup>MA/AA</sup> book they bought] to abbreviate the LFs that the modal and alternative-based accounts respectively assign to *whatever*-DPs, as spelled out in the preceding subsections (i.e. with *unsettled/or*<sup>C</sup>, along with all of their property- and modal base-arguments, and Op<sup>presup</sup>); [ $\phi$ ]-*w* indicates that all of the world proforms in the LF  $\phi$  are *w*. The only difference between the sub-LF corresponding to the *whatever*-DP in (64) and the ones presented in previous subsections is that a bound pronoun, *they*<sub>5</sub>, replaces the proper name *Kim*.

(64) Everybody enjoyed whatever book they bought



(65)-(66) respectively spell out the meanings derived by the alternative-based account (AA) and the modal account (MA) from the LF in (64); I will assume that there are only three relevant identifiers, and I take the modal base function that the modal account introduces to be a kind of indexical for  $CK_c$ .

(65) Everybody enjoyed whatever<sup>AA</sup> book they bought

- a. Denotes: ‘For every  $C_9$ -individual  $x$ ,  $x$  enjoyed the book  $x$  bought’
- b. Presupposes: ‘For every  $C_9$ -individual  $x$ , the book  $x$  bought is  $C_1$  or  $C_2$  or  $C_3$ ’

- (66) Everybody enjoyed whatever<sup>MA</sup> book they bought
- a. Denotes: ‘For every  $C_9$ -individual  $x$ ,  $x$  enjoyed the book  $x$  bought’
  - b. Presupposes: ‘For every  $C_9$ -individual  $x$ , it is common knowledge that the book  $x$  bought is  $C_1$  or  $C_2$  or  $C_3$  and it is not common knowledge that the book  $x$  bought is  $C_1$  and it is not common knowledge that the book  $x$  bought is  $C_2$  and it is not common knowledge that the book  $x$  bought is  $C_3$ ’

Furthermore, the alternative-based account assigns (65) the alternatives in (67).

- (67) For every utterance context  $c$ ,  $\text{ALT}_c((65)) \supseteq \{\psi_1, \psi_2, \psi_3\}$  such that:
- a.  $\psi_1$ 
    - (i) Denotes: ‘For every  $C_9$ -individual  $x$ ,  $x$  enjoyed the book  $x$  bought’
    - (ii) Presupposes: ‘For every  $C_9$ -individual  $x$ , the book  $x$  bought is  $C_1$ ’
  - b.  $\psi_2$ 
    - (i) Denotes: ‘For every  $C_9$ -individual  $x$ ,  $x$  enjoyed the book  $x$  bought’
    - (ii) Presupposes: ‘For every  $C_9$ -individual  $x$ , the book  $x$  bought is  $C_2$ ’
  - c.  $\psi_3$ 
    - (i) Denotes: ‘For every  $C_9$ -individual  $x$ ,  $x$  enjoyed the book  $x$  bought’
    - (ii) Presupposes: ‘For every  $C_9$ -individual  $x$ , the book  $x$  bought is  $C_3$ ’

Both accounts are able to explain the infelicity of the *whatever*-DP in the context repeated in (68).

- (68) *Context: The book that Kim bought is War & Peace, the book that Pat bought is War & Peace, and the book that Lee bought is War & Peace.*  
 #Everybody enjoyed whatever book they bought

Suppose that the contextually provided information determines that the identifier  $C_1$  is  $[\lambda w : w \in D_s . [\lambda x : x \in D_e . x \text{ is W\&P in } w]]$ . According to the alternative-based account, (68) violates Maximize Presupposition because the logically stronger presupposition of an equally-informative

alternative  $\psi_1$  is satisfied in the context. According to the modal account, (68) is a presupposition failure because the presupposition in (66) is not satisfied if it is common knowledge that, for example, the book that Kim bought is *War & Peace*. But the modal account incorrectly predicts the sentence to be a presupposition failure in (69)-(70) for the same reason. The modal account has a strong requirement, forbidding the modal base from identifying anybody's book.

(69) *Context: The book that Kim bought is War & Peace, the book that Pat bought is Anna Karenina, and the book that Lee bought is Resurrection.*

Everybody enjoyed whatever book they bought

(70) *Context: The book that Kim bought is War & Peace, and the book that Pat bought is War & Peace. I don't know what book Lee bought.*

Everybody enjoyed whatever book they bought

In contrast, the alternative-based account predicts (69), (70), and (71) to be felicitous, since Maximize Presupposition is not violated; it is not common knowledge that for every  $C_9$ -individual  $x$ , the book  $x$  bought is  $C_n$ , for some relevant identifier  $C_n$ .

(71) *Context: The book that Kim bought is the same as the book that Pat bought, which is the same as the book that Lee bought. I don't know whether it was War & Peace, Anna Karenina, or Resurrection.*

Everybody enjoyed whatever book they bought

These examples highlight the undergeneration problem faced by the modal account; it rules out felicitous uses of *whatever*-DPs that are bound into by *every*-DPs.

A second challenge for the modal account (specifically, a modified version of it that recasts a proposal in Dayal 1997 and von Stechow 2000) comes from the interaction between *whatever*-DPs and quantificational adverbs like *always*. The way that the modal account handles certain readings of *whatever*-DPs that arise when they occur in the scope of quantificational adverbs gives rise to the

expectation that certain unattested readings actually exist. Without further constraints, the modal account overgenerates; a conceptual advantage of the alternative-based account is that it does not give rise to the same expectation.

Consider (72). It has a meaning that, roughly speaking, attributes to Kim a habit of buying expensive books. On this reading, the definite subject is interpreted as dependent on the quantificational adverb *always*, in the sense that it refers to the unique book that Kim buys in any given occasion in the domain of *always* (like *the talk* in *the talk is always good*, as a description of a colloquium series); I will say that the *whatever*-DP has a ‘dependent reading’.

- (72)    Whatever book Kim buys is always expensive  
           Implies: ‘Across occasions, Kim buys different books’

To account for the implications of dependent readings, Dayal 1997 and von Stechow 2000 suggest that the modal base relative to which the *whatever*-DP is evaluated matches that of the adverb, so that the *whatever*-DP’s modal implication is that the referent’s identity varies across the set of occasions quantified over by the adverb<sup>10</sup>. In order to spell this out, the compositional assumptions of the modal account need to be modified; the modal introduced by the *whatever*-DP must operate on the intension of the definite rather than its extension, as previously assumed. The intension of a definite is a type  $(s, e)$ -function commonly called an ‘individual concept’.

(73) is the modified definition of *unsettled, unsettled*’, used just for these cases. As before, it takes a world, a sequence of properties, and a modal base, and it requires the properties to be identifiers. In contrast, it now takes the intension of a definite, which is defined at the evaluation world, which has at least one identifying property at every world in the modal base, and for which there is no identifier that holds of the value of the concept at every world in the modal base. If defined, it returns the value of the concept at the evaluation world. The modified LF for a *whatever*<sup>MA</sup>-DP is as in (74); the given meaning assumes that  $MB_{\langle 3, (s, (s, t)) \rangle}$  is an indexical for  $CK_c$ .

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<sup>10</sup>This discussion is based on the analysis of *people usually honor whoever gets elected* in Dayal 1997: 112 and von Stechow 2000: 37.

(73) For every  $w \in D_s$ ,  $C_1 \dots C_n \in D_{(s,(e,t))}$  ( $n \geq 2$ ),  $MB \in D_{(s,t)}$ :

$\llbracket \text{unsettled}' \rrbracket(w)(C_1) \dots (C_n)(MB)$  is defined only if

- a.  $MB \neq \emptyset$
- b.  $\forall w' \in MB, \forall C \in \{C_1, \dots, C_n\}$ 
  - (i)  $\exists x[C(w')(x)]$
  - (ii)  $\neg \exists C' \in \{C_1, \dots, C_n\}[C \neq C' \wedge \exists x[C(w')(x) \wedge C'(w')(x)]]$

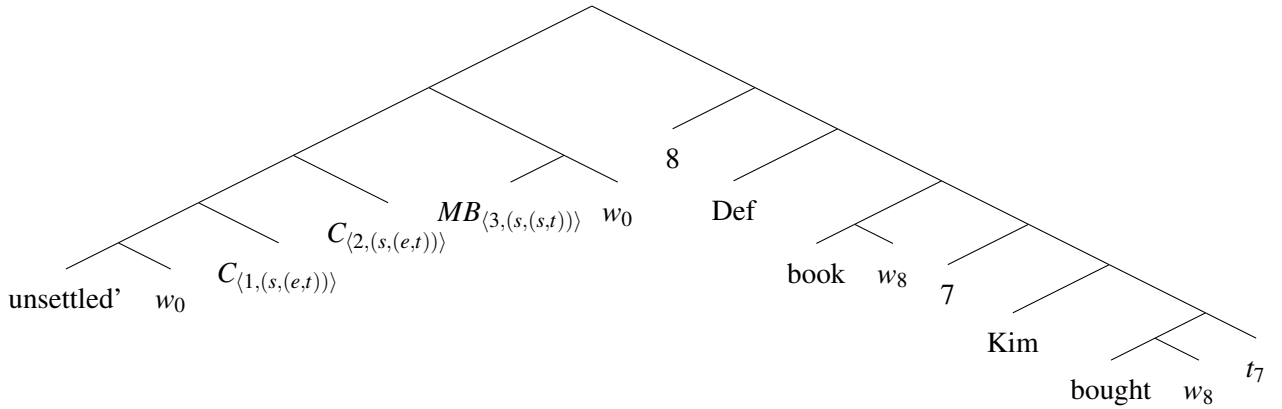
If defined, then for every  $i \in D_{(s,e)}$ :

$\llbracket \text{unsettled}' \rrbracket(w)(C_1) \dots (C_n)(MB)(i)$  is defined only if

- a.  $i(w)$  is defined
- b.  $\forall w' \in MB[\exists C \in \{C_1, \dots, C_n\}[C(w')(i(w'))]]$
- c.  $\neg \exists C \in \{C_1, \dots, C_n\}[\forall w' \in MB[C(w')(i(w'))]]$

If defined,  $\llbracket \text{unsettled}' \rrbracket(w)(C_1) \dots (C_n)(MB)(i) = i(w)$

(74)



- a. Denotes: ‘The book Kim bought in  $w_0$ ’
- b. Presupposes: ‘For every  $CK_c$ -world  $w$ , the book Kim bought in  $w$  is  $C_1$  or  $C_2$  in  $w$ , and it’s not the case that for every  $CK_c$ -world  $w'$ , the book Kim bought in  $w'$  is  $C_1$  in  $w'$ , and it’s not the case that for every  $CK_c$ -world  $w''$ , the book Kim bought in  $w''$  is  $C_2$  in  $w''$ ’

Here is how the modal account captures the dependent reading. For simplicity, suppose that *always* is a universal modal that quantifies over set of worlds determined by a modal base function

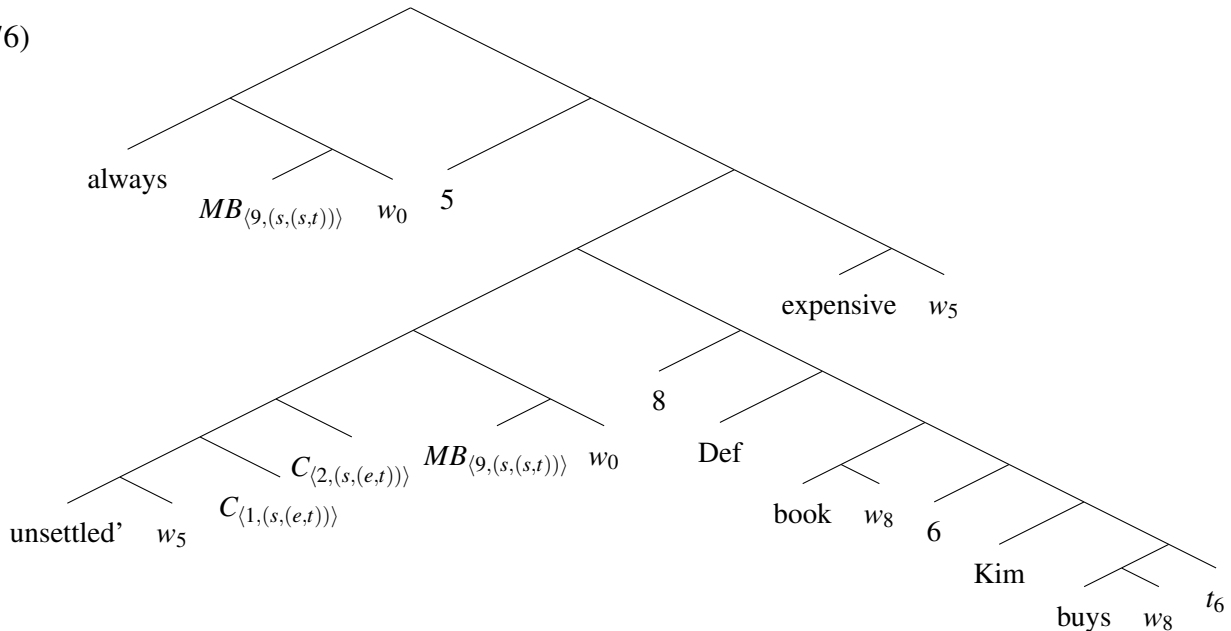


proform<sup>11</sup>, and like *every*, it projects universal presuppositions; an *always*-statement presupposes that every *MB*-world satisfies the presuppositions of the nuclear scope, as in (75).

- (75) For every  $w \in D_s$ ,  $MB \in D_{(s,t)}$ ,  $p \in D_{(s,t)}$  :  
 $\llbracket \text{always} \rrbracket(w)(MB)(p)$  is defined only if  $MB \neq \emptyset \wedge \forall w' \in MB[p(w')$  is defined].  
 If defined,  $\llbracket \text{always} \rrbracket(w)(MB)(p) = \text{True}$  iff  $\forall w' \in MB[p(w')$

If a *whatever*<sup>MA</sup>-DP appearing in the scope of *always* has the same modal base extension as *always*, as in the LF in (76), then the initially presented implication arises.

(76)



- a. Denotes: ‘For every *MB*-world  $w$ , the book Kim buys in  $w$  is expensive in  $w$ ’
- b. Presupposes: ‘For every *MB*-world  $w$ , the book that Kim buys in  $w$  is  $C_1$  or  $C_2$  in  $w$ , and it’s not the case that for every *MB*-world  $w'$ , the book Kim buys in  $w'$  is  $C_1$  in  $w'$ , and it’s not the case that for every *MB*-world  $w''$ , the book Kim buys in  $w''$  is  $C_2$  in  $w''$ ’

This is an appropriate meaning for the dependent reading; it implies that across worlds (or more in-

<sup>11</sup>More accurately, world-time pairs or situations, as in Berman 1987 a.o. This detail is irrelevant for the point presently being made about the modal account, though I will introduce it shortly to properly evaluate the predictions of the alternative-based account.

tuitively, occasions), Kim buys different books. The problem for this account arises from readings of similar sentences where the occasion/time of the eventuality in the *whatever*-DP's restrictor is understood to be independent of the occasions/times quantified over by *always*. This independence can be brought out by changing the tense to *bought*, as in (77). The relevant reading of (77) is the one that, roughly speaking, attributes perpetual expensiveness to a single bought book (suppose we are talking about the book Kim bought yesterday and saying that, in general, it never goes on sale). I will say that it has an 'independent reading'<sup>12</sup>.

(77) Whatever book Kim bought is always expensive

The problem is that on an independent reading, the *whatever*-DP requires ignorance, as shown by the contrast between (78a-b). Although both contexts supply that Kim buys different books across occasions, felicity of the *whatever*-DP on an independent reading is determined only by whether the identity of the single book that was bought is known.

(78) a. *Context: Every Monday, Kim buys a copy of War & Peace and every Friday, she buys a copy of Anna Karenina. These are books that never go on sale. Kim bought a book today, but I don't know which; I don't know whether today is Monday or Friday.*

Whatever book Kim bought is always expensive

b. *Context: Every Monday, Kim buys a copy of War & Peace and every Friday, she buys a copy of Anna Karenina. These are books that never go on sale. Today is Monday, so Kim bought War & Peace today.*

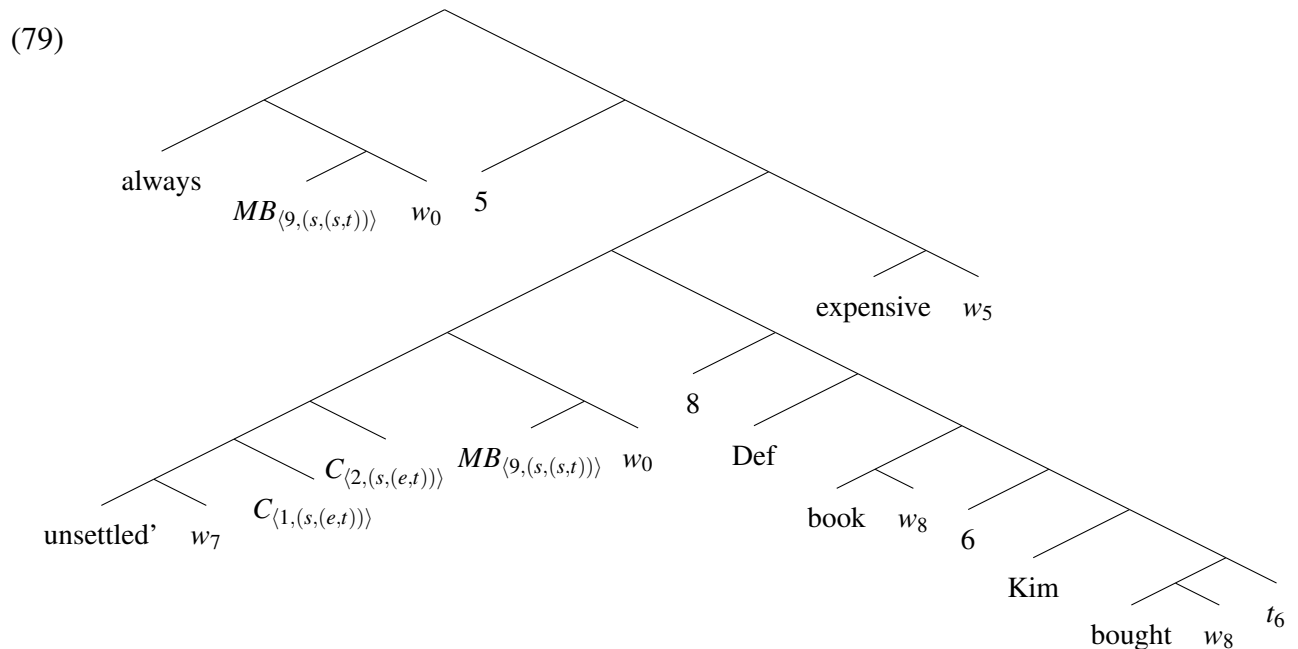
#Whatever book Kim bought is always expensive

The modified modal account can certainly generate the independent reading's attested modal inference; it arises if the *whatever*-DP's modal base argument is  $CK_c$  and not the quantificational

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<sup>12</sup>*Whatever book Kim buys* may receive an independent reading (*there's some book that Kim won't stop buying, even though it's never on sale. Whatever book Kim (always) buys is always expensive.*), and *whatever book Kim bought* may receive a dependent reading (*every Monday, Kim buys a book from store A, and every Tuesday, she looks up the price of that same book in store B. Whatever book she bought (the day before) is always expensive*). The discussion concerns the examples only on the intended dependent and independent readings.

domain of *always*. However, the modified modal account does not guarantee that the *whatever*-DP's modal base does *not* match the domain of *always* on the independent reading and therefore, without further constraints, it admits an unattested reading. In particular, the LF for (77) given in (79), where *unsettled'* receives some free past world variable,  $w_7$ , has the same presupposition as the dependent LF because its modal base argument continues to match the domain of *always*. There is a difference in truth conditional meaning between (76a) and (79a); roughly speaking, the former describes a habit of expensive book buying, whereas the latter attributes perpetual expensiveness to a particular book. But there is no necessary connection between these truth conditions and the contrasting presuppositions evidenced by (78a-b).

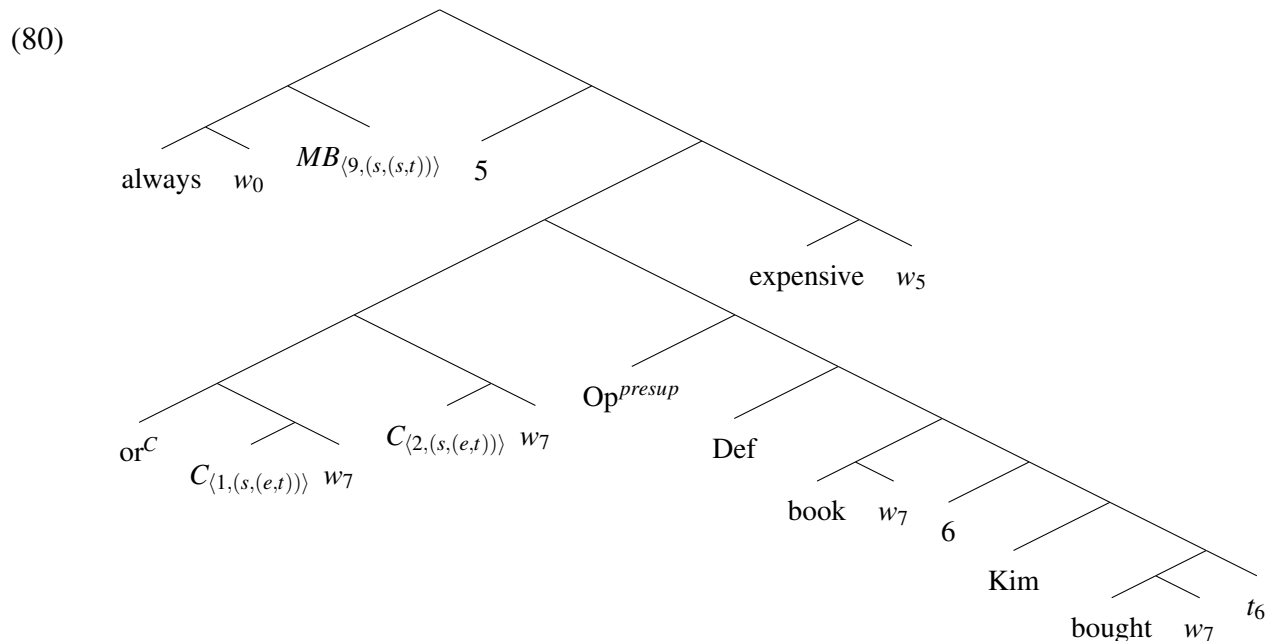


- a. Denotes: ‘For every *MB*-world  $w$ , the book Kim bought in  $w_7$  is expensive in  $w$ ’
- b. Presupposes: ‘For every *MB*-world  $w$ , the book that Kim buys in  $w$  is  $C_1$  or  $C_2$  in  $w$ , and it’s not the case that for every *MB*-world  $w'$ , the book Kim buys in  $w'$  is  $C_1$  in  $w'$ , and it’s not the case that for every *MB*-world  $w''$ , the book Kim buys in  $w''$  is  $C_2$  in  $w''$ ’

Thus, without elaboration, the modified modal account does not rule out the *whatever*-DP in the context in (78b); the context satisfies the presupposition of (79) that across occasions Kim buys different books (on Mondays, it’s *War & Peace* and on Fridays, it’s *Anna Karenina*), and it verifies

the truth conditions that on each of these occasions, *War & Peace* is expensive. Note that it is conceivable that the LF in (79) is ruled out for independent reasons; for example, there may be a principled reason that *unsettled'* having a free world variable implies having a modal base that does not match that of *always*. But an advantage of the alternative-based account is that it does not give rise to the expectation that readings as in (79) can arise.

Showing how the alternative-based account explains these facts requires a more sophisticated analysis of independent readings of definites in the scope of *always*; in particular, the current formulation of Maximize Presupposition is not straightforwardly applicable to the LF in (80), where a *whatever*-DP is evaluated at a world determined by a free proform  $w_7$  that has no relation to  $w_0$ <sup>13</sup>.



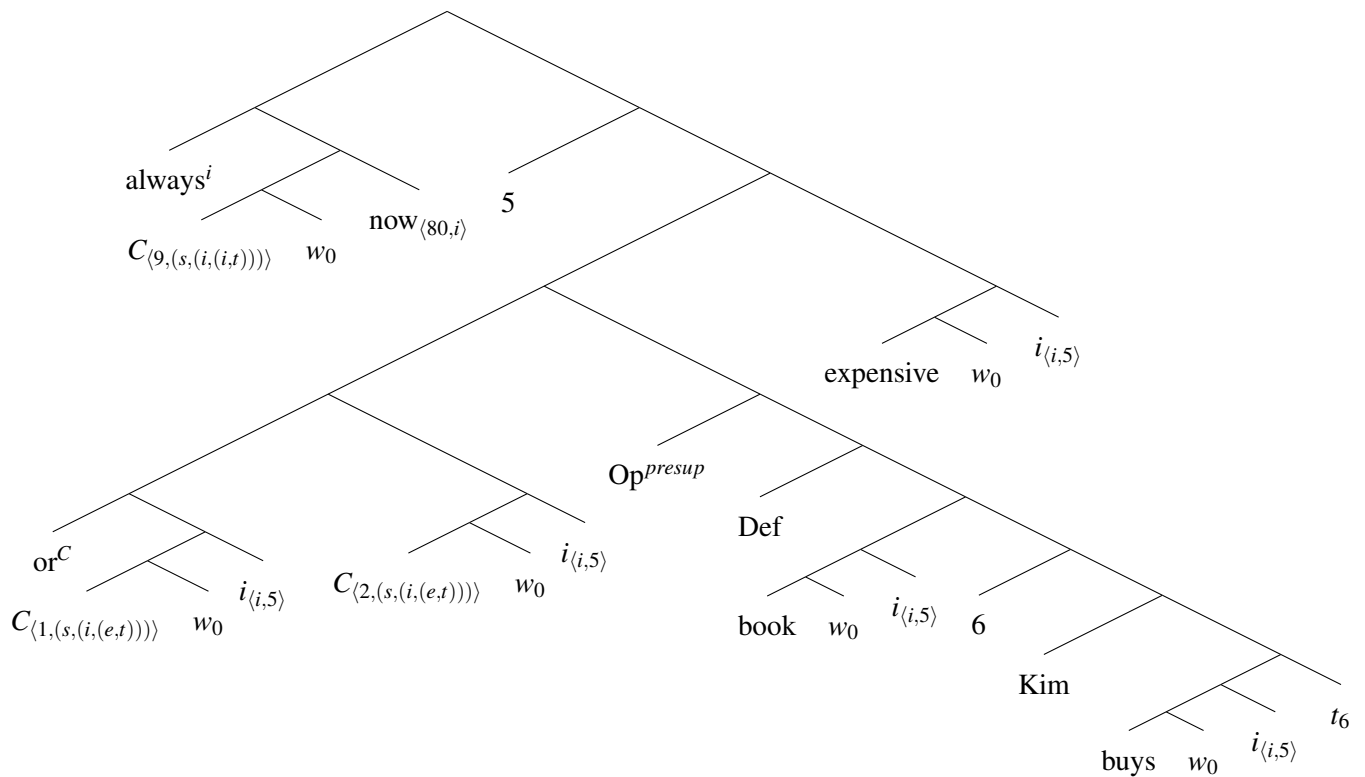
To explain the felicity conditions associated with independent readings under the alternative-based

<sup>13</sup>Suppose that  $\psi_1$  is the alternative to (80) where [  $C_{(1,(s,(e,t)))} w_7$  ] replaces the  $C$ -disjunction and  $\psi_2$  is the alternative where [  $C_{(2,(s,(e,t)))} w_7$  ] does so. For every utterance context  $c$ , if  $g_c(\langle 7, s \rangle)$  is not a world where the book Kim bought is  $C_1$  or  $C_2$ , then  $\{w \in D_s \mid \llbracket (80) \rrbracket^{g_c}(w) \text{ is defined} \} = \emptyset$ , violating the Bridge Principle (assuming  $CK_c \neq \emptyset$ ). If  $g_c(\langle 7, s \rangle)$  is a world where the book Kim bought is  $C_1$  or  $C_2$ , either  $\{w \in D_s \mid \llbracket (80) \rrbracket^{g_c}(w) \text{ is defined} \} = \{w \in D_s \mid \llbracket \psi_1 \rrbracket^{g_c}(w) \text{ is defined} \}$  and  $\{w \in D_s \mid \llbracket \psi_2 \rrbracket^{g_c}(w) \text{ is defined} \} = \emptyset$ , or else  $\{w \in D_s \mid \llbracket (80) \rrbracket^{g_c}(w) \text{ is defined} \} = \{w \in D_s \mid \llbracket \psi_2 \rrbracket^{g_c}(w) \text{ is defined} \}$  and  $\{w \in D_s \mid \llbracket \psi_1 \rrbracket^{g_c}(w) \text{ is defined} \} = \emptyset$ , depending on whether  $g_c(\langle 7, s \rangle)$  is a world where the book Kim bought is  $C_1$ , or a world where the book Kim bought is  $C_2$ . Thus, in every context where (80) is compliant with the Bridge Principle, it is trivially compliant with Maximize Presupposition, an unwelcome result given the felicity contrast shown in (78a-b).

account, I add semantic type  $i$ , for ‘temporal interval’, to the inventory of semantic types and further assume that intensions are functions looking for both  $s$ - and  $i$ -type arguments. *Always* <sup>$i$</sup>  has the revised meaning in (81), universally quantifying over a set of intervals rather than worlds<sup>14</sup>.

