

THE GRAMMAR OF CHOICE

A Dissertation Presented

by

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Linguistics

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## DEDICATION

To my grandfather Liborio, *in memoriam*.

## ACKNOWLEDGEMENTS

In the course of my long graduate career I have often imagined the moment when I would write my dissertation acknowledgements. However, in my naiveté, I never thought that I would have to write them in a hurry so that I could file my dissertation on time. Luckily, I have so many people to thank, for so many things, that there is no danger of writer's block when writing this text.

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ABSTRACT

THE GRAMMAR OF CHOICE

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This dissertation investigates the semantics of universal Free Choice (FC) items i.e., items like FC *any* or Spanish *cualquiera*.

This study is relevant for the theory of quantification. One of the core questions of this research is: what is the range of quantificational constructions used in natural language? Investigating the behavior of FC items will be instrumental in answering this question. While FC items seem to express quantification, they do not behave like ‘textbook’ quantifiers: They have a restricted distribution, and they seem to have a special relationship with modality.

In Chapter 2, I explore a compositional account in the spirit of Dayal (1998), according to which FC items are modal universal quantifiers, and conclude that this account can only derive the distribution of FC items by making assumptions that are not empirically justified.

My analysis of universal FC items is developed in Chapter 3, which constitutes the core of the dissertation. The crucial observation presented in this chapter is that analyzing universal FC items as wide-scope universals does not capture their FC component. In Chapter 3, I present an analysis that captures the FC effect and derives the ungrammaticality of FC items in episodic sentences like *\*John took any of these cards* and necessity sentences like *\*John must take any of these cards*. The key component of the proposal is the idea that all these sentences involve an exclusiveness requirement.

Chapter 4 deals with the licensing of FC items in generic sentences like *this printer prints any document*. I argue that these examples contain a covert possibility modal and thus that they fall under the general explanation given in Chapter 3 for possibility sentences. The discussion in this chapter sheds light on the semantics of generic sentences.

Chapter 5 discusses two further environments in which the interaction with genericity will turn out to be relevant: (i) necessity sentences like *Any student must work hard* and (ii) sentences like *John talked to any woman that came up to him*. The discussion in this chapter will lead to a better understanding of the interaction of FC items with genericity.

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# CHAPTER 1

## INTRODUCTION

### 1.1. Overview of the dissertation

This dissertation investigates the semantics of universal Free Choice (FC) items<sup>1</sup>, i.e., items that express what Vendler (1967) dubbed ‘freedom of choice’ and can be given a universal paraphrase. Both FC **any** and Spanish **cualquiera** belong to this category. By uttering the sentence in (1), or its Spanish counterpart in (2), I inform my addressee that all the cards are permitted possibilities for her, and hence I grant her "the unrestricted liberty of individual choice" (Vendler 1967: 80). Sentences like (1) and (2) are often paraphrased as 'for any x such that x is one of these cards, you can take x'.

- (1) You can take any of these cards.
- (2) Puedes coger cualquiera de estas cartas.  
You can take any of these cards.

The study of FC items is relevant for the theory of quantification. Work on quantificational expressions has been central to the study of language ever since Aristotle. One of the core questions of this research is: what is the range of quantificational constructions used in natural language? Investigating the behavior of FC

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<sup>1</sup> Until recently the term ‘FC item’ had been reserved for items of the **any**-type, which have a universal interpretation. Kratzer and Shimoyama (2002) show that some existential indefinites (e.g., German **irgendein**) also have a free choice component (see also Kratzer 2005, Chierchia 2005 and Farkas 2005).

items will be instrumental in answering this question. While FC items seem to express quantification, they don't behave like 'textbook' quantifiers: They have a restricted distribution, and they seem to have a special relationship with modality.

Cross-linguistically, universal FC items are ruled out in episodic sentences (see (3)) and in some necessity statements (as in (4)). They are licensed in necessity statements like (5), in possibility sentences ((6)), and in generic sentences like (7).