- (81) For every  $C \in D_{(i,t)}$ ,  $p \in D_{(i,t)}$  :  
 $\llbracket \text{always}^i \rrbracket(C)(p)$  is defined only if  $C \neq \emptyset \wedge \forall i \in C [p(i) \text{ is defined}]$ .  
 If defined,  $\llbracket \text{always}^i \rrbracket(C)(p) = \text{True}$  iff  $\forall i \in C [p(i)]$

(82) Dependent reading LF



- a. Denotes: ‘For every  $C_9$ -interval  $i$ , the book Kim buys at  $i$  is expensive at  $i$ ’  
 b. Presupposes: ‘For every  $C_9$ -interval  $i$ , the book Kim buys at  $i$  is  $C_1$  or  $C_2$  at  $i$ ’

<sup>14</sup>The implicit indexical  $now_{(80,i)}$  is never bound, and for every context  $c$  where  $g_c(\langle i, 80 \rangle)$  is defined,  $g_c(\langle i, 80 \rangle)$  is the time of utterance in  $c$ .

(83) For every utterance context  $c$ ,  $ALT_c((82)) \supseteq \{\psi_1, \psi_2\}$  such that

a.  $\psi_1$

(i) Denotes: ‘For every  $C_9$ -interval  $i$ , the book Kim buys at  $i$  is expensive at  $i$ ’

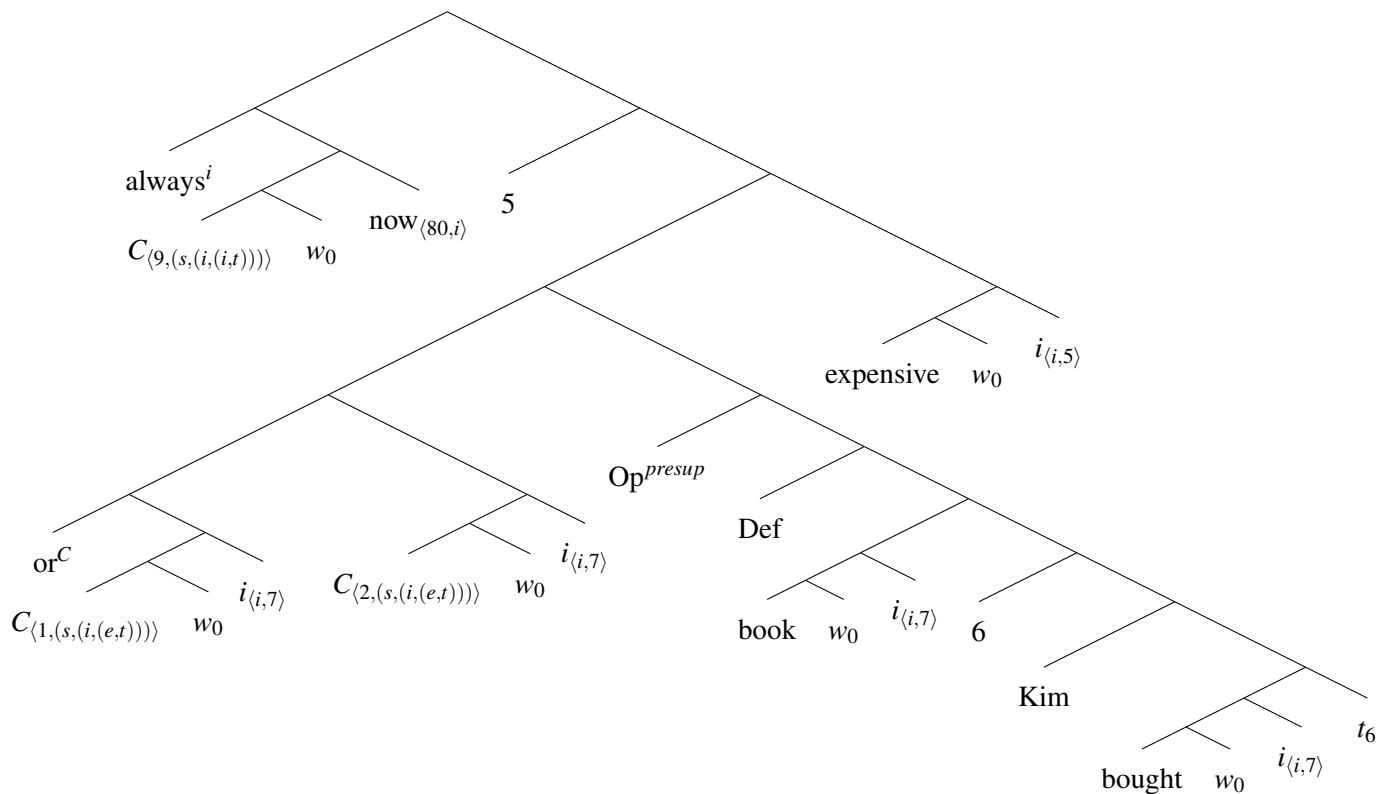
(ii) Presupposes: ‘For every  $C_9$ -interval  $i$ , the book Kim buys at  $i$  is  $C_1$  at  $i$ ’

b.  $\psi_2$

(i) Denotes: ‘For every  $C_9$ -interval  $i$ , the book Kim buys at  $i$  is expensive at  $i$ ’

(ii) Presupposes: ‘For every  $C_9$ -interval  $i$ , the book Kim buys at  $i$  is  $C_2$  at  $i$ ’

(84) Independent reading LF



a. Denotes: ‘For every  $C_9$ -interval  $i$ , the book Kim bought at  $i_7$  is expensive at  $i$ ’

b. Presupposes: ‘the book Kim bought at  $i_7$  is  $C_1$  or  $C_2$  at  $i_7$ ’

(85) For every utterance context  $c$ ,  $ALT_c((84)) \supseteq \{\psi_1, \psi_2\}$  such that

a.  $\psi_1$

(i) Denotes: ‘For every  $C_9$ -interval  $i$ , the book Kim bought at  $i_7$  is expensive at  $i$ ’

(ii) Presupposes: ‘The book Kim bought at  $i_7$  is  $C_1$  at  $i_7$ ’

- b.  $\psi_2$
- (i) Denotes: ‘For every  $C_9$ -interval  $i$ , the book Kim bought at  $i_7$  is expensive at  $i$ ’
  - (ii) Presupposes: ‘The book Kim bought at  $i_7$  is  $C_2$  at  $i_7$ ’

For the use of the dependent reading LF in (82) to comply with Maximize Presupposition, it cannot be common knowledge that at every relevant time, the book Kim buys is  $C_1$ , and it cannot be common knowledge that at every relevant time, the book Kim buys is  $C_2$ . In contrast, for the use of the independent reading LF in (84) to comply with Maximize Presupposition, the identity of the book bought at  $i_7$  (i.e. some past interval) cannot be known. The predicted possible readings are determined by whether *always*<sup>*i*</sup> binds into the *whatever*-DP because only a binding configuration like in the dependent reading LF, (82), affects how the identifying presupposition projects.

Summing up, the modal account faces an undergeneration problem, ruling out felicitous uses of *whatever*-DPs that are bound into by *every* when it is common knowledge that the individuals quantified over by *every* bought different books and the identity of at least one book is common knowledge. Without elaboration or further constraints, it also faces an overgeneration problem, predicting *whatever*-DPs in the scope of *always* that are understood independently to be licensed by the information that the identity of the referent varies across the domain quantified over by *always*. In both cases, the problem seems to be that the modal account analyzes *whatever*-DPs as introducing modality on their own.

## 2.5 Two other accounts

In this section, I will summarize two other accounts of *whatever*-DPs: the ‘unconditional’ account in Hirsch 2015 and extended in Šimík 2018 and the ‘postsuppositional’ account in Lauer 2009. I point out some advantages of the alternative-based account over the unconditional account with respect to their empirical coverage; I also provide some tentative evidence in favor for the assumption that a *C*-disjunction competes with its individual disjuncts (and not necessarily all possible disjunctions of its individual disjuncts i.e. not necessarily its subdomain alternatives) by contrasting the predictions of the alternative-based account with the unconditional account. The alternative-based

account and the postsuppositional account have been proposed to explain the same set of data, and I currently am not aware of how to arbitrate between them.

### 2.5.1 The unconditional account

The unconditional account of *whatever*-DPs is inspired by the analysis of so-called ‘unconditionals’ in Rawlins 2008, 2013; in English, these include constructions where an interrogative clause functions as a free adjunct to a main clause, as in (86a-c).

- (86)
- a. Whether or not Kim bought *War & Peace*, she spent a lot of money
  - b. Whether Kim bought *War & Peace* or *Anna Karenina*, she spent a lot of money
  - c. Whatever book Kim bought, she spent a lot of money

The unconditional account aims to capture the robust morphosyntactic similarity between interrogatives and *whatever*-DPs both in English and across languages that have non-ordinary (e.g. ignorance-requiring) definites formed with a WH-word. One of the ways in which these constructions are similar to one another, and different from other free-relative clauses and definites, is in hosting interrogative-specific morphology, like *ever*, *the hell*, and *else*, (87a-c) (Hirsch 2015)<sup>15</sup>.

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<sup>15</sup>Rawlins provides various arguments for viewing the unconditional adjunct as an interrogative clause. One of these is the fact that unconditionals license the ‘What was X doing Y’ idiom (Pullum 1973); as observed in Pullum & Huddleston 2002, this idiom does not occur in free-relative clauses, speaking against the unification attempted by the unconditional account of *whatever*-DPs. I set this issue aside.

- i.
  - a. What were they doing reading her mail?
  - b. \*She didn’t complain about whatever they were doing reading her mail
  - c. Whatever they were doing reading her mail, we have to get over it



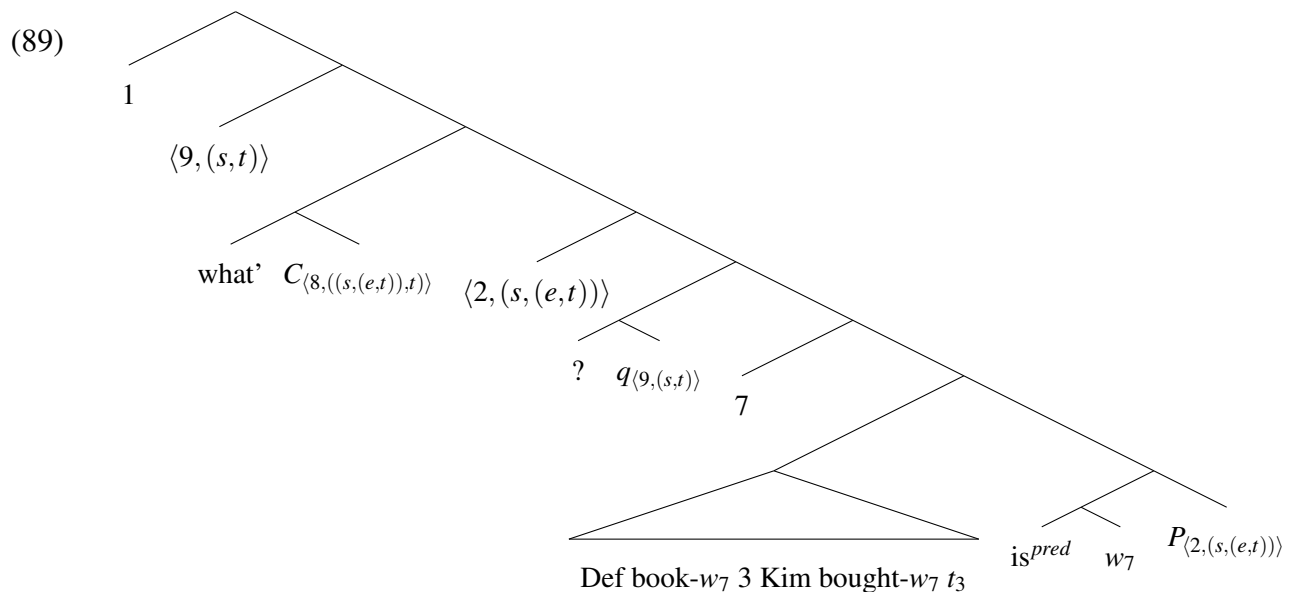
- (87) a. *Ever*
- (i) Whatever did Kim buy?
  - (ii) Kim bought the thing (\*ever) that was on the shelf
  - (iii) Kim bought whatever was on the shelf
- b. *The hell*
- (i) What the hell did Kim buy?
  - (ii) Kim bought the thing (\*the hell) that was on the shelf
  - (iii) Kim bought whatever the hell was on the shelf
- c. *Else*
- (i) What else did Kim buy?
  - (ii) Kim bought the thing (\*else) that was on the shelf
  - (iii) Kim bought whatever else was on the shelf

The two constructions also share many implications, including ignorance. When an unconditional's main clause is understood episodically, as on the intended readings of (86a-c), the unconditional implies ignorance with respect to the alternatives raised by the interrogative clause. Thus, (86a) implies ignorance about whether Kim bought *War & Peace* or not, (86b) implies ignorance about which member of {*War & Peace, Anna Karenina*} is the one that Kim bought, and (86c) implies ignorance about what the book that Kim bought is.

According to Hirsch, this similarity stems from the fact that utterances with *whatever*-DPs like (88a) are underlyingly unconditionals of the kind that (88b) more transparently reflects. The pronoun *it* in (88b) is an 'E-type pronoun' (Cooper 1979, a.o.) i.e. a pronoun that is interpreted as a definite description whose descriptive content is filled in by the context. According to Hirsch, in a *whatever*-DP LF, the descriptive content of the E-type pronoun is the property denoted by the overt *whatever*-DP's restrictor.

- (88) a. Whatever book Kim bought is over there on the shelf
- b. Whatever book Kim bought, it is over there on the shelf
- ≈ Whatever book Kim bought, it (the book Kim bought) is over there on the shelf

I will present my rendition of the unconditional account in several steps. It is modified from the original proposals in Hirsch 2015 and Šimík 2018 in several respects, primarily to facilitate comparison with the alternative-based account. I believe that the main issues I discuss apply to the original proposals as well. Under my version of the unconditional account, a predicational copular interrogative clause pointwise restricts a modal base introduced by the main clause. The interrogative clause in (89) denotes the intension of a set of possible answers like  $\{‘P(\text{The book Kim bought})’ \mid P \text{ is a relevant identifying property}\}$ . The need for predicational ignorance rather non-rigid designation, as the original account in Hirsch derives, is discussed in §2.2, and this particular interrogative LF is discussed in §2.2.1.



Matrix declaratives may (or must, according to works like Meyer 2013) be implicitly modalized, quantifying over a conversation- or speaker-oriented information state (Kratzer & Shimoyama 2002, Alonso-Ovalle & Menéndez-Benito 2010, a.o.). They may be implicitly modalized with  $\square$ , which takes a declarative conditional antecedent (i.e. an *if*-clause), or with  $\square^{int}$ , defined in (90), which takes an interrogative unconditional antecedent<sup>16</sup>.

<sup>16</sup>Hirsch, following Rawlins, uses pointwise composition (in the sense of Hamblin 1973) to restrict the modal base of  $\square$  with the interrogative-clause denotation and a universal closure operation; I am continuing to assume that modal expressions have declarative- and interrogative-taking variants.

(90) For every  $w \in D_s$ ,  $MB \in D_{(s,t)}$ ,  $Q \in D_{(s,((s,t),t))}$ ,  $p \in D_{(s,t)}$  :  
 $\llbracket \Box^{int} \rrbracket (w)(MB)(Q)(p)$  is defined only if  $MB \neq \emptyset \wedge |Q(w)| \geq 2 \wedge$

- a.  $\forall w' \in MB[\forall q \in Q(w)[q(w') \text{ is defined}]]$
- b.  $\forall w' \in MB[\exists q \in Q(w)[q(w') \wedge \forall q' \in Q(w)[q'(w') \rightarrow q \Rightarrow q']]]$
- c.  $\forall q \in Q(w)[\exists w' \in MB[q(w')]]$
- d.  $\forall w' \in MB[\forall q \in Q(w)[q(w') \rightarrow [p(w') \text{ is defined}]]]$

If defined,  $\llbracket \Box^{int} \rrbracket (w)(MB)(Q)(p) = \text{True}$  iff  $\forall q \in Q(w)[\forall w' \in MB[q(w') \rightarrow p(w')]]$

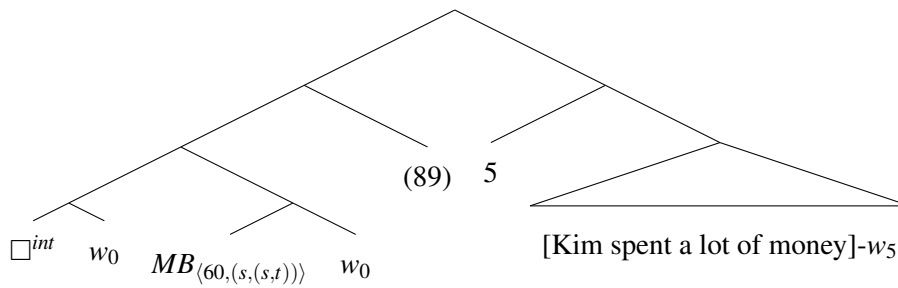
(90a) requires the modal base to satisfy every answer's presupposition, (90b) requires the modal base to satisfy Dayal-Answerhood<sup>17</sup>, (90c) requires every answer to be compatible with the modal base (producing ignorance), and (90d) is a universalized conditional presupposition. The truth conditions are universalized conditional truth conditions (every answer, together with the information in the modal base, guarantees the conditional consequent).

*Whatever book Kim bought, Kim spent a lot of money* has the LF and meaning given in (91), derived with the lexical entry for  $\Box^{int}$  (assuming that the relevant modal base function is a kind of indexical for  $CK_c$  and the possible answers to the predicational interrogative clause are determined with the set of properties  $\{[\lambda w : w \in D_s . [\lambda x : x \in D_e . x \text{ is W\&P in } w]]$ ,  $[\lambda w : w \in D_s . [\lambda x : x \in D_e . x \text{ is AK in } w]]$ ,  $[\lambda w : w \in D_s . [\lambda x : x \in D_e . x \text{ is R in } w]]\}$ ).

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<sup>17</sup>Answerhood subsumes two separate presuppositions that Rawlins assigns to unconditionals: exhaustivity (i.e. that  $MB$  entails that an answer is true) and exclusivity (i.e. that  $MB$  excludes the possibility that two different answers are true). There do not appear to be any significantly different predictions between the two approaches.

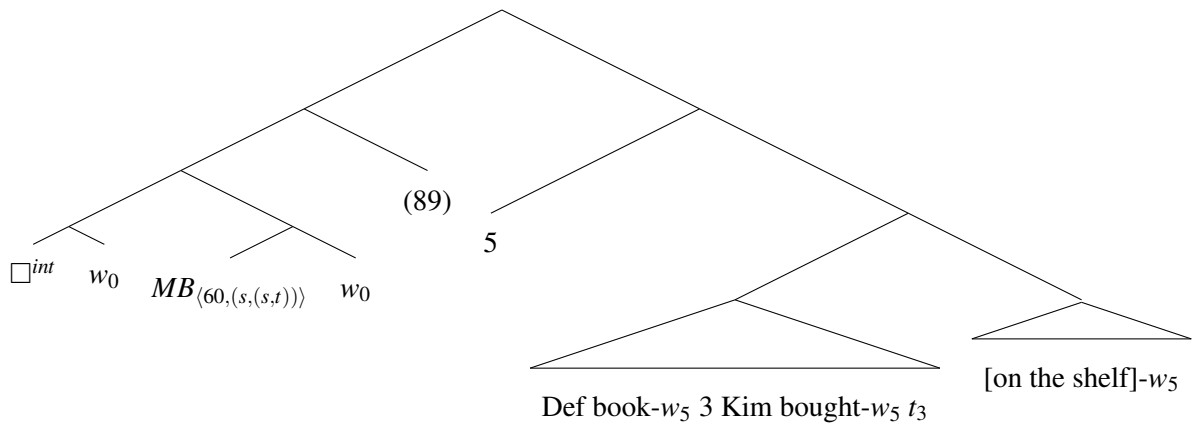
(91) Whatever book Kim bought, Kim spent a lot of money



- a. Denotes: ‘If the book Kim bought is *War & Peace*, Kim spent a lot of money, and if the book Kim bought is *Anna Karenina*, Kim spent a lot of money, and if the book Kim bought is *Resurrection*, Kim spent a lot of money’
- b. Presupposes: ‘It is common knowledge that the book Kim bought is *War & Peace*, *Anna Karenina*, or *Resurrection*, and it is with compatible common knowledge that the book Kim bought is *War & Peace*, it is compatible with common knowledge that the book Kim bought is *Anna Karenina*, and it is compatible with common knowledge that the book Kim bought is *Resurrection*’

According to Hirsch 2015, an expression like *whatever book Kim bought is on the shelf* has an unconditional-style LF as well; my version is given in (92). The main difference is that Hirsch proposes a multidominance structure, where the syntactic restrictor *book Kim bought* is both part of the consequent, where it is type-shifted by Def, and part of the unconditional antecedent, where it is type-shifted by a question-creating operator (furthermore, the question’s possible answers identify the referent with rigid terms).

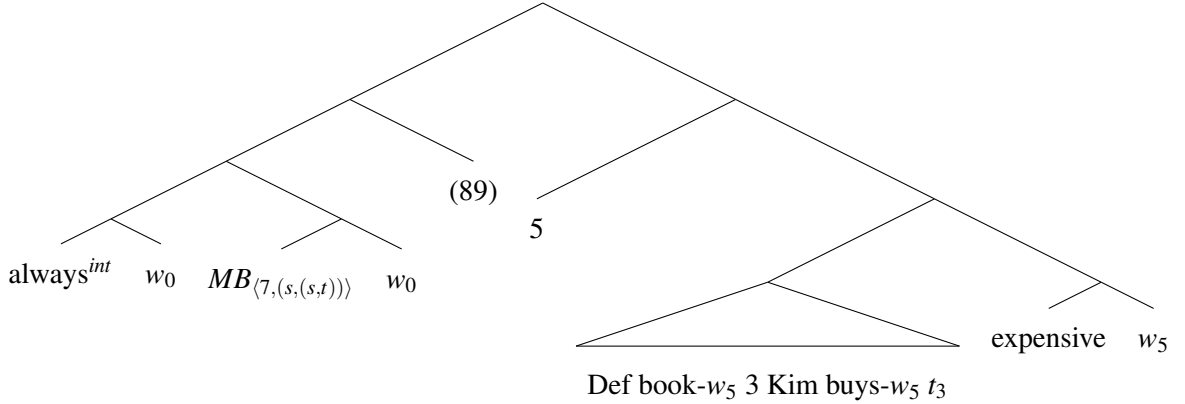
(92) Whatever book Kim bought is on the shelf



- a. Denotes: ‘If the book Kim bought is *War & Peace*, the book Kim bought is on the shelf, and if the book Kim bought is *Anna Karenina*, the book Kim bought is on the shelf, and if the book Kim bought is *Resurrection*, the book Kim bought is on the shelf’
- b. Presupposes: ‘It is common knowledge that the book Kim bought is *War & Peace*, *Anna Karenina*, or *Resurrection*, and it is compatible with common knowledge that the book Kim bought is *War & Peace*, it is compatible with common knowledge that the book Kim bought is *Anna Karenina*, and it is compatible with common knowledge that the book Kim bought is *Resurrection*’

Šimík 2018 extends the account to *whatever*-DPs that are understood as dependent on a sentence-internal modal quantifier, such as *whatever book Kim buys is always expensive*, whose LF and meaning is given in (93). (93) uses the unconditional variant of *always*, *always*<sup>int</sup> in (94).

(93) Whatever book Kim buys is always expensive



- a. Denotes: ‘For every *MB*-world  $w$  where the book Kim buys in  $w$  is *War & Peace* in  $w$ , the book Kim buys in  $w$  is expensive in  $w$ , and for every *MB*-world  $w'$  where the book Kim buys in  $w'$  is *Anna Karenina* in  $w'$ , the book Kim buys in  $w'$  is expensive in  $w'$ , and for every *MB*-world  $w''$  where the book Kim buys in  $w''$  is *Resurrection* in  $w''$ , the book Kim buys in  $w''$  is expensive in  $w''$ ’
- b. Presupposes: ‘For every *MB*-world  $w$ , the book Kim buys in  $w$  is *War & Peace*, *Anna Karenina*, or, *Resurrection* in  $w$ ; for some *MB*-world  $w$ , the book Kim buys in  $w$  is *War & Peace* in  $w$ ; for some *MB*-world  $w'$ , the book Kim buys in  $w'$  is *Anna Karenina* in  $w'$ ; for some *MB*-world  $w''$ , the book Kim buys in  $w''$  is *Resurrection* in  $w''$ ’

(94) For every  $w \in D_s$ ,  $MB \in D_{(s,t)}$ ,  $Q \in D_{(s,((s,t),t))}$ ,  $p \in D_{(s,t)}$  :

$\llbracket \text{always}^{int} \rrbracket (w)(MB)(Q)(p)$  is defined only if  $MB \neq \emptyset \wedge |Q(w)| \geq 2 \wedge$

- a.  $\forall w' \in MB[\forall q \in Q(w)[q(w') \text{ is defined}]]$   
b.  $\forall w' \in MB[\exists q \in Q(w)[q(w') \wedge \forall q' \in Q(w)[q'(w') \rightarrow q \Rightarrow q']]]$   
c.  $\forall q \in Q(w)[\exists w' \in MB[q(w')]]$   
d.  $\forall w' \in MB[\forall q \in Q(w)[q(w') \rightarrow [p(w') \text{ is defined}]]]$

If defined,  $\llbracket \text{always}^{int} \rrbracket (w)(MB)(Q)(p) = \text{True}$  iff  $\forall q \in Q(w)[\forall w' \in MB[q(w') \rightarrow p(w')]]$

I will discuss several points of comparison between the alternative-based account and the unconditional account, which tend to favor the alternative-based account. First, the requirements of *what-ever*-DPs that are bound into by *everybody* are problematic for the unconditional account in the



modal presupposition, incorrectly ruling out the example in the context in (95)<sup>18</sup>. The second issue concerns a contrast between negated unconditionals with E-type pronouns and negated *whatever*-DP statements, as in (97a-b), or statements where the constructions appear in the scope of *I don't think that...*, (98a-b).

(97) a. it's not true that whatever book Kim bought, it is on the shelf

b. It's not true that whatever book Kim bought is on the shelf

(98) a. I don't think that whatever book Kim bought, it is on the shelf

b. I don't think that whatever book Kim bought is on the shelf

These mean quite different things. To assert a positive unconditional, like *whatever book Kim bought, it is on the shelf*, is to assert that the book's being on the shelf is 'orthogonal' (Rawlins's term) to its identity i.e. no matter what book she bought, it is on the shelf. This is captured by the universalized conditional truth conditions.

As expected, (97a)-(98a) negate/doubt orthogonality; they can be felicitously followed with (99a). They say that it's not true that it's guaranteed that the book is on the shelf, regardless of what book Kim bought. In contrast, the *whatever*-DP statements in (97b)-(98b) do not have a reading that negates/doubts orthogonality; they negate/doubt the book's being on the shelf. Thus, they can be followed up with (99b). Crucially, following up the unconditionals with (99b) is odd and following up the *whatever*-DPs with (99a) is odd.

(99) a. ... because if the book she bought is *Resurrection*, she may have put it in the drawer

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<sup>18</sup>Hirsch discusses *no boy ate whatever his mother cooked*, judging it odd on an ignorance reading; he proposes that quantificational DPs in general cannot take scope above  $\square$  as a result of the 'epistemic containment principle' (Fintel & Iatridou 2003), which imposes scope constraints on quantificational DPs and epistemic modals. However, (i) appear to be acceptable. It is also unclear how the examples with *every* would be accounted for.

(i) Context: *Every man in Prof. A's class receives the same grade. I don't know what grade was assigned this year but*  
 No man<sub>i</sub> in Prof. A's class was satisfied with whatever grade he<sub>i</sub> received



- b. ... because it's actually in the drawer

This difference is surprising on a theory where the *whatever*-DP statement has unconditional-style truth conditions, as in the analysis sketched above; on the other hand, it is consistent with the alternative-based account's assigned truth conditions, which are not modalized.

The third issue concerns a difference in what Alonso-Ovalle & Menéndez-Benito 2013 call 'degrees of ignorance', with the two possible degrees being 'partial ignorance' and 'total ignorance'. Note that the unconditional account's presupposition is that every possible answer is compatible with the relevant modal base. According to the unconditional account, *whatever book Kim bought is over there on the shelf* requires that for every relevant identifying property, there is a possible world in the modal base where the referent has that property. This is 'total ignorance'.

In contrast, the alternative-based account requires something slightly weaker; Maximize Presupposition precludes common knowledge from entailing that the referent has a particular identifying property, but unlike on the unconditional account, it allows common knowledge to rule out the referent having certain identifying properties (so long as there remains uncertainty about which identifying property the referent actually has). This is not a necessary feature of the alternative-based account though<sup>19</sup>. One easy way in which the alternative-based account's weaker requirement could be strengthened is by enriching the set of alternatives (as discussed in Alonso-Ovalle & Menéndez-Benito 2010, Schwarz 2016). (100) repeats the way that alternatives are generated on the basis of *or*<sup>C</sup>.

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<sup>19</sup>Nor is total ignorance a necessary feature of the unconditional account – the presuppositions of  $\Box^{int}$  can be weakened as in (i-c).

- (i) For every  $w \in D_s$ ,  $MB \in D_{(s,t)}$ ,  $Q \in D_{(s,((s,t),t))}$ ,  $p \in D_{(s,t)}$  :
- $\llbracket \Box^{int} \rrbracket(w)(MB)(Q)(p)$  is defined only if  $MB \neq \emptyset \wedge |Q(w)| \geq 2 \wedge$
- a.  $\forall w' \in MB[\forall q \in Q(w)[q(w') \text{ is defined}]]$
  - b.  $\forall w' \in MB[\exists q \in Q(w)[q(w') \wedge \forall q' \in Q(w)[q'(w') \rightarrow q \Rightarrow q']]]$
  - c.  $\neg \exists q \in Q(w)[\forall w' \in MB[q(w')]]$
  - d.  $\forall w' \in MB[\forall q \in Q(w)[q(w') \rightarrow [p(w') \text{ is defined}]]]$
- If defined,  $\llbracket \Box^{int} \rrbracket(w)(MB)(Q)(p) = \text{True}$  iff  $\forall q \in Q(w)[\forall w' \in MB[q(w') \rightarrow p(w')]]$

(100) Assumptions about  $ALT_c$

For every utterance context  $c$  and for every LF  $\phi$ :

- a. If  $\phi$  is a maximal disjunctive LF of the form  $[ [\dots [ [ or^C \psi_1 ] \psi_2 ] \dots ] \psi_n ]$ ,  
then  $ALT_c(\phi) \supseteq \{ \psi_1, \psi_2, \dots, \psi_n \}$
- b. If  $\phi$  is a non-terminal, binary-branching LF of the form  $[\alpha \beta]$ ,  
then  $ALT_c(\phi) \supseteq \{ [ \alpha' \beta' ] \mid \alpha' \in ALT_c(\alpha) \wedge \beta' \in ALT_c(\beta) \}$

(100a) could be replaced with (101);  $or^C$  always evokes a set of so-called ‘subdomain alternatives’ (Chierchia 2013). The alternatives include not just individual disjuncts, denoting identifying properties, but also all of the possible syntactic disjunctions of individual disjuncts, corresponding semantically to the disjunctive closure of the set of identifying properties.

(101) For every utterance context  $c$  and for every LF  $\phi$ :

If  $\phi$  is a maximal disjunctive LF of the form  $[ [\dots [ [ or^C \psi_1 ] \psi_2 ] \dots ] \psi_n ]$ ,  
then  $ALT_c(\phi) \supseteq \{ \psi_1, \psi_2, \dots, \psi_n, [ [ or^C \psi_1 ] \psi_2 ], \dots, [ [ or^C \psi_1 ] \psi_n ], \dots, [ [ or^C \psi_2 ] \psi_n ], \dots, [ [ [ or^C \psi_1 ] \psi_2 ] \psi_n ], \dots \}$

Maximize Presupposition would enforce a total ignorance requirement with this assumption; the reason, intuitively, is that with an alternative set as rich as (101), excluding an identifying property straightaway allows for another alternative to be inferred, which is what Maximize Presupposition rules out. Suppose (102a) gives the values of the  $C$ -proforms in an LF for *whatever book Kim bought is on the shelf* under the alternative-based account. An information state (e.g. common knowledge) can entail that the properties in (102a) have non-empty, mutually disjoint extensions, that at least one of the properties in (102a) holds of the book Kim bought, and that ‘is *Resurrection*’ does *not* hold of the book Kim bought, while remaining unsettled about which property in (102a) holds of the book Kim bought. In contrast, an information state cannot entail that the properties in (102a) have non-empty, mutually disjoint extensions, that at least one of the properties in (102a) holds of the book Kim bought, and that ‘is *Resurrection*’ does *not* hold of the book Kim bought, while remaining unsettled about which property in (102b) holds of the book Kim bought. If ‘is

*Resurrection*’ does not hold of the book Kim bought, then ‘is *War & Peace* or *Anna Karenina*’ certainly does. The only way for Maximize Presupposition to be satisfied is if every identifying property is a live possibility.

- (102) a.  $[\lambda w : w \in D_s . [\lambda x : x \in D_e . x \text{ is W\&P in } w]]$ ,  
 $[\lambda w : w \in D_s . [\lambda x : x \in D_e . x \text{ is AK in } w]]$ ,  
 $[\lambda w : w \in D_s . [\lambda x : x \in D_e . x \text{ is R in } w]]$   
 b.  $[\lambda w : w \in D_s . [\lambda x : x \in D_e . x \text{ is W\&P in } w]]$ ,  
 $[\lambda w : w \in D_s . [\lambda x : x \in D_e . x \text{ is AK in } w]]$ ,  
 $[\lambda w : w \in D_s . [\lambda x : x \in D_e . x \text{ is R in } w]]$ ,  
 $[\lambda w : w \in D_s . [\lambda x : x \in D_e . x \text{ is W\&P in } w \vee x \text{ is AK in } w]]$ ,  
 $[\lambda w : w \in D_s . [\lambda x : x \in D_e . x \text{ is W\&P in } w \vee x \text{ is R in } w]]$ ,  
 $[\lambda w : w \in D_s . [\lambda x : x \in D_e . x \text{ is R in } w \vee x \text{ is AK in } w]]$

Do *whatever*-DPs require partial or total ignorance? The initial intuition in contexts like (103), which specifies explicitly what the relevant classes of book are, is that the *whatever*-DP requires total ignorance. In most contexts, we would infer from the utterance in (103) that each book is a candidate for being the book that Kim bought.

- (103) *Context: Kim bought a book at a speciality shop that only sells War & Peace, Anna Karenina, and Resurrection.*

Whatever book she bought is over there on the shelf

But judgments about *whatever*-DPs as the subjects of specificational sentences tentatively point to a partial ignorance requirement. Iatridou & Varlokosta 1998: 13 claim that (104a) – negated or not – is ungrammatical and that its ungrammaticality is the result of a conflict between the semantics of the *whatever*-DP (specifically, its universal quantificational force, on their view) and the semantics of a specificational sentence. They are in part guided to this view because of (104b-d). (104b-c) show that ordinary free relatives and *the*-DPs are fine in (positive or negated) specificational sen-

tences. The acceptable unconditional (104d) is what negated (104a) is intended to mean.

- (104)
- a. \*Whatever I like about John is (not) his sense of humor
  - b. What I like about John is (not) his sense of humor
  - c. The thing that I like about John is (not) his sense of humor
  - d. Whatever I like about John, it's not his sense of humor

But the oddness they perceive about the negated version of (104a) probably stems not from its quantificational force (which I take to be definite) but from the choice of restrictor for the *whatever*-DP. The *whatever*-DP presupposes that there is something that I like about John while implying that I don't know what it is, which is slightly far-fetched (cf. *Whatever Mary likes about John is not his sense of humor*). If we grant that it's the case, (104a) sounds much better. Suppose that I am forgetful so I keep a list of my acquaintances' names, and next to each one, I write down the quality of theirs that I like. I don't have my list in front of me and I'm trying to remember what I've written next to John's name. Negated (104a) is fine as a way of eliminating possible qualities that I may have written.

(105a-b) is perhaps a clearer contrast, based on examples in Dayal 1997. The felicity of (105a) constitutes a tentative piece of evidence in favor of partial ignorance, since total ignorance would require it to be possible that the book she bought is *War & Peace*.

- (105) *Context: Same as (103)*
- a. Whatever book she bought isn't *War & Peace*. She hates that book.
  - b. #Whatever book she bought is *Anna Karenina*. She loves that book.

Another tentative piece of evidence in favor of partial ignorance is (106a-b), a contrast between negative and positive appositives.

- (106)
- a. Whatever North American city Lee is in – which isn't Ottawa – is densely populated
  - b. #Whatever North American city Lee is in – which is Mexico City – is densely populated

The evidence is tentative because a total ignorance account might attribute the felicity of the negative examples to a kind of contextual restriction, i.e. exclusion of the identifier ‘is *War & Peace*’ or ‘is Ottawa’ in the evaluation of the *whatever*-DPs. Nonetheless, I will continue to assume, following Dayal 1997, that *whatever*-DPs require partial ignorance.

Summing up, although the unconditional account’s goal of explaining morphological similarities between interrogatives and *whatever*-DPs is important, it currently faces issues in accounting for the readings of *whatever*-DPs in the scope of *every* and negated/embedded unconditionals vs. *whatever*-DP statements. Also, a partial ignorance variant of the account would be more appropriate than a total ignorance one.

## 2.5.2 The postsuppositional account

To my knowledge, Lauer 2009 is the first to point out the problem that *whatever*-DPs bound into by individual quantifiers like *every* pose for inherently modal accounts. The empirical generalization that Lauer aims to capture is that the type of variation that an *whatever*-DP can convey is determined by the quantificational operators in whose scope the *whatever*-DP occurs. Lauer concludes that this empirical generalization cannot be captured in a static semantic system of the kind assumed here:

The problem is that in the semantics of such languages, an embedded operator does not have access to the domain of operators scoping over it, i.e. for a quantificational operator  $O$  in a formula  $Ox[\phi(x)]$  the interpretation of  $\phi(x)$  cannot make reference to different values of  $x$  (in particular, in the case at hand, it cannot demand that a term in  $\phi$  denotes distinct individuals relative to different values of  $x$ ).

(Lauer 2009: 10)

Lauer’s proposal is therefore couched in a dynamic update semantics, where an expression’s meaning is equated with the change that it induces to the context to which it is added. Something that this view allows, in contrast to a static semantics, is for an expression to impose requirements on the context resulting from its interpretation. According to Lauer, *whatever*-DPs have such require-

ments, commonly known as ‘postsuppositions’ (also invoked in the analysis of modified numerals in Brasoveanu 2013); in particular, they encode a postsupposition that they denote distinct individuals relative to different values of the variable bound by a quantifier scoping above them. While I do not provide the formalism required to understand the analysis in full, note that the output context for the bound-into *whatever*-DP in *everybody enjoyed whatever book they bought* is the domain quantified over by *everybody*, hence the generated postsupposition is that the *whatever*-DP denotes distinct individuals relative to different values of the variable bound by *every*.

At present, I see little difference in the empirical predictions of the postsuppositional account and the alternative-based account. As such, the pragmatic account can be seen as an alternative to the postsuppositional analysis that addresses the concern raised in the quote above by delegating some of the work (i.e. variation inferences) to the pragmatics.

## 2.6 Other applications of the alternative-based account

This concluding section addresses how the alternative-based account explains some other inferences that *whatever*-DPs give rise to, such as when they appear the scope of other sentence-internal quantifiers, when they occur in the plural, and when they are understood opaquely in the scope of attitude predicates like *be certain*. It ends with an avenue of exploration for future work, involving *whatever*-DPs that are bound into by quantifiers with non-universal presuppositions.

In Abenina-Adar 2019b, I show how the alternative-based account can account for the well-known examples in (107a-b), from Dayal 1997 and Condoravdi 2008, 2015 respectively.

- (107) a. Whatever Mary cooks uses onions  
b. Whatever exit you take will get you onto MLK Boulevard

(107a) has a reading that implies that across occasions, Mary cooks different things, and (107b) has a reading that implies that across possible future situations, you take different exits. Under the alternative-based account, these are analyzed in the same way as dependent readings in the scope of *always*. In particular, I assume that (107a-b) contain universal quantifiers – a habitual/generic uni-

versal modal and a universal future modal – that bind into the *whatever*-DPs and project universal presuppositions. The requirement imposed by Maximize Presupposition is that it is not common knowledge that across occasions/possible futures, the identity of the *whatever*-DP’s referent is  $C_n$ , for some particular identifier  $C_n$ . With (107a), this is satisfied if it is common knowledge that Mary sometimes cooks stew and sometimes cooks sautéed vegetables but not if it is common knowledge that the only thing Mary ever cooks is stew. With (107b), this is satisfied if it is common knowledge that it is not settled whether you will take Exit 1 or Exit 2 but not if it is common knowledge that you will take Exit 2.

In that work, I also discuss how the alternative-based account captures agent indifference readings, which “arise when the [*whatever*-DP] is an argument of an action-denoting predicate implying that the agent in principle has a choice as to who or what” (Condoravdi 2015: 217). (108a-b) are two well-known examples from von Stechow 2000; it is clear that (108a) does not require the speaker to be ignorant of the identity of the tool that was handy.

- (108) a. I grabbed whatever tool was handy  
 b. Zack simply voted for whoever was at the top of the ballot (von Stechow 2000: 32)

To capture (108a) under the alternative-based account, it is assumed that one parse for the sentence is a lot like the dependent reading LF discussed with *always*, containing an implicit universal modal; this is a modal that quantifies over worlds that realize the goals of the agent of the VP, an idea taken from the literature on the semantics of agentive/causative verbs (e.g. Koenig & Davis 2001, Martin & Schäfer 2012, Kratzer 2015), which is similarly assumed to have a universal presupposition. The agent indifference reading arises when this modal binds into the restrictor of the *whatever*-DP; the requirement imposed by Maximize Presupposition is that it is not common knowledge that across worlds that meet my goals during my grabbing, the tool that is handy is  $C_n$ , for some particular identifier  $C_n$ . This is satisfied if it is common knowledge that in some of my goal worlds at the time of the grabbing, the handy tool is a hammer and in some of my goal worlds at the time of the grabbing, the handy tool is a screwdriver. I argue that this analysis of indifference reading provides a better explanation of when indifference readings arise compared

to the predominant alternative theory, which is based on a contextually-determined counterfactual presupposition (von Stechow 2000, Tiedemeyer 2005).

In Abenina-Adar 2019b, 2019a, I also consider how the alternative-based account can be extended to explain the readings of morphologically plural *whatever*-DPs. Dayal 1997: 110 and Condoravdi 2015: 225 observe that morphologically plural *whatever*-DPs in unembedded contexts (i.e. simple, positive, episodic statements) do not require ignorance about the identity of the referent. For many speakers, there is a clear contrast between (109a-b).

- (109) a. *Context: Kim bought War & Peace*  
#Whatever book Kim bought is over there on the shelf
- b. *Context: Kim bought War & Peace and Anna Karenina*  
Whatever books Kim bought are over there on the shelf

Nonetheless, I observe in Abenina-Adar 2019b, based on discussion in Dayal 1997 and Condoravdi 2015, that morphologically plural *whatever*-DPs contrast with *the*-DPs in contexts where the identities of the parts making up the referent are common knowledge and are not saliently distinct, as in (110). Plural *whatever*-DPs appear to share a reading with *the various*-DPs.

- (110) *Context: Kim bought two copies of War & Peace*
- a. ?Whatever books Kim bought are over there on the shelf
- b. The books Kim bought are over there on the shelf

I will present an account of these requirements under the alternative-based account that is similar to the one I suggested in earlier work, though modified to fit the particular version of the alternative-based account developed in this chapter. Following Link 1983 and others (this exposition is based particularly on Champollion & Krifka 2016), I assume that  $D_e$  is partially ordered by the ‘(proper or improper) part-of’ relation, represented with  $\sqsubseteq$ <sup>20</sup>. Morphologically singular nouns like *book* denote (the intension of) sets of individuals that have no proper parts (i.e. atomic individuals), as

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<sup>20</sup> $\sqsubseteq$  is reflexive, transitive, and antisymmetric.



in (111);  $y$  is a proper part of  $x$ , represented  $y \sqsubset x$ , iff  $y \sqsubseteq x$  and  $y \neq x$ .

$$(111) \quad \llbracket \text{book} \rrbracket = [\lambda w : w \in D_s . \{x \in D_e \mid \neg \exists y [y \sqsubset x] \wedge x \text{ is a book in } w\}]$$

In contrast, plural nouns like *books* denote the intension of the algebraic closure of a singular noun denotation, as in (112b), represented with  $*$  (after Link 1983). *Books* denotes the intension of a set of sums of atomic books. The definition of a sum (due to Tarski) makes use of the auxiliary concept of overlap;  $x$  overlaps with  $y$ , represented  $x \sqcap y$ , iff  $\exists z [z \sqsubseteq x \wedge z \sqsubseteq y]$ .

$$(112) \quad \begin{array}{l} \text{a.} \quad \llbracket \text{books} \rrbracket = [\lambda w : w \in D_s . * \llbracket \text{book} \rrbracket (w)] \\ \text{b.} \quad \text{For every } P \in D_{(e,t)} : \\ \quad *P = \{X \in D_e \mid \exists P' \subseteq P [P' \neq \emptyset \wedge \forall y \in P' [y \sqsubseteq X] \wedge \forall x [x \sqsubseteq X \rightarrow \exists y \in P' [x \sqcap y]]]\} \\ \quad \text{(the set of 'sums' of } P \text{ i.e. the set of individuals } X \text{ such that there is a non-empty} \\ \quad \text{subset of } P, \text{ every member of which is a part of } X \text{ and with some member of which} \\ \quad \text{every part of } X \text{ overlaps)} \end{array}$$

Next, after Link 1983 and Sharvy 1980, definites presuppose the existence of a maximal entity in the denotation of their restrictor (see von Stechow et al. 2014 for a different proposal, compatible with the following discussion). (113) gives the revised meaning for the definite determiner,  $\text{Def}^{\sqsubseteq}$ .

$$(113) \quad \llbracket \text{Def}^{\sqsubseteq} \rrbracket = [\lambda P : P \in D_{(e,t)} \wedge \exists X \in P [\forall x \in P [x \sqsubseteq X]]. \iota X \in P [\forall x \in P [x \sqsubseteq X]]]$$

Because *book* characterizes a set of atoms at any world, *the book* is defined at any world iff there is exactly one book in that world (if there is more than one book, there will be no member in the set characterized by *book* of which every member is a part). *Books* characterizes a set of sums of

- 
- |       |  |              |
|-------|--|--------------|
| (i)   | $\forall x \in D_e [x \sqsubseteq x]$<br>'Everything is part of itself'  | reflexivity  |
| (ii)  | $\forall x, y, z \in D_e [[x \sqsubseteq y \wedge y \sqsubseteq z] \rightarrow x \sqsubseteq z]$<br>'Any part of any part of a thing is also a part of that thing' | transitivity |
| (iii) | $\forall x, y \in D_e [[x \sqsubseteq y \wedge y \sqsubseteq x] \rightarrow x = y]$<br>'No two distinct things are each part of the other'                         | antisymmetry |

atomic books at any world, so *the books* denotes the biggest sum of books if there is more than one book<sup>21</sup>. Finally, I assume the revised disjunctive word,  $or^{C,\Xi}$ , which combines with non-empty, mutually disjoint sets and is true of any individual that is a sum of some individual(s) in the sets (i.e. in the identifier-extensions).

(114) For every  $C_1 \dots C_n \in D_{(e,t)}$  ( $n \geq 2$ ):

$\llbracket or^{C,\Xi} \rrbracket(C_1) \dots (C_n)$  is defined iff  $\forall C \in \{C_1, \dots, C_n\}$

a.  $\exists x[C(x)]$

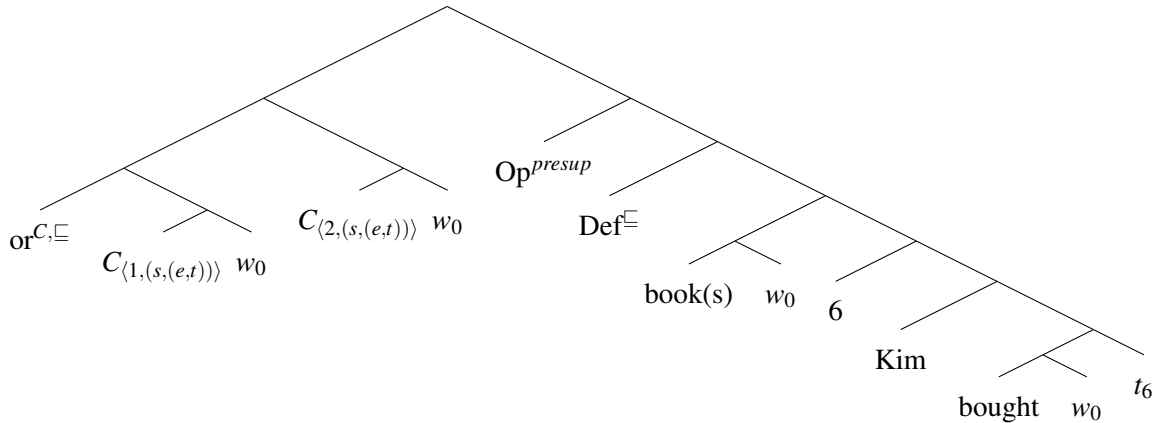
b.  $\neg \exists C' \in \{C_1, \dots, C_n\} [C \neq C' \wedge \exists x[C(x) \wedge C'(x)]]$

If defined, then for every  $X \in D_e$ :

$\llbracket or^{C,\Xi} \rrbracket(C_1) \dots (C_n)(X) = \text{True}$  iff  $X \in * \{x \in D_e \mid \exists C \in \{C_1, \dots, C_n\} [C(x)]\}$

The revised LF for *whatever book(s) Kim bought* is in (115).

(115) Whatever book(s) Kim bought



With the singular *book*, the ordinary definite sub-LF denotes an atomic individual. It could only be a sum of a singleton subset of the set of individuals in the identifier-extensions i.e. a member of

<sup>21</sup>It denotes the unique book if there is exactly one book. Although this is counterintuitive – *whatever books Kim bought* or *the books Kim bought* cannot be used to refer to a unique book that Kim bought – there is evidence that *books* holds of atomic books as well (e.g. the observation in Schwarzschild 1996 that a sentence like *Kim didn't buy books* is incompatible with her having bought a single book). See Sauerland et al. 2005 for a pragmatic, Maximize Presupposition-based account of the oddness of referring to an atomic individual with a plural definite. In the following discussion, I will just assume that a plural count definite does not refer to an atomic individual.

one of the identifier-extensions. Since the identifier-extensions are mutually disjoint, the referent is necessarily either in the extension of  $C_1$  or in the extension of  $C_2$ . Maximize Presupposition precludes common knowledge from entailing which set the referent is in. With the plural *books*, the definite sub-LF denotes a non-atomic individual; it is possible that it is in neither  $C_1$  nor  $C_2$ 's extension, even if such extensions have sums. For illustration, suppose (117a-b) are the identifiers.

- (116) a.  $[\lambda w : w \in D_s . * \{x \in D_e \mid \neg \exists y [y \sqsubset x] \wedge x \text{ is W\&P in } w\}]$   
 b.  $[\lambda w : w \in D_s . * \{x \in D_e \mid \neg \exists y [y \sqsubset x] \wedge x \text{ is AK in } w\}]$

If it is common knowledge that the books that Kim bought are a sum made up wholly of *War & Peace* atoms or a sum made up wholly of *Anna Karenina* atoms, but it is not common knowledge which, Maximize Presupposition is satisfied. If it is common knowledge that the books that Kim bought are a sum made up partly of *War & Peace* atoms and partly of *Anna Karenina* atoms, then Maximize Presupposition is also similarly satisfied. If it is common knowledge that the books that Kim bought are a sum made up wholly of *War & Peace* atoms, then using *whatever books Kim bought* violates Maximize Presupposition; the alternative which presupposes that (116a) holds of the plural referent has a stronger, satisfied presupposition. Crucially, common knowledge can entail the presupposition that the referent has the revised  $or^{C, \sqsubseteq}$ -property and simultaneously entail that it doesn't have any of the individual identifying properties only if the referent is non-atomic.

Abenina-Adar 2019a also discusses *whatever*-DPs in the scope of attitude predicates like *be certain*; these are held to presuppose that all of the attitude holder's belief worlds satisfy the presuppositions of the subordinate clause (Karttunen 1973, Heim 1992) – a universal presupposition. Thus, on an opaque reading of *Kim's cat*, (117a) presupposes that in all of Pat's belief worlds, Kim has a unique cat. (117b) is a revised lexical entry for *certain* that reflects its heritage property.

- (117) a. Pat is certain that Kim's cat is a tabby  
 b. For every  $w \in D_s$   $p \in D_{(s,t)}$ ,  $x \in D_e$ :  
 $[[\text{certain}]](w)(p)(x)$  is defined only if  $\forall w' \in \text{BEL}(x)(w)[p(w')$  is defined].  
 If defined,  $[[\text{certain}]](w)(p)(x) = \text{True}$  iff  $\forall w' \in \text{BEL}(x)(w)[p(w')$

The prediction of the alternative-based account is that a sentence like (118), where *whatever book Kim bought* is understood opaquely (as brought about by assuming that Kim didn't actually buy a book but Pat mistakenly believes that she did), may be used felicitously only if it is not common knowledge what Pat believes the book Kim bought to be. This is how the alternative-based account explains the subject-ignorance reading of (118), observed in von Stechow 2000.

(118) Pat is certain that whatever book Kim bought was expensive

To conclude, I offer a final data point from an empirical domain that merits further study. Beaver 2001 proposes that existential determiner phrases like *a*-DPs have a merely existential presupposition i.e. a presupposition at least one member of their quantificational domain satisfies the presuppositions of their nuclear scope (see also Chemla 2009; cf. Heim 1983). In the third sentence of (119), a determiner phrase with an existential presupposition binds into the restrictor of a *whatever*-DP.

(119) I walked into the shop. Several men and women were standing there. A man was holding whatever book he had just bought. A woman was too.

At this point, it is not entirely clear to me what requirements the *whatever*-DP in (119) imposes, beyond the existence of a man who bought a book. However, studying such configurations may allow for arbitration between the alternative-based account and the postsuppositional account proposed in Lauer 2009; this is left for future work.

### 3

## Comparison with some ‘epistemic indefinites’

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This chapter presents two accounts of the ignorance requirements that *some N or other*-DPs exhibit in argument position of simple, positive, episodic statements, which distinguish them from *a*-DPs. Because the accounts recycle the grammatical ingredients from the preceding chapter on *whatever*-DPs, they are similarly called ‘the modal account’ and ‘the alternative-based account’. Given the requirements that *some N or other*-DPs exhibit in the scope of quantificational operators, I conclude that the alternative-based account is preferable.

The alternative-based account that I argue for is a variant of the one proposed for German *irgendein*-DPs in Kratzer & Shimoyama 2002 and for Spanish *algún*-DPs in Alonso-Ovalle & Menéndez-Benito 2010 et seq. Following Alonso-Ovalle & Menéndez-Benito 2010 in particular, I analyze *some N or other*-DPs as existential quantifiers that evoke alternatives that denote logically stronger existential quantifiers, quantifying over smaller sets. The main difference between my proposal and former ones is that I analyze *some N or other*-DPs as being relatively structurally complex, in addition to relatively uninformative. In this way, I attempt to address a puzzle that has been raised for preceding alternative-based, pragmatic accounts about the infelicity of *irgendein*-DPs, *algún*-DPs, and related ‘epistemic indefinites’ in contexts where considerations of informativity do not disfavor the epistemic indefinite, but the epistemic indefinite is nonetheless odd (Aloni & Port 2013, 2015; Alonso-Ovalle & Menéndez-Benito 2013). Drawing connections to recent work on clausal disjunctions, in particular Lauer 2014, 2016, I propose that the felicity

of a *some N or other*-DP is partly determined by a pragmatic principle called Brevity – a manifestation of Grice’s (1975) Brevity and Horn’s (1984) R Principle – which dictates that a disjunctive construction is felicitous only if there is a reason for using it over one of its individual disjuncts.