(3) (a) \*Ayer, Juan cogió cualquier carta.  
Yesterday, Juan took-pfv. any card.

(b) \* Yesterday, Juan took any card.

(4) (a) \* Juan tiene que coger cualquier carta.  
Juan tiene que coger cualquier carta.

(b) \* Juan must take any card.

(5) (a) Cualquier estudiante tiene que trabajar duro.  
Any student must work hard.

(b) Any student must work hard

- (6) (a) Juan puede coger cualquier carta.  
Juan can take any card.
- (b) Juan can take any card.
- (7) (a) Esta impresora imprime cualquier documento.  
This printer prints any document.
- (b) This printer prints any document.

Universal FC items seem to be sensitive to some property of their environment. But in view of the examples above it is far from obvious what this property might be: looking at the contrast between the example in (3) and the examples in (5) through (7) one might think that the relevant property is modality (that is, that universal FC items are ‘modality-sensitive’ elements<sup>2</sup>). But as (4) shows, not just any type of modal will do.

Much current research is devoted to deriving the distributional properties of universal FC items (e.g., Aloni 2003; Dayal 1998, 2004a; Chierchia 2005; Horn 2000, 2005; Farkas 2005; Giannakidou 2001; Saeboe 2001, among others). In this work, I will take as my starting point the proposal put forward in Dayal (1998, 2004a).

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<sup>2</sup> Generic statements have been argued to involve a modal quantifier. Chapter 4 of this dissertation includes an extensive discussion of the type of modality involved in examples like (7).

Dayal argues that FC **any** is a modal determiner, a universal quantifier that ranges over possible individuals. On this account, the distribution of FC **any** is derived purely from its semantics: FC **any** is ruled out in contexts where the interaction of its modal component with other elements in the sentence yields impossible truth-conditions. In Chapter 2, I explore a compositional account in the spirit of Dayal (1998), and conclude that this account can only derive the distribution of FC items by making assumptions that are not empirically justified.

My analysis of universal FC items is developed in Chapter 3, which constitutes the core of the dissertation. The crucial observation presented in this chapter is that analyzing FC items like **any** or **cualquiera** as wide-scope universals is not enough to capture the Free Choice component of these items. Paraphrasing the sentences in (1) and (2)—repeated below as (8) and (9) — as 'for any x such that x is one of these cards, you may take x' predicts these sentences to be true in situations where there is no complete freedom of choice.

(8) You can take any of these cards

(9) Puedes coger cualquiera de estas cartas.

You may take any of these cards.

In Chapter 3, I present an analysis that yields the right truth conditions for sentences like (8) and (9) *and* derives the ungrammaticality of episodic sentences like (3) and necessity

sentences like (4). The key component of the proposal is the idea that all these sentences involve an exclusiveness requirement.

Chapter 4 deals with the licensing of FC items in generic sentences like (7), repeated below as (10). I argue that examples like (10) contain a covert possibility modal and thus that they fall under the general explanation given in Chapter 3 for sentences with overt modals of possibility. The discussion in this chapter sheds light on the semantics of generic sentences.

- (10) (a) Esta impresora imprime cualquier documento.  
This printer prints any document.
- (b) This printer prints any document.

Chapter 5 discusses two further environments in which the interaction with genericity will turn out to be relevant: (i) necessity sentences like (5)—repeated below as (11) — in which universal FC items are acceptable, and (ii) sentences like (12), where the FC item is 'rescued' by the addition of a relative clause ("subtriggering", LeGrand 1975). By investigating these two cases we will gain a better understanding of the interaction of universal FC items with genericity.

(11) (a) Cualquier estudiante tiene que trabajar duro.

Any student must work hard.

(b) Any student must work hard.

(12) John talked to any woman that came up to him.

The rest of this chapter presents my assumptions about the interpretation of different lexical items and the rules of semantic composition that I will adopt.