This chapter is organized as follows. §3.1 presents the ignorance effects that distinguish *some N or other*-DPs from ordinary indefinites like *a*-DPs and gives the basic, existential quantificational denotation that is assumed to be shared by all indefinite determiner phrases. §3.2 presents the modal account and how it accounts for ignorance effects. §3.3 presents the alternative-based account, some criticisms of a version of it that relies only on Quantity and Quality, and a revised version of it that uses Brevity to explain the full set of ignorance effects. §3.4 provides evidence from the contribution of embedded occurrences of *some N or other*-DPs that the alternative-based account is preferable over the modal account. §3.5 discusses previous accounts of indefinites that give rise to ignorance effects, especially those upon which the proposed alternative-based account of *some N or other*-DPs is based.

### 3.1 Epistemic indefinites

Strawson 1974 reports a contrast between *a*- and *some*-DPs. The intended context is one where the speaker has been stung and is seeking treatment.

- (i) I’ve been stung by some insect
- (ii) I’ve been stung by a wasp
- (iii) I’ve been stung by some wasp

...The most satisfactory description of an unsatisfactory situation is given by “I’ve been stung by a wasp”. That gives all the identification we need of what stung me. “I’ve been stung by some insect” acknowledges that the kind-identification given falls short of what we generally regard as desirable in such cases... “I’ve been stung by some wasp”, on the other hand, with its suggestion of a possible individual-identification of the wasp in question, seems absurd. (Strawson 1974: 92)

These judgments are representative of the kind of data that are used to categorize an expression as an ‘epistemic indefinite’; an expression is an epistemic indefinite if it has an existential meaning that, intuitively, implies ignorance of some kind about the identity of the existential witness (e.g. Alonso-Ovalle & Menéndez-Benito 2013). The usual diagnostics for distinguishing epistemic from non-epistemic indefinites is oddness in contexts where the existential witness is considered to be something that is not identifiable in any salient way (e.g. Strawson’s data<sup>1</sup>), oddness with certain follow-up discourse moves – certain identifying appositives and assertions, and questions about the identity of the existential witness – and oddness in contexts where the identity of the existential witness is obvious. The term ‘epistemic indefinite’ appears to have emerged to describe the typological finding in Haspelmath 1997: §3.2.4 that it is common for languages to morphosyntactically distinguish a class of indefinites with these properties. Note that although the term ‘epistemic indefinite’ contains ‘epistemic’, calling an expression an epistemic indefinite does not imply commitment to an analysis where these expressions semantically encode a knowledge-/belief-related meaning (though some expressions with the aforementioned properties have been analyzed in this way). Much of the research on epistemic indefinites accepts that there are possibly diverse grammatical representations underlying the judgments that diagnose epistemic indefiniteness and aims to understand the range of variation.

An examination of further examples reveals that *some*’s effects with singular count nouns are not always as robust. For example, Farkas 2002: 70 (citing a manuscript by Michael Israel) reports that (1b) is odd following (1a), but the judgments I have collected are mixed.

- (1) a. Susan rented some movie for us to watch yesterday  
b. It was *The Maltese Falcon*

Becker 1999 says, “There may be important differences between the expressions *some student* and

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<sup>1</sup>The context-dependence of the judgment is illustrated by the fact that (iii) with *some wasp* is felicitous in a context where distinctions among wasp-kinds or among individual wasps are salient and relevant for treatment and by the fact that *some insect* may induce judgments of absurdity/oddness in a context where the only distinction among stingers that is relevant for treatment is, e.g., insect vs. jellyfish (i.e. where further identification of the insect’s kind would be irrelevant).

*some student or other*. In particular, the exclusion of *or other* seems to allow a reading on which the referent is in fact identifiable. . . [In] some cases, *some student* seems to fall part-way between *a student* and *some student or other* . . .” (fn. 1). Perhaps Becker is right that *some student* is sometimes roughly the same as *a student*; alternatively, perhaps (as implied by Slade 2015) *some student* is always distinct from *a student* but the kind of ignorance that it conveys is very easily satisfiable, so that, e.g., knowing the name of the movie that Susan rented does not preclude being ignorant of the movie’s identity in the way that *some movie* requires. I will focus on *some N or other*-DPs as an English example of an epistemic indefinite since the judgments appear to be more robust; Farkas likewise notes that adding *or other* (or distressing *some*, a phenomenon I have not examined) produces a more robust effect.

*Some N or other*-DPs exhibit the usual properties that diagnose epistemic indefiniteness. First, Strawson’s judgments remain the same if *some insect or other* replaces *some insect* ((i) is still fine) and *some wasp or other* replaces *some wasp* ((iii) is still odd), showing that *some N or other*-DPs are odd in contexts where the existential witness is considered to be something that isn’t identifiable in any salient way. Second, there is a clear contrast between (2a-b) when they are continued with certain follow-up discourse moves, as in (3a-c), partially repeated from the introduction.

- (2) a. Kim bought a book  
 b. Kim bought some book or other
- (3) a. (2a), #(2b) – namely, *War & Peace*  
 b. (2a), #(2b). It was *War & Peace*  
 c. A: (2a), #(2b)  
 B: What was it?

Third, in contexts where the identity of an existential witness is common knowledge, as in (4), *a-* and *some N or other*-DPs contrast in that only the former is felicitous; if the identity of the existential witness is not common knowledge, then both are fine, (5).



- (4) *Context: We saw Kim buying War & Peace.*
- a. Kim bought a book
  - b. #Kim bought some book or other
- (5) *Context: We saw Kim buying a book, but we didn't see which book it was.*
- a. Kim bought a book
  - b. Kim bought some book or other

In considering different possible analyses of the sources of ignorance requirements, I will assume an existential, generalized-quantificational semantics for indefinite determiner phrases, as in (6) (Barwise & Cooper 1981); the presupposition assigned to *Indef* is based on Beaver 2001 and on Chemla 2009 (cf. Heim 1983).

- (6) For every  $P, Q \in D_{(e,t)}$ :
- [[Indef]]( $P$ )( $Q$ ) is defined only if  $\exists x[P(x) \wedge [Q(x) \text{ is defined}]]$ .
- If defined, [[Indef]]( $P$ )( $Q$ ) = True iff  $\exists x[P(x) \wedge Q(x)]$

This is a simplification; although an indefinite *a*-DP has an existential meaning in argument position of an episodic sentence like (7), other occurrences of *a*-DPs do not have an existential interpretation, (8a-d); here, they appear to inherit their quantificational force from the adverbs in the consequent clauses (Lewis 1975, Kamp 1981, Heim 1982, a.o.).

- (7) A plate fell from this shelf
- (8)
- a. If a plate falls from this shelf, it always breaks
  - b. If a plate falls from this shelf, it usually breaks
  - c. If a plate falls from this shelf, it sometimes breaks
  - d. If a plate falls from this shelf, it rarely breaks

Because my investigation is limited to *a*- and *some N or other*-DPs occurring in argument posi-

tion of simple episodic sentences, *Indef* is sufficient. In entertaining accounts for the difference between these two determiner phrases, I will only consider different possible restrictions for the existential quantifier. Thus, the accounts I consider could be recast in a theory where indefinite determiner phrases denote restricted variables, as in Kamp 1981, Heim 1982, among other kinds of non-quantificational analyses (Fodor & Sag 1982, Partee 1986b, Reinhart 1997, Kratzer & Shimoyama 2002, a.o.).

Incidentally, *Indef* is not obviously insufficient to account for the quantificational force of *some-* and *some N or other-DPs*, given the fact (discussed in Becker 1999) that they are more robustly existential. Whereas an *a-DP* supports a generic reading in (9a), with roughly the same meaning as *every turtle has four legs*, a *some-* or *some N or other-DP* does not, (9b).

- (9) a. A turtle has four legs  
b. Some turtle (or other) has four legs

On the other hand, in an *if*-clause restricting an adverb like *usually* (which Becker does not discuss), a *some-* or *some N or other-DP* does appear to inherit the force of the adverb; (10) has roughly the same meaning as *the fisherman set free most turtles that got caught in the net*.

- (10) If some turtle (or other) got caught in the net, the fisherman usually set it free

I implicitly assume the theory of the constraints on the quantificational force of indefinite determiner phrases in Kratzer & Shimoyama 2002, involving requirements imposed by determiners' uninterpretable features. I set this issue aside in considering the source of ignorance requirements.

### 3.2 The modal account

According to the modal account, what distinguishes *some N or other-DPs* from *a-DPs* is that they are restricted to quantify over individuals whose identity is unsettled. (11) has the meaning sketched in (11a-b), assuming that the relevant modal base is speaker-epistemic.

- (11) Kim bought some book or other
- a. Denotes: ‘There is a book such that the speaker is certain that it is  $C_1$  or  $C_2$  (... or  $C_n$ ), but is not certain that it is  $C_1$  and is not certain that it is  $C_2$  (... and is not certain that it is  $C_n$ ) such that Kim bought it’
  - b. Presupposes: ‘There is a book such that the speaker is certain that it is  $C_1$  or  $C_2$  (... or  $C_n$ ), but is not certain that it is  $C_1$  and is not certain that it is  $C_2$  (... and is not certain that it is  $C_n$ )’

This meaning closely resembles the one assigned to clausal disjunctions in Zimmermann 2000. Under Zimmermann’s proposal, *Kim bought War & Peace or Anna Karenina*, said with falling intonation, expresses that out of some contextually determined list of propositions, the only ones that the speaker considers possible are that Kim bought *War & Peace* and that Kim bought *Anna Karenina*. A formation condition on lists guarantees what  $or^C$ ’s presupposition is proposed to guarantee: that the listed possibilities are independent of one another (i.e. mutually disjoint, in the set terminology used to discuss  $or^C$ ). The main difference between the modal account and Zimmermann’s account of disjunctions is that the latter derives ‘genuineness’ – i.e. the inference that each mentioned list member is considered possible – or in the terminology presented in the preceding chapter, a total ignorance inference. (11a) merely requires partial ignorance, forbidding certainty about which particular identifier holds of the witness.

I take the meaning in (11) to be derived from an LF as in (12)<sup>2</sup> and from the lexical entries in (12a-d), repeated from previous chapters.

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<sup>2</sup>An alternative compositional analysis, based on von Stechow 1994, would have *Indef* select for an additional restrictor argument and have *unsettled* with all of its arguments (or under the pragmatic account,  $or^C$  with all of its argument) be the sister of *Indef*.

- (i) For every  $C, P, Q \in D_{(e,t)}$ :  
 $\llbracket \text{Indef} \rrbracket (C)(P)(Q)$  is defined only if  $\exists x [C(x) \wedge P(x) \wedge [Q(x) \text{ is defined}]]$ .  
 If defined,  $\llbracket \text{Indef} \rrbracket (C)(P)(Q) = \text{True}$  iff  $\exists x [C(x) \wedge P(x) \wedge Q(x)]$



there is no one method of identifying objects that is relevant for every occurrence of a *some N or other*-DP ((13b) is based on the triplets example in Alonso-Ovalle & Menéndez-Benito 2017).

- (13) a. *Context: We saw Kim buying War & Peace.*  
 #Kim bought some book or other
- b. *Context: We are looking at a shelf that is full of rare editions of War & Peace. We know that Kim has bought one in an auction.*  
 Kim bought some book or other

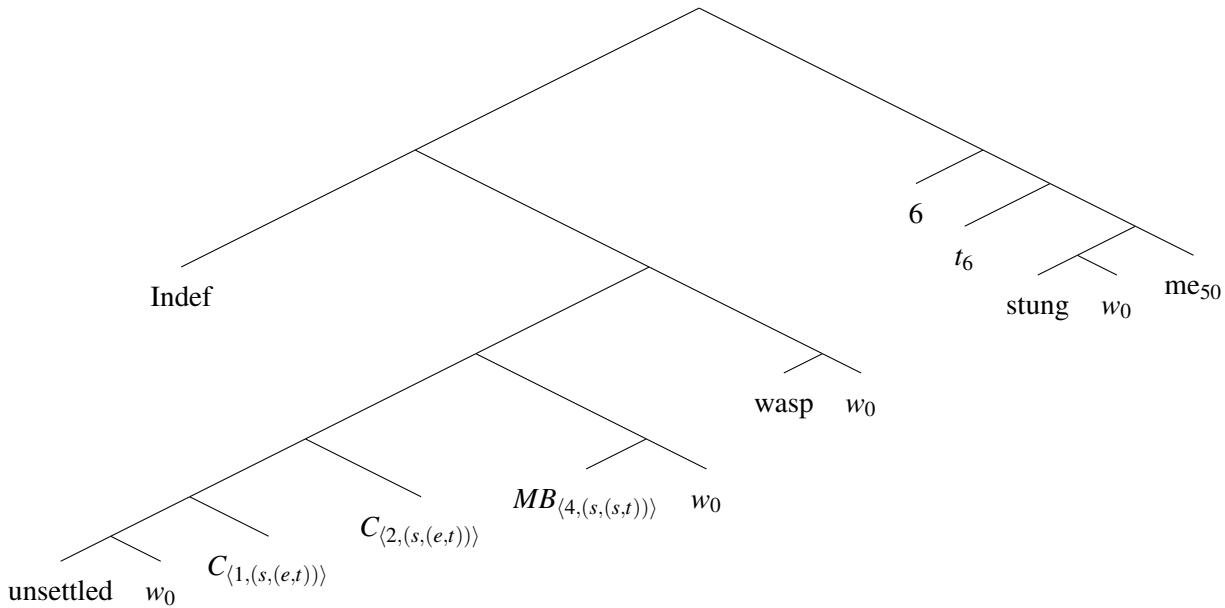
*Some book or other* is odd in (13a), especially in comparison to *a book*, presumably because the context does not supply much by way of identifying books, other than by naming. Furthermore, it identifies an existential witness by naming. In contrast, it is fine in (13b), despite the fact that the name of an existential witness is known, because there is a different, salient way of identifying books i.e. as particular members of the ostended domain of copies of *War & Peace*. See §4 for further discussion on methods of identification, which I set aside while contrasting accounts.

What explanation does the modal account provide for the three properties that distinguish *some N or other*-DPs from *a*-DPs? Recall that these are oddness in contexts where the existential witness is considered to be something that isn't further identifiable, oddness with certain follow-ups, and oddness in contexts where the identity of the existential witness is obvious. The first property is a consequence of the Bridge Principle and the Appropriateness Condition, repeated in (14).

- (14) For every utterance context  $c$  and for every declarative LF  $\phi$
- a. Bridge Principle  
 $\phi$  is felicitous in  $c$  only if  $CK_c \subseteq \{w \in D_s \mid \llbracket \phi \rrbracket^{g_c}(w)$  is defined}
- b. Appropriateness Condition  
 $\phi$  is felicitous in  $c$  only if for every free proform  $\alpha$  in  $\phi$ ,  $\llbracket \alpha \rrbracket^{g_c}$  is defined

Consider the LF assigned by the modal account to *some wasp or other stung me*, (15).

(15) Some wasp or other<sup>MA</sup> stung me



The Appropriateness Condition requires any context in which (15) is used to supply an assignment that assigns values for all of the free proforms,  $C_{\langle 1,(s,(e,t)) \rangle}$ ,  $C_{\langle 2,(s,(e,t)) \rangle}$ ,  $MB_{\langle 4,(s,(s,t)) \rangle}$ , and  $me_{50}$ . The Bridge Principle requires (15), relative to the contextually-given assignment, to be defined at every world in  $CK_c$ . This means that at every world  $w$  in  $CK_c$ , at every world  $w'$  that is  $MB_{\langle 4,(s,(s,t)) \rangle}$ -accessible from  $w$ , the values assigned to  $C_{\langle 1,(s,(e,t)) \rangle}$  and  $C_{\langle 2,(s,(e,t)) \rangle}$  characterize non-empty and mutually disjoint sets in  $w'$  (presupposition of *unsettled*), and at every world  $w$  in  $CK_c$ , there is a wasp in  $w$  that is  $C_{\langle 1,(s,(e,t)) \rangle}$  at some world  $MB_{\langle 4,(s,(s,t)) \rangle}$ -accessible from  $w$  and  $C_{\langle 2,(s,(e,t)) \rangle}$  at some world  $MB_{\langle 4,(s,(s,t)) \rangle}$ -accessible from  $w$  (presupposition of *Indef*). Compliance with both principles requires the speaker (or whoever it is whose information state  $MB_{\langle 4,(s,(s,t)) \rangle}$  reflects) to have a way of distinguishing among wasps, which is not satisfied if wasps are considered to be something not identifiable.

Contextual restrictions for quantificational expressions are commonly held to have weaker felicity conditions than words like *it* and *that*, which motivate the Appropriateness Condition. Recall that a hearer will not freely accept the addition of *on it/this/that*, even if it is known there there is something that the speaker can felicitously refer to with *it/this/that*. Schwarzschild 2002 shows that the felicity conditions of contextual restrictions are less stringent:

- (i) Me and my partner Fleisch went into debt; serious debt and to some not very nice people. I got an idea that I could sell that old fish farm I have back home and maybe raise a few bucks. I call a lawyer and she tells me: “You can only sell the farm, if all of your relatives die.” Since I have not heard about any genocidal maniacs recently, I give up on that idea. Meanwhile, I relate the story to Fleisch who is more desperate than I am. He asks who’s included in “all of your relatives”? I say I do not know exactly, but the devilish look in his eyes tells me I better go back to the lawyer to find out.

The lawyer’s use of *all* is implicitly restricted. I know that. Fleisch knows that. But exactly what the restriction consists of, only the lawyer can tell us. So when I hear the lawyer’s remark and when Fleisch hears mine, we both come under the Privacy Principle in [(16)]. The only way we can say exactly what is being quantified over is to make reference to the lawyer’s utterance: it is the people she had in mind.

(Schwarzschild 2002: 311)

(16) Privacy Principle

It is possible for a felicitous utterance to contain an implicitly restricted quantifier even though members of the audience are incapable of delimiting the extension of the implicit restriction without somehow making reference to the utterance itself.

(Schwarzschild 2002: 307)

The restrictions in the LFs of *some N or other*-DPs appear to be subject to this weaker felicity condition. Unlike indexical pronominal expressions like *this* and *that*, *some N or other*-DPs may be felicitous even if it is not established in advance how the individuals quantified over are being identified. (17) is an example.

- (17) A: What did you do last night?  
B: My friend and I watched some movie or other

The felicity of B's utterance does not depend on previous establishing of how exactly movies are being identified. But supposing that there is some principle that dictates that a free proform must have reference, the modal account provides an explanation of Strawson's reported judgement i.e. that the felicity of *some wasp (or other)* depends on the audience's willingness to accept that the speaker or relevant epistemic source has a way identifying wasps. A *wasp*, whose LF does not contain *unsettled*, does not impose this requirement.

Regarding the next property – oddness with identifying follow-ups or with follow-up questions about the witness's identity – the modal account establishes a semantic similarity between such follow-ups and the semantics commonly assigned to Moorean Paradoxes. The term 'Moorean Paradox' is applied to a variety of conjunctions that are hypothesized to be semantically consistent that are composed of a statement  $\phi$  and a present tense, negative speaker-belief ascription that  $\phi$  (or alternatively, a present tense, positive speaker-belief ascription that  $\neg\phi$ ), which are judged odd or contradictory. (18) is an example.

(18) #It's raining but I'm not certain that it's raining

According to Yalcin 2007, uses of sentences like (18) are defective because "... They involve the speaker in some kind of pragmatic conflict. For instance, if it is conventionally understood that, in making an assertion in a normal discourse context, one usually represents oneself as knowing what one says, then in uttering [(18)], one will end up representing oneself as both knowing something and also as knowing that one does not know it" (pp. 984). (19) schematizes a pragmatic derivation of a contradiction from (18) (based on Pearson 2013: 122).

- (19)
- a. The speaker has asserted that it is raining but she isn't certain that it is raining
  - b. If the speaker asserts  $\phi$ , then she is certain that  $\phi$  (by Quality)
  - c. The speaker is certain that it is raining but that she isn't certain that it is raining (by (19a), (19b))
  - d. The speaker is certain that it is raining (by (19c))
  - e. The speaker is certain that she isn't certain that it is raining (by (19c))



- f. If the speaker is certain that she isn't certain that it is raining, then she isn't certain that it is raining (by assumption).
- g. The speaker isn't certain that it is raining (by (19e) and (19f)).
- h. (19d) and (19g) is a contradiction

Suppose that the evaluation of the *some N or other*-DP in (20a) involves a speaker<sub>c</sub>-oriented modal base and that the continuations in (20b) identify the witness at the same level of granularity that the *some N or other*-DP requires with its identifiers. Taking the continuations in (20b), effectively, to add a restriction to the existential quantification, as given in (21), a pragmatic derivation of a contradiction proceeds along the lines of (19).

- (20) a. Kim bought some book or other
- b. { Namely, *War & Peace* / it is *War & Peace* }
- (21) There is a book such that I am certain that it is *War & Peace* or  $C_2$  (... or  $C_n$ ), but I am not certain that it is *War & Peace*, and I am not certain that it is  $C_2$ , (... and I am not certain that it is  $C_n$ ), such that Kim bought it, and such that it is *War & Peace*

To ask *what is it?* in response to (20a) is to entreat the speaker to perform a Moorean Paradox.

Note that the pragmatic derivation of a contradiction only goes through assuming that the modal base in speaker<sub>c</sub>-oriented. Examples like (22a-b), constructed on analogy with addressee-oriented (teasing) readings and conversation-oriented (disagreement) readings of *whatever*-DPs presented in von Stechow 2000 and Lauer 2009, would be accommodated by the modal account by appealing to different possible values for the *MB*-argument of *unsettled*.

- (22) a. I got you something or other that I think you'll really like
- b. A: Kim bought *War & Peace*
- B: No, she bought *Anna Karenina*
- A: In any case, she bought some book or other

But given this apparently needed flexibility in whose beliefs *unsettled* is sensitive to, the modal account does not predict any necessary conflict between what is said in (20a) and the continuations in (20b); it is fully compatible (semantically and pragmatically) for the speaker to claim something and to claim that the addressee does not believe it, (23a-b).

- (23) a. It's raining { but / even though } you are not certain that it is raining  
b. You are not certain that it is raining { but / even though } it is

As it turns out, judgments regarding discourses like (24) are slightly different from those collected about *some N or other*-DPs followed up with an identifying continuation without any further context. In particular, B's use of a *some N or other*-DP (together with an identifying follow-up) is typically perceived to be licensed by A's initial use of the same *some N or other*-DP.

- (24) A: Kim bought some book or other  
B: Indeed she did buy some book or other. She bought *War & Peace*

The modal account can explain this judgment by appealing to a default speaker-oriented modal base, so that a Moorean paradox arises by default but not when the context is sufficiently rich so as to allow the *some N or other*-DP to be evaluated relative to a non-speaker oriented modal base.

The final fact – that *some N or other*-DPs contrast with *a*-DPs in contexts where the identity of the existential witness is common knowledge – was illustrated by (25).

- (25) *Context: We saw Kim buying War & Peace.*  
a. Kim bought a book  
b. #Kim bought some book or other

Supposing that the information that Kim bought *War & Peace* in part determines what counts as identifying a book in this context, then (25b), unlike (25a), is a presupposition failure if there are no books whose identities are not known, or, if there are other books whose identities are not known,

it is contingent on whether Kim bought any of those. In contrast, *Kim bought a book* is verified by the information that she bought *War & Peace*.

### 3.3 The alternative-based account

This section presents the grammatical representation assigned to *some N or other*-DPs under the alternative-based account, the insufficiency of Quantity and Quality alone to explain the full range of ignorance effects, and the additional pragmatic principle of Brevity, which is adduced from the felicity conditions on clausal disjunctions and applied to *some N or other*-DPs.

According to the alternative-based account, *some N or other*-DPs encode a restriction that they quantify over individuals that are in at least one identifier-extension, and for each relevant identifier  $C$ , the *some N or other*-DP has an alternative that denotes an existential quantifier restricted to quantify over individuals in  $C$ 's extension. (26) has the meaning sketched in (26a-b) and it is associated with alternatives whose meanings are given in (27).

(26) Kim bought some book or other<sup>AA</sup>

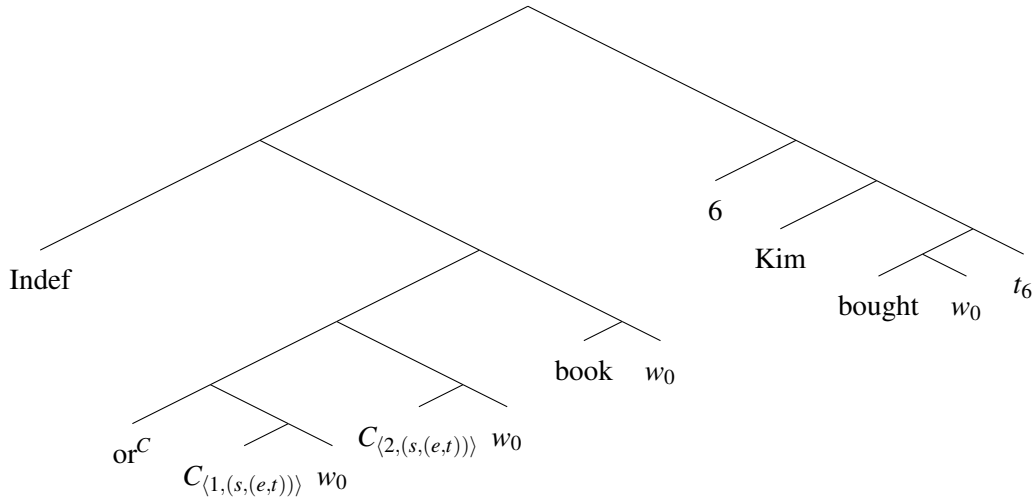
- a. Denotes: 'There is a  $C_1$  or  $C_2$  (... or  $C_n$ ) book that Kim bought'
- b. Presupposes: 'There is a  $C_1$  or  $C_2$  (... or  $C_n$ ) book'

(27)  $\text{ALT}_c((26)) \supseteq \{\psi_1, \psi_2, \dots, \psi_n\}$  such that

- a.  $\psi_1$ 
  - (i) Denotes: 'There is a  $C_1$  book that Kim bought'
  - (ii) Presupposes: 'There is a  $C_1$  book'
- b.  $\psi_2$ 
  - (i) Denotes: 'There is a  $C_2$  book that Kim bought'
  - (ii) Presupposes: 'There is a  $C_2$  book'
- c.  $\psi_n$ 
  - (i) Denotes: 'There is a  $C_n$  book that Kim bought'
  - (ii) Presupposes: 'There is a  $C_n$  book'

As discussed later in §3.5, this account is largely based on the analysis of German *irgendein*-DPs in Kratzer & Shimoyama 2002 and the analysis of Spanish *algún*-DPs in Alonso-Ovalle & Menéndez-Benito 2010. The meaning in (26) is derived from the LF assigned by the alternative-based account in (28), along with the meaning for  $or^C$ , repeated from the previous chapter (the rest is repeated from the modal account of *some N or other*-DPs above)<sup>3</sup>.

(28) Kim bought some book or other<sup>AA</sup>



(29) For every  $C_1 \dots C_n \in D_{(e,t)}$  ( $n \geq 2$ ):

$\llbracket or^C \rrbracket (C_1) \dots (C_n)$  is defined iff  $\forall C \in \{C_1, \dots, C_n\}$

a.  $\exists x [C(x)]$

b.  $\neg \exists C' \in \{C_1, \dots, C_n\} [C' \neq C \wedge \exists x [C(x) \wedge C'(x)]]$

If defined, then for every  $x \in D_e$ :

$\llbracket or^C \rrbracket (C_1) \dots (C_n)(x) = \text{True}$  iff  $\exists C \in \{C_1, \dots, C_n\} [C(x)]$

The LF in (28) gets associated with alternatives as a result of the assumptions concerning  $ALT_c$

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<sup>3</sup>Note that I intend for the result of  $or^C$  composing with the  $C$ -variables to compose intersectively with *book* and crucially not for *book* to be one of the identifiers. I use  $or^C$  and not its plural variant  $or^{C,\Xi}$  introduced in §2.6 because *some N or other*-DPs are only grammatical in morphologically singular form, (i).

(i) \*Kim bought some books or others

I do not have an explanation for this constraint.

in (30), repeated from the preceding chapter. (30a) states that regardless of the context, a  $C$ -disjunction competes with its individual disjuncts, and (30b) states that the alternatives to a non-terminal, binary-branching LF include all of the structures derivable by substituting its daughters with their respective alternatives.