## **1.2. Formal framework and assumptions**

I will assume that the input for semantic interpretation are the phrase structure trees known as Logical Forms (LFs), which are the output of syntactic derivations. LFs will be interpreted by a recursive interpretation procedure. In order to represent the meaning of syntactic constituents I will employ an intensional typed lambda-calculus with the usual resources. Section 1.2.1. presents the basics of this logical language and section 1.2.2. discusses the interpretation of LFs. In section 1.2.2.1. I present my assumptions about the interpretation of lexical items and traces. Section 1.2.2.2. lays out the rules of semantic composition I am adopting.

## 1.2.1. Logical Language

### 1.2.1.1. Types

The following types are used:

- (i) e (individuals)
- (ii) s (worlds)
- (iii) i (times)
- (iv) l (eventualities)
- (v) t (truth values)
- (vi) If a and b are types, then  $\langle a, b \rangle$  is a type.
- (vi) Nothing else is a type.

### 1.2.1.2. Symbols

- (i) For every type a, an infinite set of  $\text{VAR}_a$  of variables of type a.
- (ii) The connectives  $\sim$ ,  $\&$ ,  $\vee$ , and  $\rightarrow$
- (iii) The  $\lambda$ -operator and the quantifiers  $\forall$  and  $\exists$ .
- (iv) The parentheses ( and ).
- (v) For every type a, a (possibly empty) set  $\text{CON}_a$  of constants of type a.

Some examples:

<u>Constant</u>	<u>Type</u>
m	e
j	e
talk'	$\langle e \langle e \langle 1 \langle s, t \rangle \rangle \rangle \rangle$
woman'	$\langle e \langle s, t \rangle \rangle$

### 1.2.1.3. Syntax

( $WE_a$  = the set of well-formed expressions of type a)

- (i) If  $\alpha \in VAR_a$  or  $\alpha \in CON_a$ , then  $\alpha \in WE_a$
- (ii) If  $\alpha \in WE_{\langle ab \rangle}$ , and  $\beta \in WE_a$ , then  $\alpha(\beta) \in WE_b$
- (iii) If  $\alpha$  and  $\beta \in WE_t$ , then  $\sim \alpha$ ,  $\alpha \& \beta$ ,  $\alpha \vee \beta$ , and  $\alpha \rightarrow \beta \in WE_t$
- (iv) If  $\alpha \in WE_t$  and  $v \in VAR_a$ , then  $\forall v \alpha$  and  $\exists v \alpha \in WE_t$
- (v) If  $\alpha \in WE_a$  and  $v \in VAR_b$ , then  $\lambda v \alpha \in WE_{\langle ba \rangle}$
- (vi) For any type a, every element of  $WE_a$  is constructed in a finite number of steps in accordance with (i) to (v).



#### 1.2.1.4. Semantics

##### Semantic Domains

Let us assume that (i)  $D$  is the set of all possible individuals; (ii)  $E$  is the set of all possible eventualities; (iii)  $\{0, 1\}$  is the set of truth values; (iv)  $W$  is the set of all possible worlds and (v)  $I$  is the set of all times. Then, we can define the interpretation domains as follows:

$$(i) \quad D_e = D$$

$$(ii) \quad D_t = \{0, 1\}$$

$$(iii) \quad D_l = E$$

$$(iv) \quad D_s = W$$

$$(v) \quad D_i = I$$

$$(vi) \quad \text{For any types } a \text{ and } b, D_{\langle a,b \rangle} \text{ is the set of all functions from } D_a \text{ to } D_b$$

##### Interpretation

An interpretation function  $\text{Int}$  assigns a denotation to each non-logical constant of the logical language. For instance,

$$\text{Int}(m) = \text{Mary}$$

$$\text{Int}(j) = \text{John}$$

Int (woman') = that function  $f \in D_{\langle e \langle s, t \rangle \rangle}$  such that for any individual  $a \in D$  and any world  $w \in W$ ,  $f(a)(w) = 1$  iff  $a$  is a woman in  $w$ .

Int (talk') = that function  $f \in D_{\langle e \langle e \langle t \langle s, t \rangle \rangle \rangle \rangle}$  such that for any individuals  $a, b \in D$ , any event  $e \in E$  and any world  $w \in W$ ,  $f(a)(b)(e)(w) = 1$  iff  $e$  is an event of  $a$  talking to  $b$  in  $w$ .

A variable assignment  $f$  assigns to every variable of type  $a$  an element of  $D_a$ . For any variable assignment  $f$ , for any well-formed expression  $\alpha$ ,  $J(\alpha)^f$  is the denotation of  $\alpha$  with respect to  $f$ . The definition runs as follows:

- (i) If  $\alpha \in \text{CON}_a$ , then  $J(\alpha)^f = \text{Int}(\alpha)$
- (ii) If  $\alpha \in \text{VAR}_a$ , then  $J(\alpha)^f = f(\alpha)$
- (iii) If  $\alpha \in \text{WE}_{\langle ab \rangle}$ , and  $\beta \in \text{WE}_a$ , then  $J(\alpha(\beta))^f = J(\alpha)^f(J(\beta)^f)$
- (iv) If  $\alpha$  and  $\beta \in \text{WE}_t$ , then  $J(\sim \alpha)^f = 1$  iff  $J(\alpha)^f = 0$ ,  $J(\alpha \ \& \ \beta)^f = 1$  iff  $J(\alpha)^f = 1$  and  $J(\beta)^f = 1$ ,  $J(\alpha \vee \beta)^f = 1$  iff  $J(\alpha)^f = 1$  or  $J(\beta)^f = 1$ , and  $J(\alpha \rightarrow \beta)^f = 0$  iff  $J(\alpha)^f = 1$  and  $J(\beta)^f = 0$ .
- (v) If  $\alpha \in \text{WE}_t$  and  $v \in \text{VAR}_a$ , then  $J(\forall v \alpha)^f = 1$  iff for all  $d \in D_a$ ,  $J(\alpha)^{f[v/d]} = 1$  and  $J(\exists v \alpha)^f = 1$  iff for some  $d \in D_a$ ,  $J(\alpha)^{f[v/d]} = 1$ .
- (vi) If  $\alpha \in \text{WE}_a$  and  $v \in \text{VAR}_b$ , then  $J(\lambda v \alpha)^f$  is that function  $h \in D_{\langle b, a \rangle}$ , such that for all  $d \in D_b$ ,  $h(d) = J(\alpha)^{f[v/d]}$ .

### 1.2.2. Interpretation of Logical Forms

For any syntactic constituent  $\alpha$ ,  $[[\alpha]]^g$  is the denotation of  $\alpha$  with respect to the variable assignment  $g$ . In what follows, variable assignments will be taken to be functions from natural numbers to various objects.

In order to represent the denotations of syntactic constituents I will use the logical language described in 1.2.1. When necessary, I will indicate the semantic type of variables by means of subscripts. For instance,  $P_{\langle 1, \langle s, t \rangle \rangle}$  is a variable of type  $\langle 1, \langle s, t \rangle \rangle$ .

#### 1.2.2.1. Lexical items and Traces

##### Traces and Pronouns

I will assume that traces and pronouns bear a numerical index, and that indexed items are interpreted in the following way:

- (13) For any  $\alpha$  of type  $a$ , for any natural number  $n$  and for any assignment  $g$ ,
- $$[[\alpha_n]]^g = g(n) \text{ (where } g(n) \text{ must belong to } D_a)$$

## Predicates

I assume all predicates have a world argument.

Common nouns denote functions from individuals to worlds to truth-values:

$$(14) \quad [[\mathbf{mujer}]]^g = \lambda x_e \lambda w_s (\text{woman}'(x)(w))$$

Following much work on event semantics (see for instance, Davidson 1967; Parsons 1990, among many others), I will assume that verbs have an event argument.