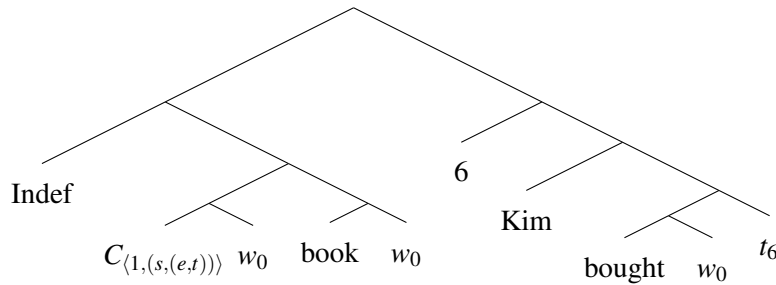
(30) Assumptions about  $ALT_c$

For every utterance context  $c$  and for every LF  $\phi$ :

- a. If  $\phi$  is a maximal disjunctive LF of the form  $[ [\dots [ [ \text{or}^C \psi_1 ] \psi_2 ] \dots ] \psi_n ]$ ,  
then  $ALT_c(\phi) \supseteq \{ \psi_1, \psi_2, \dots, \psi_n \}$
- b. If  $\phi$  is a non-terminal, binary-branching LF of the form  $[ \alpha \beta ]$ ,  
then  $ALT_c(\phi) \supseteq \{ [ \alpha' \beta' ] \mid \alpha' \in ALT_c(\alpha) \wedge \beta' \in ALT_c(\beta) \}$

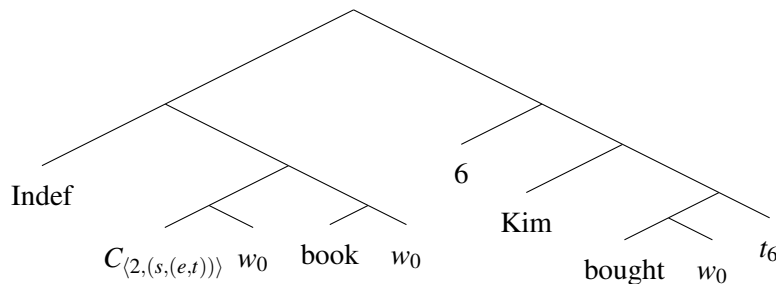
Given (30), in any context  $c$ ,  $ALT_c$  applied to the LF in (28) returns a set of LFs whose members include (31a-b).

(31) a.



- (i) Denotes: ‘There is a  $C_1$  book that Kim bought’
- (ii) Presupposes: ‘There is a  $C_1$  book’

b.



- (i) Denotes: ‘There is a  $C_2$  book that Kim bought’
- (ii) Presupposes: ‘There is a  $C_2$  book’

What kind of explanation does the alternative-based account provide for the various properties that distinguish *some N or other*-DPs from *a*-DPs? First, it predicts that the use of a *some N or other*-DP may trigger processes of pragmatic reasoning involving Quantity and Quality, as a result of the fact that a *some N or other*-DP always has more informative alternatives. The maxims are repeated from the introduction in (32)-(33).

(32) Quantity

- a. Make your contribution as informative as required for the purposes of the exchange
- b. Do not make your contribution more informative than is required

(33) Quality

- a. Do not say what you believe to be false
- b. Do not say that for which you lack adequate evidence

Suppose we are in a context where it is common knowledge that there are books, where there is a salient way of distinguishing things (among them, books), and where our purpose is to determine in the most precise way possible what Kim bought, as in (34).

(34) *Context: At a speciality Tolstoy shop that sells only War & Peace, Anna Karenina, and Resurrection.*

A: What did Kim buy?

B: She bought some book or other

In this context, like in any context, B's utterance is associated with more informative alternatives; these would suit the purpose of this particular conversation better than B's actual utterance, which brings A and B less close to determining in the most precise way possible what Kim bought. Assuming that Quantity and Quality are B's deciding considerations in choosing to say *some book or other* rather than one of its alternatives, B can be inferred to be certain of what she has said, given Quality – i.e. that there is a  $C_1$  or  $C_2$  (... or  $C_n$ ) book that Kim bought – but to be uncertain

of every alternative; otherwise, B would have used an alternative, given Quantity. This derivation of an ignorance inference parallels the one discussed in the introduction in connection to *Kim is in North America* in response to *What city is Kim in?*

But not every conversational context is set up in this way, and Quantity and Quality alone do not suffice to explain the full range of inferences/judgments that *some N or other-DPs* produce. This can be brought out by contrasting a *some N or other-DP* statement with the general statement *Kim is in North America*. In the discourse in (35), *Kim is in North America* does not license any inferences about B's beliefs about Kim's city-level whereabouts. The assumption of Quantity and Quality compliance do not license such inferences presumably because city-level statements do not suit the conversational purpose better i.e. are not relevant. B may or may not know which city in North America Kim is in.

- (35) A: Is Kim in Europe?  
B: Kim is in North America

In contrast, as pointed out by Aloni & Port 2013 and Alonso-Ovalle & Menéndez-Benito 2013 for the epistemic indefinites that they study, epistemic indefinites, including *some N or other-DPs*, continue to license ignorance inferences in contexts where a *some N or other-DP's* alternatives are not better suited than it for the conversational purpose. I take (36) to exemplify such a context; in this context, saying that Kim bought a particular book does not serve the conversational purpose – to explain why Kim should get a bookmark – better than the *some N or other-DP*. Her receiving a bookmark is not in any way dependent on the identity of the book she bought.

- (36) *Context: We saw Kim buying a book, but we didn't see which book it was. The shop has a special offer: buy a book, get a bookmark.*  
Excuse me! Our friend should get a bookmark.  
a. She bought a book  
b. She bought some book or other

That *some book or other* licenses an ignorance inference is evidenced by the contrast between (36b) and (37c) in their respective contexts, which differ in whether we saw what book Kim bought.

(37) *Context: We saw Kim buying War & Peace. The shop has a special offer: buy a book, get a bookmark.*

Excuse me! Our friend should get a bookmark.

- a. She bought a book
- b. She bought *War & Peace*
- c. #She bought some book or other

The oddness of (37c) is not explained if Quantity and Quality are the only pragmatic principles involved in the derivation of ignorance inferences with *some N or other*-DPs. In particular, Quantity as formulated does not distinguish between the *some N or other*-DP statement and its alternatives determined on the basis of the *C*-disjunction, since in this conversation, there is no pressure to contribute additional information about the book's identity. The alternative-based account needs a different way to explain the oddness of (37c).

Aloni & Port 2015 raise a similar concern about follow-up moves. It is commonly assumed that inferences derived by Gricean Quantity-Quality are defeasible; since not every conversation is normal, an inference that depends on assumptions of normality is not expected to arise in every conversation. Grice uses the term 'cancellable' to describe this feature of pragmatically derived inferences. For example, that (38a) often implies (38b) is attributed to Quantity-Quality, but the consistency of B's statement in (39) shows that this implication is defeasible.

- (38)
- a. Kim read some of the books
  - b. Kim didn't read all of the books



(39) Context: *To join our book club, you need to have read some of the books.*

A: Does Kim qualify for membership in our book club?

B: Yes, because Kim read some of the books – in fact, she read all of them

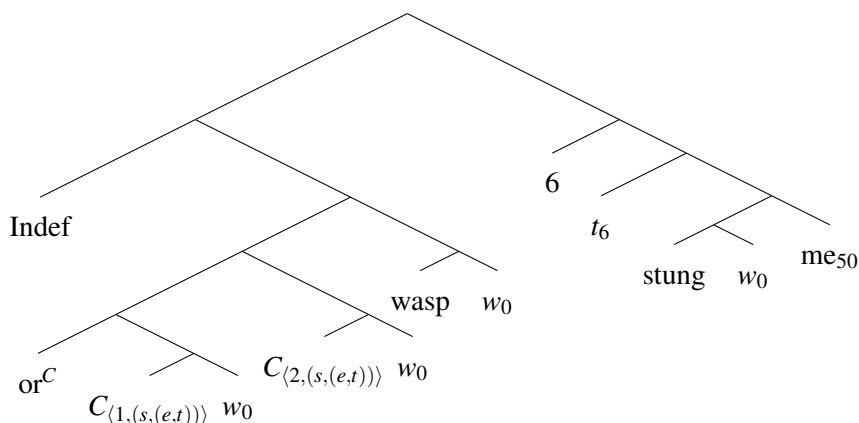
A purely Quantity/Quality-based account of ignorance implications does not explain the oddness of continuations like (40); the expectation, given (39), is that (40) would constitute felicitous implicature suspension.

(40) A: Did Kim receive a bookmark?

B: #Yes, because Kim bought some book or other – namely, *War & Peace*

Finally, under the alternative-based account, the Appropriateness Condition and the Bridge Principle do not provide an explanation for the oddness of *some N or other*-DPs in contexts where witnesses are not considered to be identifiable. (41) is the relevant LF.

(41) Some wasp or other<sup>AA</sup> stung me



The Appropriateness Condition requires the contextually-given assignment to provide values for all of the free proforms,  $C_{\langle 1,(s,(e,t)) \rangle}$ ,  $C_{\langle 2,(s,(e,t)) \rangle}$ , and  $me_{50}$ . The Bridge Principle requires (41), relative to the contextually-given assignment, to be defined at every world in  $CK_c$ . This means that at every world  $w$  in  $CK_c$ , the values assigned to  $C_{\langle 1,(s,(e,t)) \rangle}$  and  $C_{\langle 2,(s,(e,t)) \rangle}$  characterize non-empty and mutually disjoint sets in  $w$  (presupposition of  $or^C$ ), and at every world  $w$  in  $CK_c$ , there is a wasp

in  $w$  that is  $C_{\langle 1, (s, (e, t)) \rangle}$  or  $C_{\langle 2, (s, (e, t)) \rangle}$  in  $w$  (presupposition of *Indef*). Some properties that would meet this condition would be properties like ‘is an insect’ and ‘is a mammal’. At every world compatible with common knowledge, there are insects and mammals, nothing is both an insect and a mammal, and there is a wasp that is an insect. Perhaps in certain contexts, Quantity-Quality produce obviously false ignorance inferences regarding alternatives determined on the basis of such identifying properties, but these too should be defeasible, as discussed above.

### 3.3.1 Excursus on clausal disjunction

To show how I propose to account for these facts under the alternative-based account, I want to consider the implications of unembedded clausal disjunctions, in particular, the ignorance implication regarding each disjunct, (42). I take clausal disjunctions to be structurally parallel at LF to the other kinds of disjunctions discussed so far, and I assume that disjunctions always have their individual disjuncts as alternatives (Sauerland 2004, Katzir 2007).

(42) Kim is in Mexico City or Ottawa

Once again, in certain contexts, Quantity and Quality may be responsible for producing the implication that the speaker is not certain that Kim is in Mexico City and the implication that the speaker is not certain that Kim is in Ottawa; *Kim is in Mexico City or Ottawa* provides less information than its individual disjuncts do, and if Quantity and Quality are assumed to be the deciding factors in the speaker’s choice to utter a disjunction, then ignorance is inferred. But it has long been recognized that the syntactic form of a disjunction is involved in producing its implications. The effort involved in producing a disjunction is discussed by McCawley.

A declarative sentence *A or B* conveys that the speaker doesn’t know which of *A* and *B* is the case because if he did know, he would have been in a position to say *A* or to say *B*, as the case may be, and thus he could have said something more informative than *A or B* with less linguistic effort. Because the speaker expended the extra effort, he is taken as not having been in a position to cooperatively assert *A* or assert *B* and is

thus taken as not knowing whether A or B is the case.

(McCawley 1978: 245)

Eckardt expresses a similar point<sup>4</sup>.

In using a disjunction, the speaker necessarily has to mention two [disjuncts] which are usually more specific. These [disjuncts] are presented as salient and relevant. The simpler sentences are salient alternative utterances in context. The hearer hence will look for a reason why the speaker chose a more complex expression in order to give less information.

(Eckardt 2007: 39)

That the relative effort involved in producing a disjunction has an effect in its pragmatic implications is discussed recently in Lauer 2014, 2016; Lauer shows that ignorance implications arise more robustly than an alternative-based account employing just Quantity and Quality would expect. A well-known feature of Quantity-Quality based inferences is that whether they are licensed is highly dependent on the question in discourse, or so-called ‘question under discussion’ (QUD), that an utterance is addressing (van Kuppevelt 1996, Roberts 1996, 2012). Such questions are often implicit in discourse, but speakers appear to have robust judgments about mini-discourses consisting of question-answer pairs. Consider the conversational impact of B’s utterance as a response to the various questions posed by A in (43a-c).

- (43) a. A: What city is Kim in?  
B: Kim is in North America
- b. A: Who out of our siblings is currently in North America?  
B: Kim is in North America
- c. A: Is Kim in Europe?  
B: Kim is in North America

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<sup>4</sup>I have substituted *disjuncts* for Eckardt’s term *properties*, which I reserve for  $(s, (e, t))$ -type denotations.

In (43a), B is taken to imply that they are not certain what city in North America Kim is in. In (43b), B is taken to imply that Kim is in North America and that for every other sibling  $x$ , B is not certain that  $x$  is in North America – possibly also the scalar/exhaustivity implication that for every other sibling  $x$ , B is certain that  $x$  is not in North America (the difference can be intonationally marked in B’s utterance). Finally, in (43c), B is not taken to imply anything about (their beliefs about) the whereabouts of their siblings or about (their beliefs about) what city Kim is in; *Kim is in North America*, as a response to *Is Kim in Europe?*, is fully compatible with B knowing exactly what city in North America Kim is in. These differences arise because A’s question in part determines which potential utterances B’s actual utterance is compared to.

Lauer observes that disjunctive structures are different; consider the conversational impact of B’s utterance as a response to the various questions posed by A in (44a-c), based on data in Lauer 2014, 2016.

- (44) a. A: What city is Kim in?  
B: Kim is in Mexico City or Ottawa
- b. A: Who out of our siblings is currently in North America?  
B: Kim is in Mexico City or Ottawa
- c. A: Is Kim in Europe?  
B: Kim is in Mexico City or Ottawa

Regardless of A’s question, B is taken to imply that B is not certain whether Kim is in Mexico City or whether she is in Ottawa. This is in spite of the fact that B has ‘ver-answered certain questions. *Kim is in Mexico City or Ottawa* provides more information than the expected *no*-answer would provide in (44c), and it provides more information than the expected *Kim*-answer would provide in (44b). Note that these judgments persist even if the context is enriched so that Mexico City and Ottawa are the only two places in North America that A and B would consider it possible for Kim to be in i.e. where *Kim is in North America* and *Kim is in Mexico City or Ottawa* effectively mean the same thing. This suggests that the implication that arises with a disjunctive structure is not a result (solely) of its informativity and the information-demands of the context.

Lauer 2013: §9.3, 2014, 2016 proposes, following the quoted works above, that the syntactic structure of disjunction is responsible for the robustness of its ignorance implications. Because of the relative syntactic complexity and un informativity of unembedded disjunctions, even if they are as good as their individual disjuncts at satisfying the information-demands of the conversation, the use of a syntactically complex expression causes the listener to look for a reason why it was used over a structurally simpler alternative. Unless such a reason is found, the use of a disjunction is infelicitous. As evidence that felicity is at stake, consider the judgments about (45a-c) (based on Lauer 2014, fn. 14).

- (45) a. A: If only Kim were in Ottawa or Mexico City. . .  
B: But Kim is in Ottawa or Mexico City! She landed in Ottawa this morning.
- b. A: If only Kim were in North America. . .  
B: #But Kim is in Ottawa or Mexico City! She landed in Ottawa this morning.
- c. A: If only Kim were in North America. . .  
B: But Kim is in Ottawa! She landed in Ottawa this morning.

(45a) shows that one reason that justifies using a disjunction, other than ignorance, is previous use of a disjunction; I will call this reason ‘maintaining parallelism’. On the other hand, the oddness of (45b) shows that when maintaining parallelism and ignorance are eliminated as reasons justifying the use of a disjunction, the disjunction is odd. (45c) shows that a non-disjunctive construction’s felicity is not dependent on maintaining parallelism.

That the syntactic form of a speaker’s message may lead to pragmatic inferences is recognized in Grice 1975, who posits the maxim in (46), which includes (46c).

- (46) Manner
- a. Avoid obscurity of expression
  - b. Avoid ambiguity
  - c. Be brief (avoid unnecessary prolixity)
  - d. Be orderly

The effects attributed to (46c) are commonly called ‘markedness implicatures/inferences’ and are explored in McCawley 1978, Horn 1984, Rett 2015, a.o. – see Rett 2015: §4, 2020 for an overview. I find (46c) insufficient to account for judgments regarding B’s utterance in (45b), given the standard view that maxims like (46) are defeasible. (46c) in principle cannot derive infelicity. As such, I will assume a Lewisian construal of (46c) as a specification of correct play, which I call Brevity, (47); it is closely modeled on the M Principle in Rett 2015: 101, except for a difference discussed below. Brevity requires there to be a salient reason every time a complex utterance is used instead of a simpler alternative. The notion of structural simplicity that I assume is the one in Katzir 2007; for all LFs  $\phi$  and  $\psi$ ,  $\psi$  is simpler than  $\phi$  iff  $\psi$  can be derived from  $\phi$  by a finite series of contractions, deletions, or substitutions, but  $\phi$  cannot be derived from  $\psi$  by a finite series of contractions, deletions, or substitutions. For every LF  $\phi$ , every alternative to  $\phi$  determined on the basis of a disjunction in  $\phi$  is simpler than  $\phi$ .

(47) Brevity

For every utterance context  $c$  and every declarative LF  $\phi$ ,  $\phi$  is felicitous in  $c$  only if there is no  $\psi \in \text{ALT}_c(\phi)$  such that

- a.  $\psi$  is structurally simpler than  $\phi$
- b. There is no reason to use  $\phi$  in  $c$  instead of  $\psi$

(Reasons: upholding Quantity, upholding Quality, maintaining parallelism, withholding information, and avoiding disagreement)

The list of reasons for using something complex is not meant to be exhaustive; these are the only ones I will discuss. (48a-b) motivate including withholding information and avoiding disagreement as reasons for using something syntactically complex.

(48) a. Kim is in Ottawa or Mexico City. Care to guess which?

b. A: Kim is in Ottawa

B: No, she’s in Mexico City

A: In any case, she’s in Ottawa or Mexico City, so she’s in North America

I do not intend for (47) to replace Grice's Manner (or Rett's (2015) M Principle, which also expresses the defeasible assumption that shorter forms are preferred, if assertable); I think there may well be cases where a defeasible assumption for shorter forms provides a better explanation than a felicity condition. (49), involving the periphrastic causative phrase *cause to die* (cf. *kill*), has been claimed to exemplify such a case. McCawley 1978 proposes that the inference commonly associated with the periphrastic causative – i.e. that the death was caused in a manner less direct than normally described with *kill* – results from the relative complexity of *cause to die* compared to *kill*, but Rett 2015 observes that such an inference is defeasible (interestingly, in a context where *cause to die* maintains parallelism).

(49) A: I just saw an ambulance leave Adam's apartment carrying the sheriff's body. Did Adam somehow cause the sheriff to die?

B: Yes (Adam caused the sheriff to die), in fact he killed him outright.

(Rett 2015: 87)

On the other hand, I am convinced by (45b) that there are cases where the use of something complex for no reason induces infelicity; Horn 1984 appears to have the same idea in writing (regarding his proposed speaker-economy principle, the R Principle) "... intentional violations of the R-based least effort principle are often simply unhelpful or perverse" (pp. 14). My formulation of Brevity is meant to account for those cases, which I propose include various species of disjunctions such as *some N or other-DPs*. Note that in an optimization-based pragmatic theory (like the one proposed in Lauer 2013, 2014, 2016 – see also Blutner 2000), the trade-off between being brief and realizing other priorities can be expressed more coherently than in the felicity condition construal that I have adopted (for presentational ease), where such priorities are simply listed as trumping being brief.

Let's consider what felicity conditions Brevity assigns clausal disjunctions and then *some N or other-DPs*, given that disjunctions always have simpler individual disjuncts as alternatives. I would like to start with disjunctions in entailment reversing syntactic contexts, like B's utterance in (50), a negated disjunction.

- (50) A: Is Kim in Mexico City?  
B: Kim isn't in Mexico City or Ottawa

B's utterance is at risk of violating Brevity and being infelicitous, given that it's more complex than its alternatives, *Kim isn't in Mexico City* and *Kim isn't in Ottawa*. What reason could make its use comply with Brevity? It cannot be upholding Quality, withholding information, and avoiding disagreement. What B said entails its alternatives; if B upholds Quality, withholds information, or avoids disagreement with what they say, they would have upheld Quality, withheld information, and avoided disagreement by saying a simpler alternative. No one else has said a disjunction, so it cannot be maintaining parallelism. Compliance with Brevity therefore depends on B's upholding Quantity. The purpose of the exchange must require the extra information provided by the negation of the disjunction i.e. mentioning Ottawa must serve the purpose of the exchange.

A disjunction that is not in an entailment reversing syntactic context, like (51), must be justified by something other than upholding Quantity, since its alternatives are more informative; if using (51) upholds Quantity, then an using individual disjunct also would have upheld Quantity.

- (51) Kim is in Mexico City or Ottawa

The reason that using (51) complies with Brevity may be that the speaker is upholding Quality, in which case, the speaker must be uncertain of the individual disjuncts. Alternatively, the reason that using (51) complies with Brevity may be a desire to withhold information, in which case the speaker must want not to divulge the information provided by a simpler disjunct (teasing). Alternatively, the reason that using (51) complies with Brevity may be a desire to avoid disagreement, in which case the speaker and addressee must disagree on the truth of a simpler disjunct. Finally, the reason that (51) complies with Brevity may be that someone else has said it first. Unless one of these reasons is salient in a context where (51) is used, (51) is infelicitous.

The alternative-based account of *some N or other*-DPs can appeal to Brevity to explain the properties that distinguish them from *a*-DPs; in contexts where the identity of the existential witness is obvious, like (52), using a *some N or other*-DP violates Brevity, whereas an *a*-DP, by virtue



of not containing a disjunction, does not.

(52) Context: At a speciality Tolstoy shop that sells only *War & Peace*, *Anna Karenina*, and *Resurrection*. We saw Kim buying *War & Peace*. The shop has a special offer: buy a book, get a bookmark.

Excuse me! Our friend should get a bookmark.

- a. She bought a book
- b. #She bought some book or other

Upholding Quantity cannot justify (52b) (it is less informative than its alternatives), nor can upholding Quality, withholding information, or avoiding disagreement (the information supplied by an alternative is evident). Finally, no one else has said *some book or other*.

The oddness of identifying follow-ups is also explained as a Brevity violation; they reveal that the initial use of the complex *some N or other*-DP was not justified by upholding Quality, withholding information, or avoiding disagreement. On the other hand, B's use of *some book or other* in (53) does not violate Brevity, since it maintains parallelism.

(53) A: Kim bought some book or other  
B: Indeed she did buy some book or other. She bought *War & Peace*

The *some N or other*-DPs in (54a-b) also do not violate Brevity.

(54) a. I got you something or other that I think you'll really like  
b. A: Kim bought *War & Peace*  
B: No, she bought *Anna Karenina*  
A: In any case, she bought some book or other

The speaker has a reason to say something relatively complex – in particular, withholding information in (54a) and avoiding disagreement in (54b). Finally, under the alternative-based account,

(55a-b) contrast when the speaker is seeking treatment because (55b), unlike (55a), is at risk of violating Brevity.

- (55) a. Help! I've been stung by a wasp  
b. Help! I've been stung by some wasp or other

In order for the use of (55b) to comply with Brevity, the speaker needs to be upholding Quality, withholding information, avoiding disagreement, or maintaining parallelism (upholding Quantity is out since the weakest alternative was used). Regardless of the reason assumed, given  $or^C$ 's requirements for non-empty and mutually disjoint identifier-extensions and the Privacy Principle, compliance with Brevity requires the speaker to have a way of distinguishing among wasps; *a wasp* does not contain  $or^C$ , so its use being compliant with Brevity does not require the speaker to have a way of distinguishing among wasps.

### 3.4 Challenges for the modal account

The two accounts make different predictions for the meanings and felicity conditions of constructions where *some N or other*-DPs are syntactically embedded. Perhaps the most obvious place to look for a difference is in a configuration like (56), where a *some N or other*-DP appears in the immediate scope of negation, which reverses entailment.

- (56) [not [ some N or other<sup>MA/AA</sup> ... ] ]

Since the modal account assigns a *some N or other*-DP a restriction to entities whose identities are unsettled, (56) is expected to deny the existence of an existential witness whose identity is unsettled; this is fully compatible with the existence of an existential witness whose identity is settled. On the other hand, the alternative-based account assigns (56) a meaning that denies the existence of an existential witness in the relatively largest set; it is associated with alternatives determined on the basis of  $or^C$  that are logically weaker, and the only reason that could make its

use comply with Brevity is the speaker's desire to uphold Quantity.

As is well-known, however, configurations like (56) do not arise, because *some*-DPs cannot be interpreted in the immediate scope of clause-mate negation (Szabolcsi 2004, Homer 2011, a.o.). Thus, (57) is well-formed but only admits a reading implying that there is some unknown thing in the lecture that Lee did not understand (and no reading implying that he didn't understand anything, as predicted by the alternative-based account, nor a reading implying that there is no unknown thing in the lecture that he understood, as predicted by the modal account).

(57) Lee didn't understand something or other from the lecture

But there are other entailment reversing environments to be examined – for example, the restrictor of a universal quantifier. Being Canadian entails being North American, but being North American does not entail being Canadian. However, (58a), where *North American* restricts *every*, entails<sup>5</sup> (58b), where *Canadian* restricts *every*, showing that *every* reverses entailment on its restrictor.

- (58) a. Every North American has eaten a donut  
b. Every Canadian has eaten a donut

What predictions do the two accounts make for a sentence like (59)?

(59) Everybody who bought some book or other received a bookmark

(60) gives the LF I assume; *every*'s restrictor is supplied by a contextual restrictor proform inter-

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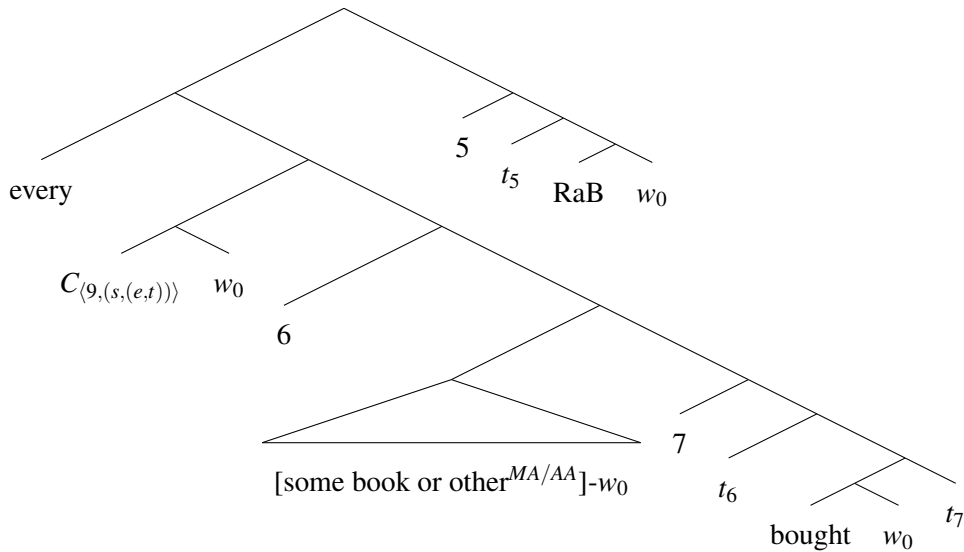
<sup>5</sup>More accurately, (58a) Strawson-entails (58b).

- (i) Strawson-entailment  
For every  $p, q \in D_{(\sigma, \tau)}$ :  
 $p$  Strawson-entails  $q$  iff for every  $x \in D_{\sigma}[[p(x) \text{ is defined} \wedge q(x) \text{ is defined}] \rightarrow p(x) \Rightarrow q(x)]$   
(von Stechow 1999)

There are worlds where, e.g., *every North American has eaten a donut* is defined and true but, e.g., *every North American who is 30ft tall has eaten a donut* is undefined; but the former Strawson entails the latter because if there are 30ft-tall North Americans, it follows from the former that they have eaten a donut.

sected with the set of individuals who bought some book or other, and its nuclear scope is given by the simplified predicate *R(eceived) a B(ookmark)*. The meaning of (60), discussed below, is derived from the meaning for *every* repeated in (60a), the simplified meaning of RaB in (60b), and the meanings given for the other lexical items in the preceding subsections.

(60)



- a. For every  $P, Q \in D_{(e,t)}$ :  
 $\llbracket \text{every} \rrbracket (P)(Q)$  is defined only if  $\exists x[P(x)] \wedge \forall x[P(x) \rightarrow [Q(x) \text{ is defined}]]$ .  
 If defined,  $\llbracket \text{every} \rrbracket (P)(Q) = \text{True}$  iff  $\forall x[P(x) \rightarrow Q(x)]$ .
- b.  $\llbracket \text{RaB} \rrbracket = [\lambda w : w \in D_s . [\lambda x : x \in D_e . x \text{ RaB in } w]]$

According to the modal account, (60) has the meaning sketched in (61a-b) (supposing that the relevant modal base is speaker-oriented).

(61) Everybody who bought some book or other<sup>MA</sup> received a bookmark

- a. Denotes: ‘For every  $C_9$ -individual  $x$  such that there is a book  $y$  such that the speaker is certain that  $y$  is  $C_1$  or  $C_2$  but is not certain that  $y$  is  $C_1$  and is not certain that  $y$  is  $C_2$  and  $x$  bought  $y$ ,  $x$  RaB’
- b. Presupposes: ‘There is a  $C_9$ -individual  $x$  such that there is a book  $y$  such that the speaker is certain that  $y$  is  $C_1$  or  $C_2$  but is not certain that  $y$  is  $C_1$  and is not certain that  $y$  is  $C_2$  and  $x$  bought  $y$ ’

In contrast, according to the alternative-based account, (60) has the meaning sketched in (62a-b) and is associated with alternatives with the meanings sketched in (63).

(62) Everybody who bought some book or other<sup>AA</sup> received a bookmark

- a. Denotes: ‘For every  $C_9$ -individual  $x$  such that there is a  $C_1$  or  $C_2$  book  $y$  such that  $x$  bought  $y$ ,  $x$  RaB’
- b. Presupposes: ‘There is a  $C_9$ -individual  $x$  such that there is a  $C_1$  or  $C_2$  book  $y$  such that  $x$  bought  $y$ ’

(63)  $ALT_c((62)) \supseteq \{\psi_1, \psi_2\}$  such that

- a.  $\psi_1$ 
  - (i) Denotes: ‘For every  $C_9$ -individual  $x$  such that there is a  $C_1$  book  $y$  such that  $x$  bought  $y$ ,  $x$  RaB’
  - (ii) Presupposes: ‘There is a  $C_9$ -individual  $x$  such that there is a  $C_1$  book  $y$  such that  $x$  bought  $y$ ’
- b.  $\psi_2$ 
  - (i) Denotes: ‘For every  $C_9$ -individual  $x$  such that there is a  $C_2$  book  $y$  such that  $x$  bought  $y$ ,  $x$  RaB’
  - (ii) Presupposes: ‘There is a  $C_9$ -individual  $x$  such that there is a  $C_2$  book  $y$  such that  $x$  bought  $y$ ’

While this example can be used to mean quite a few different things, it quite clearly lacks the meaning predicted by the modal account. Consider a context where everyone bought at least one book, and for some people, we know what book they bought, and for others, we don’t.

(64) *Context: We saw Kim buying War & Peace. We also saw Pat and Lee buying books, but we didn’t see which books these were.*

A: Everyone who bought some book or other received a bookmark

B: ?What about Kim, who we saw buying *War & Peace*?

According to the modal account, B's response should be understood as asking for additional information. Because we saw Kim buying *War & Peace* (and assuming she bought no other book, whose identity is unknown), she is excluded from *every*'s quantificational domain under the modal account. But intuitively, B is not asking for additional information but rather confirmation of something that was already implied by what A said. A similar argument could be made against the semantics assigned to disjunctions in Zimmermann 2000 (see Alonso-Ovalle 2005 for such an argument); given the status of B's response in (65), A's utterance appears to lack a meaning where *everyone* is restricted to quantify over individuals who potentially have each property denoted by the disjuncts in its disjunctive restrictor.

(65) *Context: We saw Kim buying War & Peace. We also saw Pat and Lee buying books, but we didn't see which books these were.*


A: Everyone who bought *War & Peace*, *Anna Karenina*, or *Resurrection* received a bookmark

B: ?What about Kim, who we saw buying *War & Peace*?

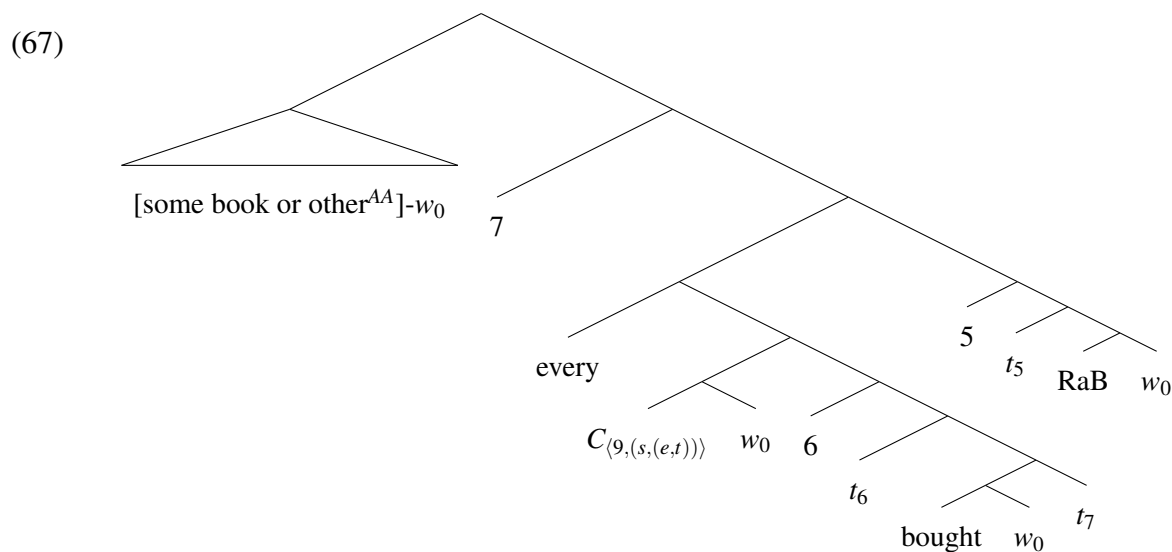
According to the alternative-based account, what A says, with the LF considered in (60), implies that everyone who bought a book in the relatively widest set received a bookmark, so it is expected to imply that Kim received a bookmark. Given that the structurally complex (60) entails all of its structurally simpler alternatives, the only reason that could make its use comply with Brevity is the speaker's desire to uphold Quantity. The speaker must want to convey the additional information. This is indeed one salient meaning of the example; it can be understood roughly as *everyone who bought any book at all received a bookmark*, with an implication that there is some way of identifying books<sup>6</sup>. The other (possibly more salient) reading of the sentence is brought out in the context in (66).

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<sup>6</sup> In connection to this requirement, note that *?everyone who was stung by some wasp or other was rushed to the hospital* is odd in the same way that *?I've been stung by some wasp or other* is. The only natural description of such a scenario, out-of-the-blue, appears to be *everyone who was stung by a wasp was rushed to the hospital*.

- (66) Context: The speciality shop has a sign reading “ comes with a bookmark, but Anna Karenina does not.” We cannot make out what is written on the sign. Kim, Lee, and Pat bought every book sold here, though Pat bought only Anna Karenina.  
Everybody who bought some book or other received a bookmark

The example is felicitous in this context, but the LF assigned to it by the alternative-based account predicts (66) to be falsified by the information that *Anna Karenina* does not come with a bookmark and that Pat bought only *Anna Karenina* (hence bought a book but didn’t receive a bookmark). (66) shows that like other indefinite determiner phrases, *some N or other*-DPs have free upward scope. (66) is intuitively verified by the fact that everyone who bought the book obscured by the blotch received a bookmark. One way to account for it is to posit the additional LF in (67), where the *some N or other*-DP has undergone QR out of the restrictor of *every*.



In (67), the *some N or other*-DP is not in an entailment reversing environment, so the alternatives associated with (67) entail (67). Its meaning and the meanings of its alternatives are given in (68)-(69).

- (68) a. Denotes: ‘There is a  $C_1$  or  $C_2$  book  $y$  such that for every  $C_9$ -individual  $x$  such that  $x$  bought  $y$ ,  $x$  RaB’  
 b. Presupposes: ‘There is a  $C_1$  or  $C_2$  book  $y$  such that there is a  $C_9$ -individual  $x$  such that  $x$  bought  $y$ ’
- (69)  $\text{ALT}_c((68)) \supseteq \{\psi_1, \psi_2\}$  such that
- a.  $\psi_1$   
 (i) Denotes: ‘There is a  $C_1$  book  $y$  such that for every  $C_9$ -individual  $x$  such that  $x$  bought  $y$ ,  $x$  RaB’  
 (ii) Presupposes: ‘There is a  $C_1$  book  $y$  such that there is a  $C_9$ -individual  $x$  such that  $x$  bought  $y$ ’
- b.  $\psi_2$   
 (i) Denotes: ‘There is a  $C_2$  book  $y$  such that for every  $C_9$ -individual  $x$  such that  $x$  bought  $y$ ,  $x$  RaB’  
 (ii) Presupposes: ‘There is a  $C_2$  book  $y$  such that there is a  $C_9$ -individual  $x$  such that  $x$  bought  $y$ ’

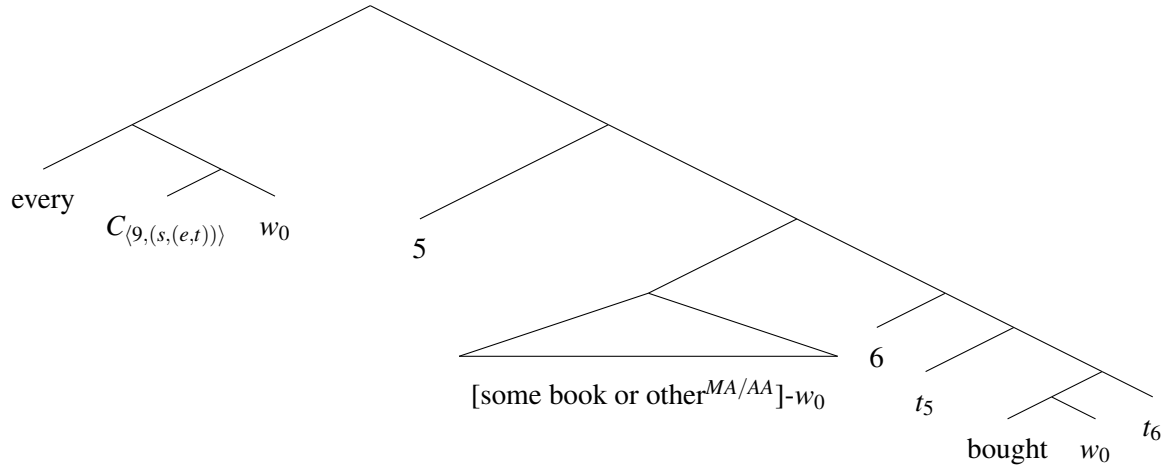
The meaning in (68a) is verified in the context described, and its use is compliant with Brevity because upholding Quality favors (68a) over its alternatives; we don’t know whether  $C_1$  or  $C_2$  applies to the book such that everyone who bought it received a bookmark. Although long-distance QR of this kind is typically assumed to be impossible – given that relative clauses like the one containing *some book or other* are islands for movement (Ross 1967) – there are many other proposals for the free upward scope of indefinite determiner phrases. So long as they can deliver a meaning as in (68), the other reading of *some N or other*-DPs in the restrictor of *every* (also, in an *if*-clause) is accounted for.

Finally, the two accounts make different predictions for (70), on the interpretation where *everybody* scopes over *some book or other*. The relevant LF is given in (71).



(70) Everybody bought some book or other

(71)



According to the modal account, (71) has the meaning sketched in (72a-b) (supposing that the relevant modal base is speaker-oriented).

(72) Everybody bought some book or other<sup>MA</sup>

- a. Denotes: ‘For every  $C_9$ -individual  $x$ , there is a book  $y$  such that the speaker is certain that  $y$  is  $C_1$  or  $C_2$  or  $C_3$  but is not certain that  $y$  is  $C_1$  and is not certain that  $y$  is  $C_2$  and is not certain that  $y$  is  $C_3$  and  $x$  bought  $y$ ’
- b. Presupposes: ‘There is a book  $y$  such that the speaker is certain that  $y$  is  $C_1$  or  $C_2$  or  $C_3$  but is not certain that  $y$  is  $C_1$  and is not certain that  $y$  is  $C_2$  and is not certain that  $y$  is  $C_3$ ’

Given that the modal account encodes modal restrictions in order to account for the oddness of (73) in its provided context, the expectation is that (74) should be odd in the same way; but in fact, (74) is perfectly felicitous.

(73) *Context: We saw Kim buying War & Peace. The shop has a special offer: buy a book, get a bookmark.*

#Excuse me! Our friend should get a bookmark. She bought some book or other.

(74) *Context: We saw Kim buying War & Peace, Pat buying Anna Karenina, and Lee buying Resurrection. The shop has a special offer: buy a book, get a bookmark.*

Excuse me! Our friends should all get bookmarks. Everybody bought some book or other.

According to the alternative-based account, (70) has the meaning in (75) and its alternatives have the meanings given in (76).

(75) Everybody bought some book or other<sup>AA</sup>

- a. Denotes: ‘For every  $C_9$ -individual  $x$ , there is a  $C_1$  or  $C_2$  or  $C_3$  book  $y$  such that  $x$  bought  $y$ ’
- b. Presupposes: ‘There is a  $C_9$ -individual  $x$  such that there is a  $C_1$  or  $C_2$  or  $C_3$  book  $y$ ’

(76)  $\text{ALT}_c((75)) \supseteq \{\psi_1, \psi_2, \psi_3\}$  such that

- a.  $\psi_1$ 
  - (i) Denotes: ‘For every  $C_9$ -individual  $x$ , there is a  $C_1$  book  $y$  such that  $x$  bought  $y$ ’
  - (ii) Presupposes: ‘There is a  $C_1$  book  $y$ ’
- b.  $\psi_2$ 
  - (i) Denotes: ‘For every  $C_9$ -individual  $x$ , there is a  $C_2$  book  $y$  such that  $x$  bought  $y$ ’
  - (ii) Presupposes: ‘There is a  $C_2$  book  $y$ ’
- c.  $\psi_3$ 
  - (i) Denotes: ‘For every  $C_9$ -individual  $x$ , there is a  $C_3$  book  $y$  such that  $x$  bought  $y$ ’
  - (ii) Presupposes: ‘There is a  $C_3$  book  $y$ ’

The *some N or other*-DP does not appear in an entailment reversing environment, so the alternatives to (75) entail it. Nonetheless, (74) does not violate Brevity because using the lengthy *some N or other*-DP is justified by upholding Quality; the context does not support the stronger meanings of the alternatives that everyone (i.e. Kim, Lee, and Pat) bought a particular book. On the other hand, the alternative-based account correctly predicts (77) to constitute a Brevity violation.

(77) Context: We saw Kim buying *War & Peace*, Pat buying *War & Peace*, and Lee buying *War & Peace*. The shop has a special offer: buy a book, get a bookmark.

#Excuse me! Our friends should all get bookmarks. Everybody bought some book or other.

Upholding Quality does not justify using the lengthy *some N or other-DP*; the context supports a simpler alternative. Summing up, the modal account of *some N or other-DPs*, which analyzes them as encoding a restriction to individuals whose identity is unsettled, faces undergeneration problems. These arise most poignantly when examining embedded occurrences of *some N or other-DPs*. I have primarily talked about *some N or other-DPs* in the restrictor and scope of *every*, but similar arguments could be made on the basis of examples like (78), understood with *always* scoping over *some book or other*.

(78) Kim is always reading some book or other

(78) is felicitous when, on every relevant occasion, Kim is reading a book, and it is common knowledge that on some occasions, she reads *War & Peace*, and on others, she reads *Anna Karenina*. The expectation on the modal account is that (78) entails that on every relevant occasion, Kim reads a book whose identity is unknown, incorrectly predicting it to be infelicitous when it is common knowledge what she reads.

### 3.5 Previous accounts of epistemic indefinites

In this section, I compare the alternative-based account of *some N or other-DPs* to some of its precedents in the literature on similar epistemic indefinites; I also contrast the account with a semantic-pragmatic account of such expressions in Aloni & Port 2013, 2015.

#### 3.5.1 Previous Gricean accounts

The alternative-based account for *some N or other-DPs* is quite directly based on the analysis of German *irgendein-DPs* in Kratzer & Shimoyama 2002 and the analysis of Spanish *algún-DPs* in

Alonso-Ovalle & Menéndez-Benito 2010 et seq. These expressions exhibit the usual properties that diagnose epistemic indefiniteness. For instance, they are odd with identifying continuations.

- (79) a. Jemand hat angerufen  
 someone has called  
 ‘Someone called’
- b. Irgendjemand hat angerufen  
 IRGEND-someone has called  
 ‘Someone called’
- c. (79a), #(79b) ... nämlich Hans  
 ‘Namely, Hans’ (Aloni & Port 2013: 3)
- (80) a. María se casó con un estudiante del departamento del lingüística  
 María SE married with UN student of the department of linguistics  
 ‘María married a linguistics student’
- b. María se casó con algún estudiante del departamento del lingüística  
 María SE married with ALGUN student of the department of linguistics  
 ‘María married a linguistics student’
- c. (80a), #(80b) ... en concreto con Pedro  
 ‘Namely, Pedro’ (Alonso-Ovalle & Menéndez-Benito 2010: 2)

According to Kratzer & Shimoyama, what distinguish *ein-* from *irgendein-*DPs is that the latter encode a ‘domain widening’ requirement. The notion of domain widening was first introduced in Kadmon & Landman 1993, where it is invoked to explain the free choice and negative polarity effects of *any*-DPs in English. In effect, an indefinite with a domain widening requirement forbids restrictions on its quantificational domain, inducing the relatively weakest meaning in entailment preserving environments. This fact forms the basis of Kadmon & Landman’s account of *any*’s polarity sensitivity; *any* is claimed to encode a domain widening requirement but also to be subject to a pragmatic constraint that requires its use to strengthen meaning.

In contrast, Kratzer & Shimoyama do not assume that *irgendein-*DPs are subject to a pragmatic strengthening constraint<sup>7</sup>, presumably because *irgendein-*DPs are not polarity sensitive. Instead,

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<sup>7</sup>They also do not analyze indefinites as existentials but rather as lacking quantificational force, as in Kamp

they provide three reasons that could justify using a domain widening expression that a hearer entertains when reasoning about a speaker’s message choice: (i) strengthening the claim ( $\approx$  upholding Quantity), (ii) avoiding a false claim ( $\approx$  upholding Quality), and (iii) avoiding an unwarranted exhaustivity inference. In the case of existentials, an exhaustivity inference is an inference that no individual excluded from the domain of quantification is an existential witness.

Here is a simplified illustration of the reasoning with an unembedded *irgendein*-DP<sup>8</sup>. Suppose that there are exactly three people, María, Juan, and Pedro. (81) expresses the proposition that the set {María, Juan, Pedro}, the widest set, contains a caller.

- (81) Irgendjemand hat angerufen  
 IRGEND-someone has called  
 ‘Someone called’

Strengthening the claim cannot be the reason that the widest domain was used, as it actually weakens the claim made with (81), where the *irgendein*-DP isn’t in an entailment reversing environment. Perhaps a domain widening expression was used because the speaker is not certain that existentially quantifying over a smaller domain containing, e.g., just Juan would have resulted in a true claim. Or perhaps the widened domain, including María and Pedro, was used to avoid an unwarranted exhaustivity inference; if just Juan were included in the quantificational domain of the existential statement, the hearer would infer that the speaker is certain that Juan came but not certain that

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1981 and Heim 1982; under their implementation, indefinites denote sets of alternatives that compose in a Hamblin-pointwise manner, producing sets of individual- or propositional-alternatives, which are closed off by various operators. The analysis follows Hamblin’s (1973) compositional semantics for interrogative and the analysis of Bengali indefinites in Ramchand 1997, Japanese indeterminate pronouns in Shimoyama 2001, etc.

<sup>8</sup>They focus on *irgendein*-DPs in the scope of modals and the so-called ‘distribution requirements’ they give rise to, speculating that the same account can extend to unembedded cases by positing an implicit speaker-/conversation-oriented modal. This suggestion is taken up in Alonso-Ovalle & Menéndez-Benito 2010. My simplified illustration is based on their discussion of distribution requirements in the scope of deontic necessity modals, like (i).

- (i) Du musst dir irgendeins von diesen beiden Büchen leihen  
 You must you.dat IRGEND-one of those two books borrow  
 ‘You must borrow one of those two books’  
 (Distribution requirement: each of those two books is a deontic possibility)

I replace every occurrence of *must/necessary* in the reasoning with *the speaker is certain that*.

María or Pedro called, as B would infer in an exchange like A: *Who out of María, Juan, and Pedro called?*, B: *Juan*. The speaker's use of a domain widening expression may be to avoid this. The same reasoning applies with each possible narrowing of the domain. For each of the sets in (82a-f), it is inferred that either the speaker is not certain that it contains an existential witness (avoided for its falsity/Quality-violation) or the speaker is certain that it contains an existential witness but also certain there is an existential witness among the individuals that it excludes (avoided for its unwarranted exhaustivity inference).

- (82)
- a. {Juan}
  - b. {María}
  - c. {Pedro}
  - d. {Juan, María}
  - e. {Juan, Pedro}
  - f. {María, Pedro}

(83) schematizes all of these inferences and puts them together with the inference that the speaker is certain of what was said, (83g).

- (83)
- a. (Not(Certain(J called))) or (Certain(J called) and Certain(M or P called))
  - b. (Not(Certain(M called))) or (Certain(M called) and Certain(J or P called))
  - c. (Not(Certain(P called))) or (Certain(P called) and Certain(M or J called))
  - d. (Not(Certain(J or M called))) or (Certain(J or M called) and Certain(P called))
  - e. (Not(Certain(J or P called))) or (Certain(J or P called) and Certain(M called))
  - f. (Not(Certain(M or P called))) or (Certain(M or P called) and Certain(J called))
  - g. Certain(J or M or P called)

The inferences in (83) require that Juan's calling, María's calling, and Pedro's calling are all compatible with the speaker's beliefs<sup>9</sup>. The inferences in (83) are compatible with the speaker being

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<sup>9</sup>Note that adding the inference *Certain(Not(J called))* would mean that the right disjunct of (83f) is false, so its

certain that all three of the individuals called, but if that possibility is excluded (which Alonso-Ovalle & Menéndez-Benito 2003 suggest is inferred by comparing an existential to a universal alternative)<sup>10</sup>, the derived inference is that for every  $x \in \{\text{Juan, María, Pedro}\}$ , it is compatible with the speaker's beliefs that  $x$  called and compatible with the speaker's beliefs that  $x$  didn't call.

The analysis makes correct predictions for *irgendein*-DPs in entailment reversing environments e.g. in the scope of *doubt*. If Hans doubts that María is North American, Hans doubts that María is Canadian (granting he thinks that it's possible that she is Canadian), showing that *doubt* reverses entailment for its complement. The analysis predicts that no extra inferences are drawn when an *irgendein*-DP appears in the scope of *doubt*, other than what is implied by its literal domain widened meaning. The reason is that widening the domain strengthens the overall statement's meaning, thus widening cannot serve to avoid saying something false, as all of the statements with narrower domains are entailed, nor can widening serve to avoid an unwarranted exhaustivity inference, as the literal meaning of what was said precludes drawing an exhaustivity inference. Consider *María is North American* vs. *María is Canadian*. The hearer might reason that the former was chosen because using the latter would have produced the unwarranted exhaustivity inference that María is not also Mexican, so *María is North American* was chosen over *María is Canadian* either because *María is Canadian* is false or because both *María is Canadian* and *María is Mexican* are true. No similar reasoning works with *Hans doubts that María is North American* vs. *Hans doubts that María is Canadian*. The potential exhaustivity inference drawn from *Hans doubts that María is Canadian* – namely, *Hans doesn't doubt that María is Mexican* – is preempted by the fact that *Hans doubts that María is North American* entails that this potential exhaustivity inference is false. As predicted, the *irgendein*-DP in (84) has no extra implications. (84) just means that Hans doubts that María married a doctor<sup>11</sup>.

left disjunct must be true, which, together with *Certain(Not(J called))*, contradicts (83g).

<sup>10</sup>Note that adding the inferences *Not(Certain(M and P and J called))* and *Certain(J called)* produces a contradiction. The latter inference would make the left disjuncts of (83d) and (83e) false, so their right disjuncts, which entail *Certain(P called)* and *Certain(M called)*, must be true; together these contradict *Not(Certain(M and P and J called))*.

<sup>11</sup>Kratzer & Shimoyama 2002 make this point with the example in (i). Given the observation in footnote 6, it would be interesting to see if there actually is an extra implication with an *irgendein*-DP vs. an *ein*-DP in entailment reversing environments. Perhaps the former implies that there is a salient way of distinguishing among the things quantified over, as *some N or other*-DPs do.

- (84) Hans bezweiflet, dass María irgendeinen Arzt geheiratet hat  
Hans doubts that María IRGEND-one doctor married has  
'Hans doubts that María married a doctor'

I will comment on two points regarding this analysis. First, the claim that *irgendein*-DPs are associated with total ignorance requirements – that every member of the domain has to be a live candidate for the existential witness – is questioned in Lauer 2009, Aloni & Port 2015, and others. Alonso-Ovalle & Menéndez-Benito 2010: 9 offer the hide-and-peek scenario in (85) to diagnose an epistemic indefinite's degree of ignorance. The relevant feature of the context is that it explicitly excludes some of the members of the indefinite's domain as candidates for the existential witness. The context strikingly distinguishes between Spanish *algún*-DPs and English *some N or other*-DPs, on the one hand, and Spanish *cualquier*-DPs and English *any*-DPs, on the other.

- (85) *Context: We are playing hide-and-peek and Juan is hiding. Pedro is convinced that Juan is not in the bathroom or in the kitchen, but for all Pedro knows, Juan could be in any of the other rooms in the house, or even outside the house (say, in the barn). Pedro:*
- a. Juan puede estar en alguna parte de la casa  
Juan may be in ALGUNA part of the house  
'Juan may be in some part of the house.'
  - b. #Juan puede estar en cualquier parte de la casa  
Juan may be in CUALQUIER part of the house  
'Juan may be in any part of the house.'
  - c. Juan could be in some room or other in the house
  - d. #Juan could be in any room in the house

As observed in Lauer 2009, German (86) is felicitous in this scenario, suggesting it has a weaker ignorance implication than the Kratzer & Shimoyama 2002-account predicts.

- 
- (i) Niemand musste irgendjemand einladen.  
Nobody had to IRGEND-one invite  
'Nobody had to invite anybody'



- (86) Juan könnte in irgendeinem Raum in diesem Haus sein  
Juan could in irgend-one room in this house be  
'Juan could be in some room in this house.'  
(Lauer 2009: 35)

Taking the hide-and-seek scenario to show that *algún*-DPs require merely partial ignorance and presuming that German *irgendein*-DPs and Spanish *algún*-DPs differ in this regard, Alonso-Ovalle & Menéndez-Benito 2010 assign *algún*-DPs a weaker domain constraint. In particular, they propose that *algún*-DPs do not induce maximal domain widening, competing with all possible narrowed domain alternatives as *irgendein*-DPs were claimed to, but rather impose a non-singleton constraint on their domain, competing with alternatives whose domains are singleton subsets of whatever the *algún*-DP's domain is. Supposing that {Living Room, Kitchen, Bedroom} is the set of rooms in the house, then the proposition expressed with (87) could be proposition that the domain in (88d) contains Juan's location, or the proposition that (88g) does, but crucially not the proposition that the domain in (88a) contains his location.

- (87) Juan está en alguna habitación de la casa  
Juan is in ALGUNA room of the house  
'Juan is in some room of the house'  
(Alonso-Ovalle & Menéndez-Benito 2013: 110)

- (88) a. {Living Room}  
b. {Kitchen}  
c. {Bedroom}  
d. {Living Room, Kitchen}  
e. {Living Room, Bedroom}  
f. {Kitchen, Bedroom}  
g. {Living Room, Kitchen, Bedroom}

Regardless of what proposition the speaker is assumed to be expressing (the hearer may or may not know which domain in (88d-g) is intended), the utterance evokes pragmatic competitors whose domains are singletons – what the use of *algún* excludes. The same pragmatic assumptions are

used to enrich the meaning. Supposing (88g) is the domain, the speaker infers that each of (88a-c) was avoided either because it does not contain an existential witness or because a witness was excluded. (89a-c) puts these inferences together with the inference that the speaker is certain that Juan is in exactly one room<sup>12</sup>. LR = ‘Living Room’, K = ‘Kitchen’, B = ‘Bedroom’.

- (89) a. (Not(Certain(J is in LR))) or (Certain(J is in LR) and Certain(J is in K or B))  
 b. (Not(Certain(J is in B))) or (Certain(J is in B) and Certain(J is in K or LR))  
 c. (Not(Certain(J is in K))) or (Certain(J is in K) and Certain(J is in LR or B))  
 d. Certain((J is in LR and Not(J is in K or B)) or (J is in K and Not(J is in LR or B)) or (J is in B and Not(J is in LR or K)))

These inferences are compatible with the speaker being certain, e.g., that Juan is not in the Living Room, but the only way for (89b-d) to be consistent with that is if the speaker is not certain which member of {Kitchen, Bedroom} is Juan’s location. In general, it is consistent to infer that the speaker has ruled out all but at least two singleton alternatives. On the other hand, these inferences are incompatible with the speaker being certain that Juan is in the Living Room; if so, then the right disjunct of (89a) must be true, which contradicts the inference that the speaker is certain that Juan is in exactly one room (89d). Thus, there is a partial ignorance requirement. Ignorance effects are correctly predicted not to arise in entailment reversing environments, (90a-b), for the reasons spelled out above with the richer alternative set.