Intransitive verbs denote functions of type  $\langle e \langle 1 \langle s, t \rangle \rangle \rangle$ .

$$(15) \quad [[\mathbf{sonreír}]]^g = \lambda x_e \lambda e_1 \lambda w_s (\text{smile}'(x)(e)(w))$$

Transitive verbs denote functions of type  $\langle e \langle e \langle 1 \langle s, t \rangle \rangle \rangle \rangle$ .

$$(16) \quad [[\mathbf{hablar}]]^g = \lambda x_e \lambda y_e \lambda e_1 \lambda w_s (\text{talk}'(y)(x)(e)(w))$$

## Tense

I will adopt the referential theory of tense (Partee 1973, Kratzer 1998a), according to which tenses are special kinds of pronouns. The interpretation of past tense is given in (17).

- (17)  $[[\text{past}_n]]^g$  is only defined if  $g(n)$  is a time interval that precedes  $t_0$ , the utterance time. If defined,  $[[\text{past}_n]]^g = g(n)$

(see Kratzer 1998a)

## Episodic aspect

In Spanish, the episodic/generic distinction in the past is marked by aspectual morphology. As shown in (18) and (19) below, the verb in episodic sentences bears perfective morphology while the verb in generic sentences bears imperfective morphology.

- (18) Ayer Juan salió con María  
Juan went out-**pfv.** with María  
‘Yesterday, Juan went out with María’

(19) Cuando vivía en Madrid, Juan salía con María

When he lived in Madrid, Juan went out-**impf.** with María

‘When he lived in Madrid, Juan used to go out with María’

According to Davidson (1967), episodic sentences express existential quantification over events. On this view, the sentence in (18) asserts the existence of a past event of Juan going out with María. The correspondence between existential quantification and perfective morphology has led some researchers (e.g., Bonomi (1997), Lenci and Bertinetto (2000)) to propose that perfective morphology in Romance introduces existential quantification over events.

Furthermore, sentences like (18) involve perfective viewpoint aspect in the sense of Klein (1994): Klein argues that the role of viewpoint aspect morphology is to express a relation between the running time of an event and the reference (or topic) time. Imperfective aspect expresses the relation ‘topic time is included in event time’; perfective aspect expresses the relation ‘event time is included in topic time’. This is illustrated in (20) and (21), where the topic time is contributed by the temporal adverbial.

(20) John was working at three.

Imperfective:  $TT \subseteq ET$

(21) John worked between two and three.

Perfective:  $ET \subseteq TT$

In our example sentence (18), the running time of the event of going out is included in the topic time (that is, the interval denoted by **yesterday**).

I will adopt the proposal for perfective aspect put forward in Kratzer 1998a:

$$(22) \quad [[\text{perfective}]]^{\text{E}} = \lambda P_{\langle 1, \langle s, t \rangle \rangle} \lambda t_i \lambda w_s (\exists e (f_{\text{time}}(e) \subseteq t \ \& \ P(e)(w)))$$

(The function  $f_{\text{time}}$  is a function that maps an event into its running time.)

On this proposal, a single functional head supplies both existential quantification and perfective viewpoint aspect in the sense of Klein (1994)<sup>3</sup>.

### Modals

I will assume the following semantics for modal auxiliaries, where R stands for the accessibility relation (that is, a binary relation in the set of possible worlds). The accessibility relation can be provided by an overt element (i.e., a phrase like **in view of what is known, in view of what the laws are**), or it can be given a value by the context of utterance.

$$(23) \quad [[\text{can}]]^{\text{E}} = \lambda R_{\langle s \langle s, t \rangle \rangle} \lambda p_{\langle s, t \rangle} \lambda w_s (\exists w' (R(w)(w') \ \& \ p(w')))$$

---

<sup>3</sup> I will assume that English sentences like (i), on their episodic reading, also involve perfective aspect, as defined above.