- (90) a. Pedro duda que Juan salga con alguna chica del departamento de  
 Pedro doubts that Juan date:SUBJ3S with ALGÚNA girl of the department of  
 lingüística  
 linguistics  
 ‘Pedro doubts that Juan is dating any girl in the linguistics department’

(Alonso-Ovalle & Menéndez-Benito 2010: 14)

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<sup>12</sup>The inference that there is exactly one witness is context dependent, licensed with *Juan is in some room in the house* but not necessarily for *some student called*; when it is not licensed, Alonso-Ovalle & Menéndez-Benito 2010: §5 propose that the singular non-singleton *algún*-DP has not just singleton pragmatic competitors but also plural and numeral competitors, thus accounting for ignorance-of-number inferences.

- b. Todos los profesores que están hablando con algún estudiante llevan sombrero  
 all the professors who are talking with ALGÚN student wear hat  
 ‘Every professor who is talking to a student wears a hat’

(Alonso-Ovalle & Menéndez-Benito 2017: 13)

To account for the fact that the German (86) is felicitous in the hide-and-seek scenario, it can be assigned a weaker domain requirement, like the non-singleton requirement proposed for *algún*-DPs, though there are other differences between *irgendein*- and *algún* – see §4 and their paper for a discussion of plurals. Spanish *cualquier*-DPs and English *any*-DPs can be assigned the strong domain requirement, competing with all possible narrowings of their domains.

Note that on the alternative-based account I presented for *some N or other*-DPs, partial ignorance is derived by assuming that *or<sup>C</sup>* competes with its individual disjuncts rather than its individual disjuncts along with all of their possible disjunctions (discussed in connection to *whatever*-DPs in §2.5.1). On the present account, *some N or other*-DPs are also a sort of non-singleton indefinite. The main difference, in my eye, between my proposal for *some N or other*-DPs and the proposal for *algún*-DPs in Alonso-Ovalle & Menéndez-Benito 2010 is the source of the non-singleton requirement. On the present account, it arises because of the semantic requirements of *or<sup>C</sup>*, the disjoiner of *C*-proforms, which is defined only if it receives at least two non-empty, mutually disjoint disjuncts. In contrast, on their proposal, the source of the non-singleton requirement is the lexical entry of *algún*. My reason for modifying their account is to try to explain the robustness *some N or other*-DPs’ special effects e.g. the fact that a *some N or other*-DP is odd in a context where the identity of the existential witness is obvious, even if its putative alternatives do not answer the salient question better. Brevity seems like a good way to rule out *some N or other*-DPs in such contexts, given that their morphosyntax quite clearly suggests a complex, disjunctive structure. As is made clear by my application of *or<sup>C</sup>* in the analysis of *whatever*-DPs, I have no objections to viewing certain expressions as having disjunctive LFs, even when there is no morphosyntactic evidence for a disjunction. However, Brevity plausibly applies to many more structures other than disjunctions<sup>13</sup>, and it may be worthwhile to consider whether it could be applied to the analysis of

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<sup>13</sup>See, for example, the discussion in Katzir 2007 on scalar implicatures derived by adding material in entailment

*algún*-DPs. In Alonso-Ovalle & Menéndez-Benito 2013, the authors tentatively suggest an alternative line of analysis for that apparent mandatoriness of *algún*-DPs' ignorance effects, sketched in (91); it appeals to the fact that *algún* and *un*, which may have the same truth conditional meaning, differ in that *un* does not evoke alternatives.

- (91) An item A that can trigger a Quantity implicature will do so in cases where the pragmatic alternatives it evokes are not relevant iff there is an item B with the same truth conditional meaning as A but that does not evoke alternatives

(Alonso-Ovalle & Menéndez-Benito 2013: 45)

I think their analysis indeed commits them to something like (91), even in explaining the basic ignorance inferences derived from *algún*-DPs with the reasoning based on Kratzer & Shimoyama 2002 sketched above. To see how something like (91) is a necessary part of the analysis, consider a language whose only existential determiner is *algún*-like i.e. a language like Spanish but with no way of expressing an existential statement with a singleton domain. It seems that no ignorance inferences could be drawn from the *algún*-like DP, even supposing that it encodes an anti-singleton domain constraint. The suggestion in (91) is in a vein of works like Magri 2009a and Meyer 2013, which propose that certain Quantity-based inferences arise mandatorily; see Lauer 2013 for a comparison of the Brevity-based analysis and the obligatory implicature analysis.

### 3.5.2 The dynamic, conceptual cover account

There is at least one other semantic-pragmatic account of the difference between ordinary and epistemic indefinites, due to Aloni & Port 2013, 2015. The account is couched within a dynamic semantics and employs the notion of a 'conceptual cover', originally proposed in Aloni 2001.

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reversing environment, like the attested implicature in (i).

- (i) A: Who came?  
B: Every tall person came  
Implicature: Not every person came

Aloni develops a logic where the interpretation of all quantificational expressions is relative to a conceptual cover, representing how individuals are being identified. Formally, a conceptual cover (of a set of individuals across a set of possible worlds) is a set of individual concepts meeting the constraint in (92); at every world, each individual in the set is the value of exactly one individual concept. A conceptual cover, intuitively, represents a way of distinguishing among the members of a set of individuals within a logical space that establishes their existence.

- (92) For every  $X \in D_{(e,t)}$ ,  $W \in D_{(s,t)}$ ,  $CC \in D_{((s,e),t)}$ :  
 $CC$  is a conceptual cover of  $X$  across  $W$  iff  $\forall x \in X, \forall w \in W [\exists ! i \in CC [i(w) = x]]$

Aloni & Port 2013, 2015 propose that what distinguishes epistemic indefinites (specifically, German *irgendein*-DPs and Italian *un qualche*-DPs) from ordinary indefinites is that they induce a shift in the contextually-salient conceptual cover. Epistemic indefinites signal that the existential formula they express is evaluated relative to a different conceptual cover than the one that the initial context supplies. Furthermore, they encode a felicity condition that the conceptual cover shift is for a reason, namely, that without the shift, the speaker would not have been able to identify the referent of the indefinite. This is the ignorance inference. The disappearance of ignorance inferences in entailment reversing environments is also explained – see their work for details.

I do not currently have any arguments for or against the conceptual cover approach. Alonso-Ovalle & Menéndez-Benito 2017 suggest that the approach faces problems explaining the distribution of ignorance readings, given the way that epistemic indefinites are understood in the scope of universal quantifiers. They show that an example like (93) (on which my discussion of *some N or other*-DPs in the scope of universals in the preceding subsection was based) is felicitous despite the fact that the speaker can identify, for every professor, which student they are dancing with.

(93) *Context: Smith is dancing with Anna, Jones, with John, and Peters, with Lester.*

Todos los profesores están bailando con algún estudiante  
all the professor are dancing with ALGÚN student  
'Every professor is dancing with some student'

(Alonso-Ovalle & Menéndez-Benito 2017: 19)

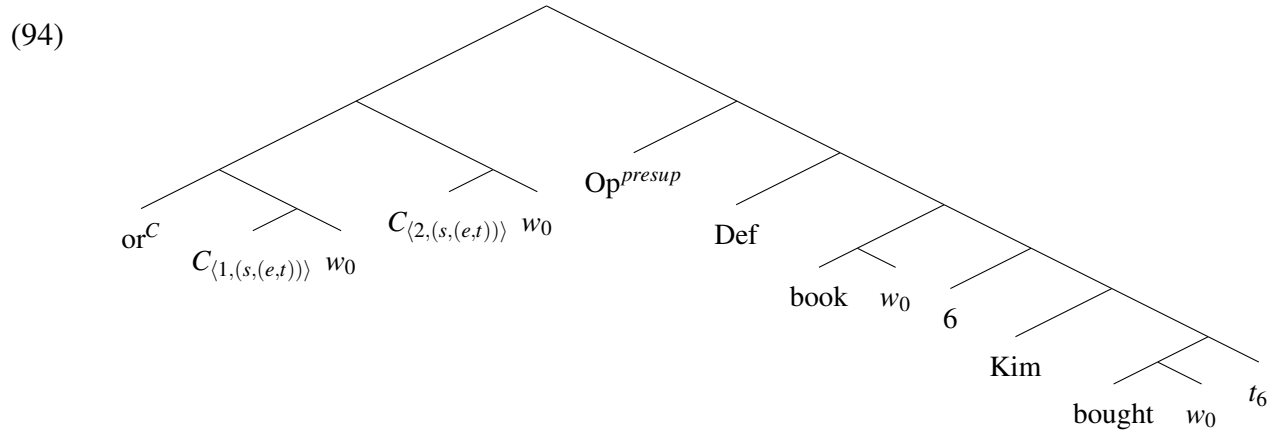
Given the felicity condition that Aloni & Port 2013, 2015 assign epistemic indefinites, (93) is expected to require that for every professor  $x$ , without the shift, the speaker would not have been able to identify which student  $x$  is dancing with. Perhaps one way to reconcile the dynamic, conceptual cover based account with (93) is to consider the dynamicity of the universal quantifier. Bumford 2015 proposes that certain distinguishing features of distributive universal quantifiers – like their giving rise to pair-list readings in interrogatives (*what did everyone buy?*), internal readings of comparative adjectives in their scope (*everyone bought a different book*), etc. – are explained by analyzing *every* as a kind of iterated conjunction, so that, e.g., (93) is analyzed as the conjunction of a sequence of propositions formed by applying the nuclear scope to each of the professors in turn. Under such an analysis of *todos los profesores*, perhaps the *CC*-shift induced by *algún estudiante* could be used to derive an implication that the professors danced with students under different covers. I am not sure how close that would get the dynamic, conceptual cover account to the attested inferences of (93), nor am I in a position to merge the technical assumptions of these two distinct dynamic analyses, but for now, I am not fully convinced that (93) speaks against the conceptual cover analysis. I return to discuss more details of Aloni's proposal in the next and final chapter.

### 3.6 Conclusion

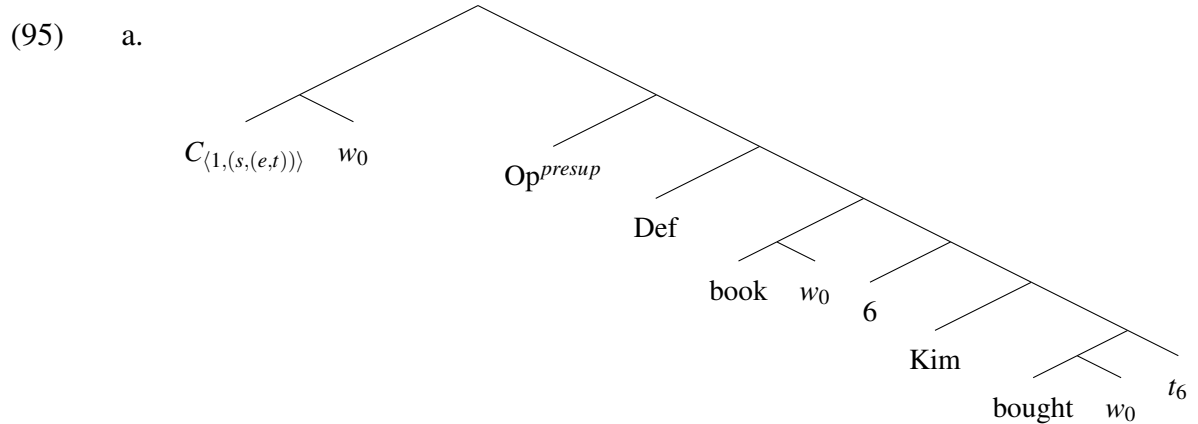
This chapter contrasted two possible analyses of *some N or other*-DPs in English, showing that the alternative-based account, largely based on prior pragmatic accounts of similar indefinites, provides a better explanation of the interpretation and felicity conditions of *some N or other*-DPs in the scope of other operators. The main point of departure from prior pragmatic accounts is that *some N or other*-DPs are analyzed as containing a *C*-disjunction at LF and are therefore subject to

the felicity condition Brevity, which dictates that a relatively complex expression is felicitous only if there is a reason for its use.

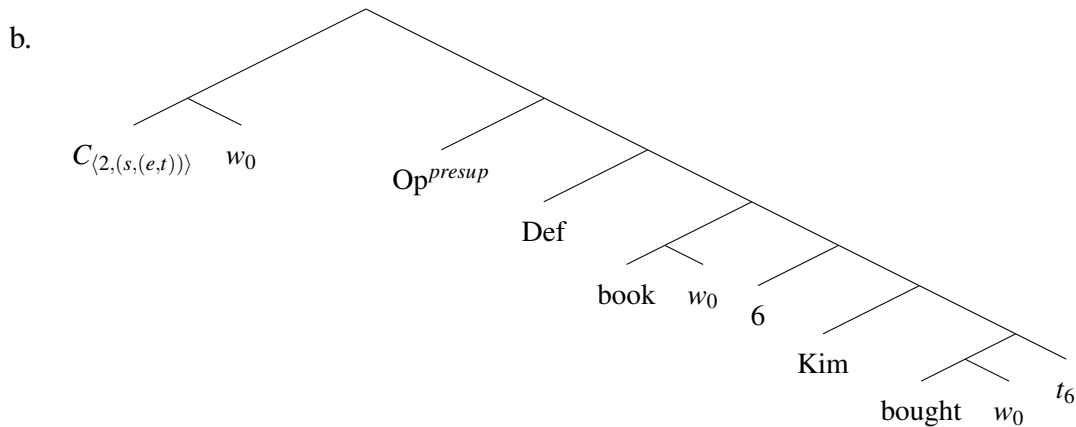
Before closing this chapter, I would like to comment on the applicability of Brevity to *whatever*-DPs. As it stands, Brevity rules out all *whatever*-DP LFs. Regardless of what kind of syntactic environment (94) is embedded in, its use over (95a-b) cannot be justified by upholding Quantity or Quality; when defined, they are equivalent.



- a. Denotes: ‘The book Kim bought’
- b. Presupposes: ‘The book Kim bought is  $C_1$  or  $C_2$ ’



- (i) Denotes: ‘The book Kim bought’
- (ii) Presupposes: ‘The book Kim bought is  $C_1$ ’



- (i) Denotes: ‘The book Kim bought’
- (ii) Presupposes: ‘The book Kim bought is  $C_2$ ’

One easy fix is to amend Brevity as in (96), which adds upholding the Bridge Principle as a reason for using something complex.

(96) Brevity

For every utterance context  $c$  and every declarative LF  $\phi$ ,  $\phi$  is felicitous in  $c$  only if there is no  $\psi \in \text{ALT}_c(\phi)$  such that

- a.  $\psi$  is structurally simpler than  $\phi$
- b. There is no reason to use  $\phi$  in  $c$  instead of  $\psi$

(Reasons: upholding the Bridge Principle, upholding Quantity, upholding Quality, maintaining parallelism, withholding information, and avoiding disagreement)

With this amendment, Maximize Presupposition is rendered redundant as a felicity condition for *whatever*-DPs. If a *whatever*-DP is used when an alternative’s presupposition is entailed by  $CK_c$ , both Maximize Presupposition and Brevity are violated, and if a *whatever*-DP’s presupposition is entailed by  $CK_c$  but no alternative’s is, both Maximize Presupposition and Brevity are satisfied. I do not find this redundancy objectionable, as Maximize Presupposition was motivated independently by contrasts that do not obviously have anything to do with Brevity, like  $\{\#a / the\}$  *sun is shining*. But if the reader is inclined, they are welcome to view the alternative-based account of both *whatever*-DPs and *some N or other*-DPs as employing just the Brevity condition in (96).



In the next and final chapter, I will lay out some empirical coverage that the alternative-based account has yet to achieve, particularly, constraints on what counts as identifying a referent/witness.

## 4

### Constraining methods of identification

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In previous chapters, I provided arguments in favor of the alternative-based account of *whatever-* and *some N or other-*DPs; under the particular unified version of this account that I presented, what distinguishes these determiner phrases from *the-* and *a-*DPs is their containing the expression *or<sup>C</sup>*, a disjoiner of domain restrictor proforms, which causes these expressions to be associated with pragmatic competitors. The assumption that the use of a *whatever-* or *some N or other-*DP complies with pragmatic principles produces ignorance inferences. The arguments in favor for this account come from the scopal interaction between these expressions' modal implications and other quantificational operators; these are shown to preclude another account – the modal account – under which these expressions semantically encode an ignorance implication.

This final chapter discusses constraints on the methods of identification that these expressions admit. For simplicity, the chapter's focus will be on these expressions' ignorance-implying uses, and I will refer to them collectively as 'ignorance-implying (in)definites', in contrast to *a-* and *the-*DPs, which collectively are called 'ordinary (in)definites'. Presumably, whatever constraints are found in ignorance-implying uses have correlates in other uses, such as those discussed with (1a-b), though I will not discuss them.

- (1) a. Everybody enjoyed whatever book they bought
- b. Everybody who bought some book or other received a bookmark

To see that there are constraints on the methods of identification that these expressions admit, note the contrast between (2a-b), repeated from §2.2.1.

(2) *Context: Kim bought War & Peace. Is War & Peace boring, interesting, or neither?*

Let's read the back cover to find out! . . .

- a. #Whatever book Kim bought is over there on the shelf
- b. The book that Kim bought – which is such that I am not certain what it is – is over there on the shelf

Whereas the use of the definite in (2b) may be licensed by the speaker's ignorance of whether the book Kim bought is boring, interesting, or neither boring nor interesting, the use of the *whatever*-DP in (2a) evidently cannot. Similar contrasts arise between *some N or other*-DPs and *a*-DP counterparts containing an overt *such that* relative clause. Although both (3a-b) are felicitous in the context in (3), where the speaker is uncertain of which individual in front of him is named Axe but is certain that the name Axe identifies the killer, only (4b) is felicitous in the context in (4), where the speaker is certain of which individual in front of him killed Spiderman but is uncertain of his name. The oddness of *some N or other*-DPs (and Sinhala epistemic indefinite *wh-hari*-DPs) in contexts like (4) is reported in Slade 2015.

(3) *Context: ☹, ☺, and ☹ stand in front of me in a police lineup. I've been told that their names are Tex, Lex, and Axe, though I am not sure who is named what. However, I am certain that the person named Axe killed Spiderman.*

- a. Spiderman was killed by someone or other in this lineup
- b. Spiderman was killed by a person in this lineup such that I am not certain who he is

- (4) Context: ☹, ☺, and 😨 stand in front of me in a police line up. I've been told that their names are Tex, Lex, and Rex. 😨 is scary, and I am certain that he killed Spiderman. However, I am not sure what his name is.
- a. #Spiderman was killed by someone or other in this lineup
  - b. Spiderman was killed by a person in this lineup such that I am not certain who he is

The data highlight the complexity of the question of what counts as identifying, as determined by the grammatical representation of *whatever* and *some N or other*-DPs. The contexts in (2) and (4) supply salient ways of identifying individuals that apparently are sufficient for *the book* – which is *such that I am not certain what it is* and *a person in this lineup such that I am not certain who he is*. This suggests that there is some grammatically encoded difference between these expressions and their *whatever*- and *some N or other*-DP counterparts with respect to the methods of identification that they preclude.

The section summarizes some of the literature on the topic of how methods of identification are determined and what the linguistically significant distinctions are; I discuss Heller & Wolter 2011 (whose focus is on *whatever*-DPs), Frana 2010, 2017 (whose focus is on postcopular WH-interrogatives versus concealed questions), and Aloni 2001 (whose focus is on constituent interrogative clauses in general). I show how various proposals for the linguistically significant distinctions in methods of identification are generally compatible with the alternative-based account. Further, I suggest, following Aloni & Port 2013, 2015, that ostension, broadly construed, has a special status as a possible method of identification; in particular, I suggest that certain ignorance-implicating determiner phrases imply ostensional ignorance because they contain a part that has an ostensional, D-linked meaning (Pesetsky 1987, Maldonado 2020).

#### 4.1 Identification with *whatever*-DPs and postcopular interrogatives

Heller & Wolter 2011, whose observations the example in (2) is based on, provide an account of *whatever*-DPs' constraints on methods of identification. Taking the analysis in Dayal 1997 as

a starting point, Heller & Wolter propose that *whatever*-DPs carry a modal presupposition that is relativized to noun meanings. On their ontological assumptions (based especially on Gupta 1980), noun meanings are not properties, as assumed here, but rather ‘sorts’. Sorts are intensions of sets of individual concepts that uphold three principles: the principle of application (which says that the individual concepts pick out entities with the noun-related property), the principle of identity (which tracks the entities picked out by the individual concepts across worlds), and the principle of separation (which distinguishes between individual concepts). A common count noun *N* provides a way of establishing whether two individuals at different worlds are the same *N*, even if their properties differ across worlds – think of a statue made of a block of marble in one world corresponding to something that is the same statue but made of a different block of marble (or not marble at all) in another world, as linguistically expressed in a statement like *Michelangelo’s David could have been made of a different piece of marble* or *Michelangelo’s David could have been made of clay* (examples from their paper). An example common noun denotation under their assumptions is given in (5)<sup>1</sup>.

- (5) For every  $w \in D_s$ ,  $i \in D_{(s,e)}$ :
- If defined,  $\llbracket \text{statue} \rrbracket(w)(i) = \text{True}$  iff
- a.  $i(w)$  is a statue in  $w$  application
  - b.  $\forall w', w'' [\llbracket i(w') \rrbracket \text{ is defined} \wedge \llbracket i(w'') \rrbracket \text{ is defined}] \rightarrow i(w')$  is the same statue as  $i(w'')$  identity
  - c.  $\neg \exists i' [\llbracket \text{statue} \rrbracket(w)(i') = \text{True} \wedge i \neq i' \wedge \exists w' [i(w') = i'(w')]]$  separation

Identity can be established between David, who is marble in the actual world, and some individual, who is clay in a possible world, because they are the values of the same statue-concept. Generally

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<sup>1</sup>I have assimilated the presentation of the lexical entry to my conventions; here is their exact formulation.

- (i)  $\llbracket \text{statue} \rrbracket^{M,s}(\text{type}\langle s, \langle \langle s, e \rangle, t \rangle \rangle)$ : the function from worlds  $w$  into sets of individual concepts  $I$  such that:
- a.  $\forall i \in I : \text{STATUE}(i(w)) = 1$
  - b.  $\forall i \in I : \forall w', w'' : \text{if } i(w') \text{ and } i(w'') \text{ are defined, then } i(w') \text{ is the same statue as } i(w'')$
  - c.  $\forall i_1, i_2 \in I : \text{if } i_1(w) = i_2(w), \text{ at any world } w, \text{ then } i_1 = i_2$  (Heller & Wolter 2011: 181)

following Heller & Wolter 2011<sup>2</sup>, *whatever*-DPs are assigned the presupposition in (6), to be discussed below;  $D_{SORTS}$  represents the subset of  $D_{(s,((s,e),t))}$  whose members uphold the three principles of application, identity, and separation.

- (6) For every  $w \in D_s$ ,  $MB \in D_{(s,(s,t))}$ ,  $P \in D_{(s,(e,t))}$ :
- [[*whatever*<sup>*sorts*</sup>]]( $w$ )( $MB$ )( $P$ ) is defined only if  $\forall S \in D_{SORTS}[\exists w', w'' \in MB(w)$   
 $[\iota x[P(w')(x)]$  is not the same  $S(w)$  as  $\iota x[P(w'')(x)]]$ .  
 If defined, [[*whatever*<sup>*sorts*</sup>]]( $w$ )( $MB$ )( $P$ ) =  $\iota x[P(w)(x)]$

(5b) suggests under what conditions we judge two entities to be the same  $S(w)$ . If some individual concept in  $S(w)$  has  $x$  as its extension in one world and  $y$  as its extension another, then  $x$  and  $y$  are the same  $S(w)$ . In other words, if a single way of picking out an individual among the statues in  $w$ , the books in  $w$ , etc. happens to pick out those two individuals at any two worlds, they are the same statue, book, etc. The requirement that (6) imposes is that no sort contains an individual concept in  $w$  that picks out the same entity as  $[\lambda w : w \in D_s . \iota x[P(w)(x)]]$  at every  $w' \in MB(w)$ . As far as I can tell, (7) is a legitimate reformulation (6).

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<sup>2</sup>Here is their exact formulation.

‘We propose that *-ever* FRs are subject to Condition S(ort), defined in [(i)], where  $S$  is the set of sorts. Condition S guarantees indeterminacy by stating that the entity denoted by the FR is not *the same N* across the relevant set of possible worlds.’

- (i) *whatever*( $w$ )( $F$ )( $P$ )( $Q$ )
- a. presupposes:  $\forall N_{(s,((s,e),t))} \in S : \exists w', w'' \in F : \iota x.P(w')(x)$  is not *the same N* as  $\iota x.P(w'')(x)$
  - b. asserts:  $\forall w' \in F : Q(w')(\iota x.P(w')(x))$

(Heller & Wolter 2011: 182)

I have removed the modalized truth conditions, following arguments in von Stechow 2000, and replaced ‘not the same  $S$ ’ with ‘not the same  $S(w)$ ’; I don’t see how it could be otherwise though as being the same statue in their sample denotation is stated in terms of the extension of *statue*.



(8) For every  $w \in D_s$ ,  $S_1 \dots S_n \in D_{SORTS}$  ( $n \geq 2$ ):

$\llbracket \text{or}^{sorts} \rrbracket(w)(S_1) \dots (S_n)$  is defined iff  $\forall S \in \{S_1, \dots, S_n\}$

(i)  $\{i(w) \mid i \in S(w)\} \neq \emptyset$

(ii)  $\forall S' \in \{S_1, \dots, S_n\} [S' \neq S \rightarrow \{i(w) \mid i \in S(w)\} \cap \{i(w) \mid i \in S'(w)\} = \emptyset]$

If defined, then for every  $x \in D_e$ :

$\llbracket \text{or}^{sorts} \rrbracket(S_1) \dots (S_n)(x) = \text{True}$  iff  $\exists S \in \{S_1 \dots S_n\} [x \in \{i(w) \mid i \in S(w)\}]$

On the other hand, it is not entirely clear to me what differences are predicted with (8) in contrast to the old, extensional  $or^C$ . Heller & Wolter 2011 propose that names (both of people like *Susan* and of places like *Mt. Hope*) denote sorts as well – intensions of sets of concepts of individuals who bear the name – so (2) is presumably ruled out by the knowledge that there is a concept in the *War & Peace* sort (i.e. intension of the set of concepts of individuals named *War & Peace*) that the referent instantiates. But is there no sort for *boring book* or *interesting book*?

In any case, as part of a theory of the range of linguistically significant notions of identification, it does provide some way of understanding the difference between *whatever*-DPs and their *such that* relative counterparts. Recall that following Frana 2010, 2017, I analyze postcopular WH-interrogatives as admitting an LF where their possible answers are determined on the basis of a set of relevant identifying properties. Frana's analysis is motivated by an observation in Heim 1979, citing a manuscript by Bill Greenberg, that a sentence like (9) can be used to mean that Lee knows some essential fact about the city referred to with *the capital of Canada* – even if he is unaware that the capital of Canada is Ottawa, as the context in (9) is meant to highlight<sup>4</sup>.

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<sup>4</sup>A sentence like (i), which contains the concealed question *the capital of Canada*, is claimed not to have such a meaning (Heim 1979).

(i) Lee knows the capital of Canada



- (9) *Context: We are categorizing capital cities based on whether they are densely, moderately, or sparsely populated. We are not sure what Ottawa is, but Lee is currently there, so he will know. Since he is clueless about politics, he surely does not know the political significance of his current location, but as concerns our purposes. . .*

Lee knows what the capital of Canada is

Within a theory where sorts are a distinguished type of denotation, the contrast between the *whatever*-DP and the *the*-DP with a *such that* relative is accounted for by attributing to the former a sort-based ignorance requirement, by virtue of containing *or<sup>sorts</sup>*, whereas the latter may have a property-based ignorance requirement, by virtue of containing an interrogative clause formed from the postcopular position of a predicational copular clause.

Positing a distinction between sort-based and property-based ignorance does not help much in understanding the indefinite case though, repeated in (10).

- (10) *Context: ☹, ☺, and ☹ stand in front of me in a police line up. I've been told that their names are Tex, Lex, and Rex. ☹ is scary, and I am certain that he killed Spiderman. However, I am not sure what his name is.*

- a. #Spiderman was killed by someone or other in this lineup
- b. Spiderman was killed by a person in this lineup such that I am not certain who he is

Names are supposed to provide sorts, and in (10), it is made salient the speaker is not certain which sort supplied by *Tex*, *Lex* and *Rex* provides a concept for the existential witness. So even supposing that sorts are linguistically significant, they do not provide an explanation for why *someone or other in this lineup* is ruled out.