- (i) John went out with Mary

$$(24) \quad [[\mathbf{must}]]^g = \lambda R_{\langle s, \langle s, t \rangle \rangle} \lambda p_{\langle s, t \rangle} \lambda w_s (\forall w' (R(w)(w') \rightarrow p(w')))$$

This is an oversimplification: Kratzer (1981, 1991) shows that the standard semantics of modals in (23) and (24) makes incorrect predictions, and argues that modal operators are sensitive to two context-dependent parameters: a modal base (which determines the set of accessible worlds) and an ordering source (which ranks the accessible worlds). For the time being, I will adopt the simplified semantics above, and make use of the more complicated semantics proposed by Kratzer only when it becomes necessary for the arguments at issue.

#### 1.2.2.2. Rules of Semantic Composition <sup>4</sup>

##### Functional Application (FA)

(25) If  $\alpha$  is a branching node and  $\beta$  and  $\gamma$  its daughters, then, for any assignment  $g$ , if

$$[[\beta]]^g \text{ is of type } \langle a, b \rangle \text{ and } [[\gamma]]^g \text{ of type } a, \quad [[\alpha]]^g = [[\beta]]^g ([[ \gamma ] ]^g)$$

---

<sup>4</sup> Taken from Heim and Kratzer (1998), with minor variations.



Predicate Abstraction (PA)

I will assume that the syntactic representations we interpret contain numerical indices that play the role of  $\lambda$ -abstractors. Structures containing these indices are interpreted by means of the rule below.

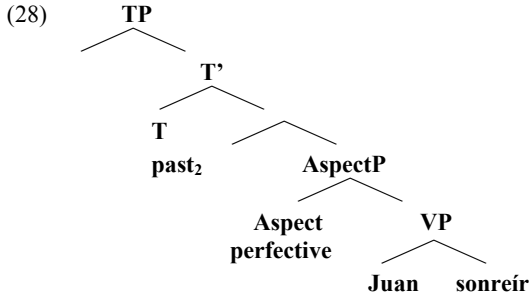
- (26) If  $\alpha$  is a branching node whose daughters are an index  $n$  and a node  $\beta$ , then, for any assignment  $g$ ,  $[[\alpha]]^g = \lambda v ([[ \beta ]]^g[v/n])$

Given these rules and the assumptions above, the denotation of a sentence will be a proposition, construed as the characteristic function of a set of worlds. By way of illustration, consider the computation of the denotation of the sentence in (27).

- (27) Juan sonrió.

Juan smiled-pfv.

Let us assume that the sentence in (27) has the (simplified) LF in (28) below.



The denotation of this sentence will be computed as follows:

(29)

$$[[\text{sonreír}]]^g = \lambda y_e \lambda e_1 \lambda w_s (\text{smile}' (y)(e)(w))$$

$$[[\text{Juan}]]^g = j$$

$$[[\text{VP}]]^g = [[\text{sonreír}]]^g ([[ \text{Juan} ]])^g = \text{by FA} \\ \lambda e_1 \lambda w_s (\text{smile}' (j)(e)(w))$$

$$[[\text{perfective}]]^g = \lambda P_{\langle 1, \langle s, t \rangle \rangle} \lambda t_i \lambda w_s (\exists e (f_{\text{time}}(e) \subseteq t \ \& \ P(e)(w)))$$

$$[[\text{AspectP}']]^g = [[\text{perfective}]]^g ([[ \text{VP} ]])^g = \text{by FA} \\ \lambda t_i \lambda w_s (\exists e (f_{\text{time}}(e) \subseteq t \ \& \ \text{smile}' (j)(e)(w)))$$

$$[[\text{past}_2]]^g = g(2)$$

$$[[\text{TP}]]^g = [[\text{AspectP}']]^g ([[ \text{past}_2 ]])^g = \text{by FA}$$

$$\lambda w_s (\exists e (f_{\text{time}}(e) \subseteq g(2) \ \& \ \text{smile}' (j)(e)(w)))$$

That is, the proposition that is true in a world  $w$  iff, in  $w$ , there is an event of Juan smiling whose running time is temporally included in a contextually relevant past time.