## 4.2 Identification in WH-interrogatives

To show how Aloni & Port 2013, 2015 propose to account for facts like (9)-(10), I provide slightly more information about Aloni's (2001) proposal for how the evaluation of quantificational expres-

sions in natural language is sensitive to conceptual covers. Suppose I am in an epistemic state where: (i) I am convinced of the existence of an individual named Spiderman who has been killed; (ii) I am convinced that ☹, ☺, and ☻ exist (e.g. I believe they are standing in front of me in a police lineup) and that one of them killed Spiderman; (iii) I am convinced that each of these individuals has a different, unique name from the set {Tex, Lex, Axe} (e.g. I've been told 'you are about to see Tex, Lex, and Axe'); (iv) no member of {☹, ☺, ☻} is such that I have an opinion about what their name is. Suddenly, I make up my mind that the name Axe is suspicious and that the person with the name Axe has killed Spiderman. (11) describes what is going on in my epistemic state  $W = \{w_1, w_2, w_3, w_4, w_5, w_6\}$ . I have definitive opinions about the spatial positioning of the individuals ☹, ☺, and ☻ but I am completely unopinionated about these individuals' names. However, I have formed the opinion that having the name Axe is equivalent to being Spiderman's killer.

- (11)  $w_1$  : ☹ is named Axe and killed Spiderman, ☺ is named Tex, ☻ is named Lex  
☹ is on the left, ☺ is in the middle, ☻ is on the right
- $w_2$  : ☹ is named Axe and killed Spiderman, ☺ is named Lex, ☻ is named Tex  
☹ is on the left, ☺ is in the middle, ☻ is on the right
- $w_3$  : ☹ is named Tex, ☺ is named Axe and killed Spiderman, ☻ is named Lex  
☹ is on the left, ☺ is in the middle, ☻ is on the right
- $w_4$  : ☹ is named Lex, ☺ is named Axe and killed Spiderman, ☻ is named Tex  
☹ is on the left, ☺ is in the middle, ☻ is on the right
- $w_5$  : ☹ is named Tex, ☺ is named Lex, ☻ is named Axe and killed Spiderman  
☹ is on the left, ☺ is in the middle, ☻ is on the right
- $w_6$  : ☹ is named Lex, ☺ is named Tex, ☻ is named Axe and killed Spiderman  
☹ is on the left, ☺ is in the middle, ☻ is on the right

As Aloni 2001 observes, this is an epistemic state in which I might say either of (12a-b).

- (12) a. I know who killed Spiderman (It's the one named Axe, obviously)  
b. I don't know who killed Spiderman (Is Axe on the left, in the middle, or on the right?)

The sets of concepts in (13a-b) are both conceptual covers of  $\{\ominus, \odot, \oplus\}$  across my epistemic state  $W$ . The ‘naming cover’ in (13a) contains a concept that the killer of Spiderman instantiates at every one of my belief worlds, namely the concept  $[\lambda w : w \in D_s . \iota x[x \text{ is named Axe in } w]]$ . The ‘ostensional cover’ in (13b) does not contain a concept that the killer of Spiderman instantiates at every one of my belief worlds; it is compatible with my beliefs that the killer of Spiderman instantiates any one of the concepts in (13b).

- (13) a. Naming cover
- $$\left\{ \begin{array}{l} [\lambda w : w \in D_s . \iota x[x \text{ is named Tex in } w]], \\ [\lambda w : w \in D_s . \iota x[x \text{ is named Lex in } w]], \\ [\lambda w : w \in D_s . \iota x[x \text{ is named Axe in } w]] \end{array} \right\}$$
- b. Ostensional cover
- $$\left\{ \begin{array}{l} [\lambda w : w \in D_s . \iota x[x \text{ is on the left in } w]], \\ [\lambda w : w \in D_s . \iota x[x \text{ is in the middle in } w]], \\ [\lambda w : w \in D_s . \iota x[x \text{ is on the right in } w]] \end{array} \right\}$$

The set of concepts in (14) is not a conceptual cover of  $\{\ominus, \odot, \oplus\}$  across  $W$  (intuitively, (14) is not a way for me to distinguish among  $\ominus$ ,  $\odot$ , and  $\oplus$  in this epistemic state). For example, in  $w_2$ , one of my belief worlds,  $\oplus$  – being on the right and named Tex – is not accounted for by any concept in (14), and  $\odot$  – being both in the middle and named Lex – is the value of more than one concept.

- (14)  $\left\{ \begin{array}{l} [\lambda w : w \in D_s . \iota x[x \text{ is named Axe in } w]], \\ [\lambda w : w \in D_s . \iota x[x \text{ is in the middle in } w]], \\ [\lambda w : w \in D_s . \iota x[x \text{ is named Lex in } w]] \end{array} \right\}$

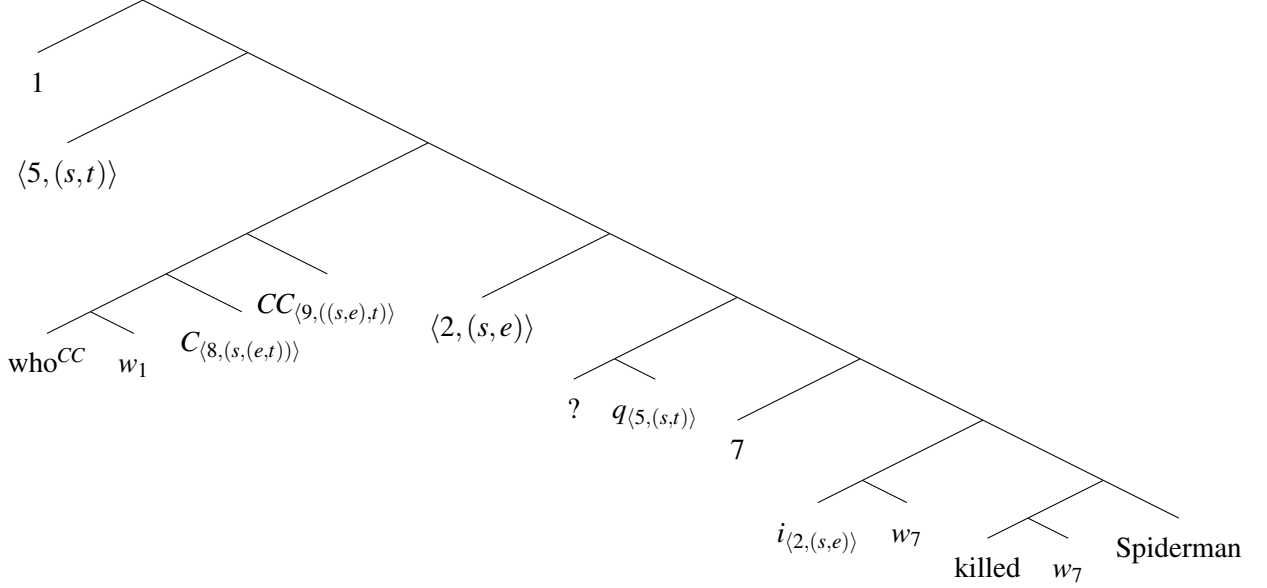
Aloni proposes that the denotation of *who killed Spiderman* is relative to a conceptual cover. One way to integrate Aloni’s proposal into the static semantics assumed here is to assume *who* has a conceptual cover-taking variant<sup>5</sup>, as in (15); (16) is a Karttunen-style LF of *who killed Spiderman*.

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<sup>5</sup>Aloni proposes that in fact all quantification is over covered domains, and ordinary quantification directly over

- (15) For every  $w \in D_s$ ,  $C \in D_{(s,(e,t))}$ ,  $CC, Q \in D_{((s,e),t)}$ :  
 $\llbracket \text{who}^{CC} \rrbracket(w)(C)(CC)(Q)$  is defined only if  $CC$  is a conceptual cover of  $C(w)$  across  $\{w\}$ .  
 If defined,  $\llbracket \text{who}^{CC} \rrbracket(w)(C)(CC)(Q) = \text{True}$  iff  $\exists i[CC(i) \wedge Q(i)]$

- (16) Who killed Spiderman?



Given  $\text{who}^{CC}$ 's presupposition, (16) denotes a partial function, defined in a world  $w$  only if the  $C_8$ -individuals in  $w$  are covered by  $CC_9$  across  $\{w\}$ . The semantics of interrogative-taking  $\text{know}^{int}$  is in (17).

- (17) For every  $w \in D_s$ ,  $Q \in D_{(s,((s,t),t))}$ ,  $x \in D_e$  :  
 $\llbracket \text{know}^{int} \rrbracket(w)(Q)(x)$  is defined only if
- $\exists p \in Q(w)[p(w) \wedge \forall q \in Q(w)[q(w) \rightarrow p \Rightarrow q]]$
  - $\forall w' \in \text{BEL}(x)(w)[\exists p \in Q(w')[p(w') \wedge \forall q \in Q(w')[q(w') \rightarrow p \Rightarrow q]]$
- If defined,  $\llbracket \text{know}^{int} \rrbracket(w)(Q)(x) = \text{True}$  iff
- $$\exists p \in Q(w)[p(w) \wedge \forall q \in Q(w)[q(w) \rightarrow p \Rightarrow q]] \wedge \forall w' \in \text{BEL}(x)(w)[p(w')]$$

individuals can be recovered with a rigid conceptual cover, (i).

- (i)  $\{[\lambda w : w \in D_s . x] \mid x \in D_e\}$

(17) presupposes that the world of evaluation and every one of the subject's belief worlds satisfy Dayal-Answerhood; for any world  $w$ , the denotation of (16) at  $w$  contains a maximally informative true answer only if (16) is defined at  $w$ . Thus, in an evaluation world  $w$ , the  $C_8$ -individuals in  $w$  must be covered by  $CC_9$  across  $\{w\}$  and the  $C_8$ -individuals in  $w'$  must be covered by  $CC_9$  across  $\{w'\}$ , for every world  $w'$  in the subject's belief worlds at  $w$  (these requirements in turn must be satisfied by every world in  $CK_c$ , given the Bridge Principle).

With (13a) as the value of  $CC_9$ , I feel justified in saying [ 0 [ I<sub>50</sub> [ know- $w_0$  [ (16) ]]], as there is a maximally informative proposition in the set {‘the one named Tex killed Spiderman’, ‘the one named Lex killed Spiderman’, ‘the one named Axe killed Spiderman’} that I believe to be true. with (13b) as the value of  $CC_9$ , I do not feel justified in saying this, as there is no maximally informative proposition in the set {‘the one on the left killed Spiderman’, ‘the one on the right killed Spiderman’, ‘the one in the middle killed Spiderman’} that I take to be true.

While  $who^{CC}$ 's conceptual cover is relatively unconstrained, Aloni & Port 2013, 2015 propose that an epistemic indefinite's method of identification is constrained by the principle in (18).

(18) ostension > naming > description

In Romance but not in Germanic, the identification method required for knowledge must be higher in order than the identification method required for specific epistemic indefinites

(Aloni & Port 2013: 38)

The motivation for this proposal is the observation that epistemic indefinites in different languages vary in the methods of identification that they admit. For example, Alonso-Ovalle & Menéndez-Benito 2003: §3 observe that the Spanish *algún*-DP in (19b) is ruled out in the context in (19), whereas the English *some*-DP in (19a), which they take to be an epistemic indefinite, is fine. As an initial approximation, the conditioning feature of the context for the *algún*-DP's felicity is whether the speaker can point to the existential witness; Alonso-Ovalle & Menéndez-Benito observe that (19b) is felicitous if interlocutors can only hear the dancing but can't see it.

(19) *Context: We are in the math department, and we don't know anyone here. Suddenly, we hear music blast out from a faculty office, and we see a person dancing on his desk.*

- a. Look! Some professor is dancing the lambada on his table!
- b. #¡Mira! Algún profesor está bailando la lambada encima de la mesa!  
look ALGÚN profesor is dancing the lambada on of the table  
'Look! Some professor or other is dancing the lambada on the table'

(Alonso-Ovalle & Menéndez-Benito 2003: 4)

According to Aloni & Port 2013, this is part of a broader generalization about the Germanic and Romance language families; they observe that German *irgendein Fussballspieler* is felicitous in (20) in the same way that English *some soccer player* is, whereas Italian *un qualche giocatore* ( $\approx$  'some soccer player') is ruled out.

(20) *Context: You are watching a soccer match with your friends*

- a. Guck mal! Da ist irgendein Fussballspieler verletzt. Weisst Du wer das ist?  
'Look! Some soccer player got injured. Do you know who he is?'
- b. ??Guarda! Un qualche giocatore si è fatto male. Sai chi è?  
'Look! Some soccer player got injured. Do you know who he is?'

(Aloni & Port 2013: 37)

In the contexts in (19)-(20), an element of an ostensional cover is an existential witness. *Some* and *irgendein* are allowed to be used to express existential quantification over an ostensional cover, but *algún* and *un qualche* cannot; it would violate the requirement for the method of identification for knowledge to be higher. Thus, in Romance, a statement with an epistemic indefinite cannot be verified by an ostended existential witness.

The alternative-based account can also be recast within a framework with conceptual covers; for example,  $or^C$  can be replaced with  $or^{CC6}$ .

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<sup>6</sup>The revised mini-disjunction LF is in (i), and the revised assumption about alternatives is in (ii).

(i) [ [ [ [  $or^{CC}$   $w_0$  ]  $C_{(9,(s,(e,t))}$  ]  $i_{(1,(s,e))}$  ]  $i_{(2,(s,e))}$  ] ] ]

(21) For every  $w \in D_s$ ,  $C \in D_{(s,(e,t))}$ ,  $i_1, \dots, i_n \in D_{(s,e)}$  ( $n \geq 2$ ):

$\llbracket \text{or}^{CC} \rrbracket(w)(C)(i_1) \dots (i_n)$  is defined only if

- a.  $\forall i \in \{i_1, \dots, i_n\} [i(w) \text{ is defined}]$
- b.  $\exists x [C(w)(x)]$
- c.  $\{i_1, \dots, i_n\}$  is a conceptual cover of  $C(w)$  across  $\{w\}$

If defined, then for every  $x \in D_e$ :

$\llbracket \text{or}^{CC} \rrbracket(w)(C)(i_1) \dots (i_n)(x) = \text{True}$  iff  $\exists i \in \{i_1, \dots, i_n\} [x = i(w)]$

An individual has the  $\text{or}^{CC}$  property if they are the value of a concept supplied by  $\text{or}^{CC}$ 's disjuncts, which must cover a contextually-determined domain, and the alternatives identify the existential witness as the value of a particular concept. The oddness of *Spiderman was killed by someone or other in this lineup* when the speaker can point to the killer but cannot provide his name could be explained by extending the ranking to *some-* vs. *some N or other*-DPs; *some N or other*-DPs' method of identification cannot be higher than the one required for knowledge, precluding ostended witnesses. I will return to how the hypothesis about the ranking-based principle can be integrated into the alternative-based account after presenting some criticisms of it.

Giannakidou & Quer 2013 and Alonso-Ovalle & Menéndez-Benito 2017, show that there are in fact felicitous uses of *algún*-DPs in contexts where the witness can literally be pointed to, like (22a-b).

(22) a. *Context: P looks out the window and sees María kissing a boy. They are far away. P can tell that it's a boy but can't make out his features.*

P: ¡Mira! ¡María está besando a algún chico!  
 Look! María is kissing A ALGÚN boy!  
 'Look! María is kissing some boy!'

- 
- (ii) a. For every utterance context  $c$  and LF  $\phi$ :  
 If  $\phi$  is a maximal disjunctive LF of the form  $[[ \dots [ [ \text{or}^{CC} w ] \psi_1 ] \psi_2 ] \dots ] \psi_n ]$ ,  
 then  $\text{ALT}_c(\phi) \supseteq \{ [[\text{Op}^{CC} w ] \psi_1 ] , [[\text{Op}^{CC} w ] \psi_2 ] , \dots , [[\text{Op}^{CC} w ] \psi_n ] \}$   
 b.  $\llbracket \text{Op}^{CC} \rrbracket = [\lambda w : w \in D_s . [\lambda i : i \in D_{(s,e)} . [\lambda x : x \in D_e . x = i(w) ] ] ]$

- b. *Context: The Pérez triplets are completely identical. P knows them well. She sees María kissing one of them. P can see the guy very clearly, but of course cannot figure out which triplet María is kissing.*

P: ¡Mira! ¡María está besando a alguno de los trillizos!  
 Look! María is kissing A ALGÚNO of the triplets!  
 ‘Look! María is kissing one of the triplets!’

(Alonso-Ovalle & Menéndez-Benito 2017: 17)

Alonso-Ovalle & Menéndez-Benito 2017 write that “...P can felicitously utter the sentence in [(22)] – even though she would be able to point at the individual that satisfies the existential claim whom, furthermore, she sees very well. The crucial factor... is that in [(22)], the speaker will not take the physical properties of the boy as identifying” (pp. 18). They posit a revised entry for *algún*, where it encodes that the existential witness has a property that is not identificational for the speaker, and a revised condition on alternatives, which existentially quantify over individuals having a subproperty of *algún*’s restrictor intersected with an identificational property<sup>7</sup>. They characterize identificational properties for an individual  $x$  at a world  $w$  as properties whose extensions are singletons at all of  $x$ ’s belief worlds in  $w$  and are ‘stable’ (a notion that remains to be clarified).

### 4.3 The distinguished status of ostension

Alonso-Ovalle & Menéndez-Benito 2017 do not return to address the question of what distinguishes *algún*-DPs from *irgendein*- and *some*-DPs; the lambda and the injured soccer player examples show that there is a difference in what can be an identificational property for the speaker. I would like to make some tentative suggestions, inspired by the principle proposed in Aloni & Port 2013, 2015. The principle is not very plausible as stated; it seems very unlikely that differ-

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<sup>7</sup>(i) is their revised lexical entry.

(i)  $\llbracket \text{algún} \rrbracket^{w,c} = [\lambda f: f \in D_{((s,(e,t)),(s,(e,t)))}. [\lambda P: P \in D_{(s,(e,t))} \wedge f(P) \text{ is not identificational for the speaker of } c \text{ in } w. [\lambda Q: Q \in D_{(s,(e,t))}. \exists x[f(P)(w)(x) \wedge Q(w)(x)]]]]]$

(Alonso-Ovalle & Menéndez-Benito 2017: 25)



ences in methods of identification should be stable in terms of language families like ‘Romance’ and ‘Germanic’. On the other hand, I think it is very likely that there are linguistically significant distinctions among methods of identification that particular expressions may be sensitive to, and perhaps the clearest illustration of this is intralinguistic, morphosyntactically conditioned contrasts in methods of identification.

As is well known, Japanese WH-words/‘indefinite pronouns’ are used in constituent interrogatives but also take on various quantificational forces (e.g. Kuroda 1965, Kratzer & Shimoyama 2002). This includes existential force with the suffix *-ka*. Sudo 2010 finds that unembedded WH-indefinites with the suffix *-ka* exhibit the properties that distinguish epistemic indefinites; for example, the follow-up question in (23c) is fine after (23a) but odd after (23b), containing a *WH ka-DP*.

- (23) a. John-wa kinoo hito-ni atteta yo  
 John-TOP yesterday person-DAT was.meeting PRT  
 ‘John was meeting somebody yesterday’
- b. John-wa kinoo dare-ka-ni atteta yo  
 John-TOP yesterday who-KA-DAT was.meeting PRT  
 ‘John was meeting somebody yesterday’
- c. (23a), #(23b)... honto? aitsu dare-ni atteta?  
 ‘Really? Who was he meeting?’ (Sudo 2010)

Alonso-Ovalle & Shimoyama 2014 observe that the qualitative flavor of ignorance conveyed is in part determined by the choice of WH-word making up the indefinite<sup>8</sup>. The WH-indefinite formed with *nani*, ‘what’, is felicitous in (24), but the one formed with *dore*, ‘which (one)’ is not.

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<sup>8</sup>They also provide evidence for a pragmatic derivation of ignorance effects, e.g. (i). “the sentence in [(i)] below, where *who-ka* is interpreted under a universal quantifier, can be uttered by a speaker who knows who is dancing with whom” (pp. 16).

- (i) Dono kyooju-mo dare-ka gausee-to odotteru  
 which professor-MO who-KA student-with is.dancing  
 ‘Every professor is dancing with some student’

(24) *Context: We are hiking in the woods and we see a troop of mushrooms. My hand brushes against a mushroom. I clearly see the mushroom that I touched.*

- a. #Dore-ka kinoko-ni sawat-ta!  
which.one-KA mushroom-DAT touch-PST
- b. Nani-ka kinoko-ni sawat-ta!  
what-KA mushroom-DAT touch-PST  
Both, roughly: ‘I touched some mushroom or other’

(Alonso-Ovalle & Shimoyama 2014: 13)

In this context, there is a salient domain of objects at which the speaker can point – a troop of mushrooms – and there is no uncertainty as to which individual in the troop the speaker touched. On the other hand, there is plenty of uncertainty about the individual’s properties, including its name (i.e. the name of the species), the descriptions that it meets, etc. Alonso-Ovalle & Shimoyama 2014 speculate that in Japanese, *dore* (‘which’) -ka-DPs imply ignorance about which individual is the existential witness, whereas *nani* (‘what’) -ka-DPs imply ignorance about what kind the touched mushroom belongs to (following Strawson 1974, Weir 2012 on these two readings of *some*-indefinites). The context in (24) does not determine what the mushroom’s kind is, so the *nani* (‘what’) -ka-DPs is felicitous.

*Whatever*-DPs are also formed with WH-words, which contribute towards the method of identification that the *whatever*-DP is sensitive to. For example, there is a sharp contrast between (25a-b) in the context in (24).

- (25) a. Whatever mushroom I just touched is giving me a rash
- b. #Whichever mushroom I just touched is giving me a rash

Unlike Alonso-Ovalle & Shimoyama 2014, I do not think that the contrast has anything to do with individual- vs. kind-based ignorance. Suppose we are hiking with a list of mushroom kinds in our pocket; if I don’t know which listed kind the mushroom that I touched belongs to, both (25a-b) are felicitous. I suspect that the contrast relates to what Aloni & Port 2013 intend when they give ostension a distinguished position in the ranking of methods of identification. Certain determiners

like *which* encode a requirement for ‘ostended’ domains – broadly construed – that other domain-fixing expressions like *what* do not. In the literature on interrogative clauses, the property of *which* has earned it the title ‘D-linked WH-word’ (Pesetsky 1987). If a WH-word is felicitous only if the interlocutors publicly agree on what its domain is, it is a D-linked WH-word. Contexts like (26a) vs. (26b), (26c) vs. (26d) show that *what* and *who* are not D-linked (also called ‘simplex’). They do not impose so strong a felicity constraint.

- (26) A: I just went on a blind dinner date at Restaurant X. Have you heard of it?  
 B: No. Tell me more.
- |                                 |                                      |
|---------------------------------|--------------------------------------|
| a. #Which person was your date? | b. Who was your date?                |
| c. #Which meal did you order?   | d. What did you order for your meal? |

More recently, Maldonado 2020 shows that in Spanish, a D-linking felicity condition is associated not only with the WH-word *cual(es)*, ‘which’, but also with the plural form *quiénes*, ‘who.pl’; *quien*, ‘who.sg’, does not impose such a constraint, (27).

- (27) *Context: Mary and John arrive at their apartment, where there is supposed to be no one. They hear two people whispering inside. Mary asks:*
- ¿Quién (#quiénes) está ahí?  
 Who.sg (#who.pl) is there?  
 ‘Who is in there?’ (Maldonado 2020: 156)

The plurality requirement of *quiénes* is satisfied – Mary and John know that there are two people whispering inside – but there is no discourse-familiar domain of individuals from which the answer to the question is expected to be drawn. In contrast, in (28), previous mention of two people satisfies the requirements of *quiénes*.

- (28) Dos personas están hablando en el dormitorio, pero no sé quiénes (#quién) son  
 Two people are talking in the bedroom, but not know who.pl (#who.sg) are  
 ‘Two people are talking in the bedroom, but I don’t know who they are’  
 (Maldonado 2020: 157)

I understand ‘ostension’ in this broader sense of discourse salience/familiarity, revealed through felicity contrasts like (28). Not every form of ostension, broadly construed, involves pointing. If María is kissing a triplet and we are familiar with the triplets, it would be felicitous to ask *which triplet is she kissing?* even if the other triplets are not around to point at. It seems very likely that certain morphosyntactic parts making up ignorance implying determiner phrases would contribute an ostensional, D-linked meaning. *Which* is a good candidate<sup>9</sup>; *other* is another.

Maldonado 2020 proposes that a D-linked domain fixing expression, in contrast to a non-D-linked one, carries the requirement that the sum of its domain’s members be familiar in the dynamic-semantic sense<sup>10</sup>. The proposal closely resembles the account given in Schwarz 2009 for strong, uncontracted definites in German (partially discussed in §2.1.2). To merge the alternative-based account of ignorance implying (in)definites with Maldonado’s view on D-linking (in a highly simplifying manner),  $or^C$  can be assumed to come in two variants. One variant,  $or^{C, strong}$ , carries an additional, dynamically-bound index/proform and requires the sum of its restrictor argument

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<sup>9</sup>Hebrew appears to be an exception. Like Japanese indeterminate pronouns, Hebrew WH-words also take on existential quantificational force with the suffix *she-X* (where X is a number-gender agreement marker/pronoun). The simplex *mi*, *ma* ‘who, what’ do not occur with noun phrases (e.g. *mi-she-hul/ma-she-hu*, ‘someone.M.SG / something.M.SG’). D-linked *eyze* occurs with a noun phrase and either with *she-X* (e.g. *eyzo-she-hi pitria*, ‘which.F.SG-SHE-F.SG mushroom’) or without (e.g. *eyzo pitria*, ‘which.F.SG mushroom’) with no perceptible difference (depending on the register, *eyze* need not inflect for gender). Like Japanese *dore-ka*, *eyze*-NPs license speaker-ignorance implications in unembedded contexts that other indefinites (e.g. bare NPs like *pitria*, ‘a mushroom’) do not. But surprisingly, unlike *dore-ka*, the *eyze*-NP in (29) is felicitous in (24); it intuitively implies ignorance about some property of the touched mushroom other than which member of the ostensional domain it is (e.g. ignorance about its kind). This is in spite of the fact that in (26), it would be odd for B to use the interrogative with *eyzo*.

- (i) nag’ati be-eyzo(-she-hi) pitria  
I.touched in-which.F.SG(-SHE-F.SG) mushroom  
‘I touched some mushroom’
- (ii) eyzo mana rishona hezmant?  
which meal first you.ordered.f  
‘Which appetizer did you order?’

<sup>10</sup>Here is Maldonado’s (2020) exact formulation (pp. 161):

- (i)  $\llbracket \text{quién}_C \rrbracket^{w,g} = \lambda F_{(e,t)} . \exists x_e : [g(C) \subseteq \llbracket \text{human} \rrbracket^w] . x \in g(C) \wedge F(w)(x)$
- (ii)  $\llbracket \text{quiénes}_{C,i} \rrbracket^{w,g} = \lambda F_{(e,t)} . \exists x_e : \left[ \begin{array}{l} g(C) \subseteq \llbracket \text{human} \rrbracket^w \\ \bigoplus g(C) = g(i) \\ |x| > 1 \end{array} \right] . x \in g(C) \wedge F(w)(x)$

extensions to be discourse familiar, and the other variant,  $or^{C,weak}$ , does not. The LFs of Romance *algún-* and *un qualche-*DPs, along with those of English *some N or other-*DPs, contain  $or^{C,strong}$ , whereas the LFs of Germanic *irgendein-* and *some-*DPs contain  $or^{C,weak}$ .

A lingering question, left for future work, is why (29a) is odd.

(29) Context: ☹, ☺, and ☹ stand in front of me in a police line up. I've been told that their names are *Tex*, *Lex*, and *Rex*. ☹ is scary, and I am certain that he killed Spiderman. However, I am not sure what his name is.

- a. #Spiderman was killed by someone or other in this lineup
- b. Spiderman was killed by a person in this lineup such that I am not certain who he is

The context supplies two discourse-familiar domains – the individuals standing in front of the speaker and a list of names – but *someone or other in this lineup* appears to stubbornly convey ignorance with respect to the former. Perhaps in addition to discourse salience/familiarity, certain domain fixing expressions really do encode an ostensional meaning, narrowly construed (i.e. literally involving pointing), in the way that Aloni & Port 2013, 2015 intend.

#### 4.4 Conclusion

This brief chapter surveyed some of the literature on the linguistically significant distinctions in how individuals are identified. The alternative-based account was shown to be compatible with various proposals found in this literature, and it was tentatively suggested that one linguistically significant distinction is whether a domain fixing expression has a strong familiarity requirement or not. This was proposed to account for some (but not all) ‘ostensional’ ignorance effects.

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