## CHAPTER 2

### THE MODAL QUANTIFIER APPROACH

As noted in Chapter 1, Dayal (1998, 2004a) claims that FC **any**

- (a) is a universal quantifier.
- (b) is a modal quantifier: it ranges over possible individuals<sup>1</sup>.
- (c) is ruled out in contexts where the interaction of its modal component with verbal morphology and modal auxiliaries would yield impossible truth conditions. Thus, its licensing conditions are purely semantic.

In this chapter, I explore a compositional account in the spirit of Dayal and ultimately conclude that properties (a) and (b) can account for the distribution of universal FC items only under certain assumptions that are not generally justified. In section 1 I summarize Dayal's proposal. Section 2 presents my implementation of Dayal's insights and discusses some of the problems raised by it.

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<sup>1</sup> Most recent accounts of universal FC items claim that these items have an intensional component of some sort. See, for instance, Saeboe (2001) and Giannakidou (2001) .

## **2.1. Background: Dayal's proposal**

Central to the research on FC items of the **any**-type is the debate between those authors who take FC items to be universal quantifiers (e.g., Dayal (1998, 2004a); Saeboe (2001)) and those who claim that FC items are indefinites (e.g., Kadmon and Landman (1993); Lee and Horn (1994); Lahiri (1998); Horn (2000, 2005); Giannakidou 2001, among others). Dayal (1998) argues against Kadmon and Landman's analysis of FC **any** as an indefinite<sup>2</sup>. In order to introduce her objections, I will briefly summarize Kadmon and Landman's analysis of **any**.

### **2.1.1. Kadmon & Landman 1993**

#### **2.1.1.1. *Any* as an indefinite**

It has long been observed that some indefinites can be interpreted existentially or generically depending on the environment they occur in (see, e.g., Kamp (1981), Heim (1982), Carlson (1977), Wilkinson (1986), Diesing (1992)):

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<sup>2</sup> See Dayal's (2004a) paper for arguments against more recent accounts of FC items as indefinites, namely those of Horn and Giannakidou.

(1) An owl hunts mice.

Roughly: ‘It is typical for owls to hunt mice’ [generic interpretation]

(2) An owl is hunting mice.

‘There is an owl that is hunting mice’ [existential interpretation]

(It is commonly assumed that sentences like (1) involve a covert quantifier, close in meaning to **typically**, which is usually represented by **GEN** ("the generic operator")<sup>3</sup>, and that it is this quantifier that is responsible for the generic reading of the indefinite phrase.)

English **any** exhibits the same quantificational variability as ‘plain’ indefinites. Apart from its FC use, **any** can also be used as a Negative Polarity Item (NPI). In its NPI use, **any** is interpreted as an existential<sup>4</sup>; in its FC use, it seems to get a universal reading.

(3) Any bird flies. (FC **any**)

(4) I don’t have any matches. (NPI **any**)

Furthermore, Kadmon and Landman say, NPs with FC **any** are licensed in precisely those contexts in which generic indefinites are allowed, and are similar to them in interpretation (see Kadmon and Landman 1993: 357). In view of the parallelism between **any** NPs and plain indefinite phrases, Kadmon and Landman conclude that **any** NPs are indefinites,

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<sup>3</sup> The exact nature of the generic operator is the subject of much debate (see, for instance, Cohen (1999), Krifka et. al. (1995) and references therein).

<sup>4</sup> For arguments that NPI **any** is an existential, see Ladusaw (1979).

which are interpreted existentially on their NPI reading and generically on their FC reading.

### 2.1.1.2. Widening

But what is it that **any** adds to the meaning of the plain indefinite? Kadmon and Landman argue that **any** widens the interpretation of the common noun phrase along a contextual dimension. In order to see what this means, consider the example in (5) (Kadmon and Landman's (31)), in a situation where I am preparing a meal for 50 people.

- (5)                    YOU: Will there be French fries tonight?
- a.                ME: No, I don't have potatoes
- b.                YOU: Maybe you have just a couple of potatoes that I could take  
                          and fry in my room.
- ME: Sorry, I don't have ANY potatoes.

As Kadmon and Landman put it, when I utter the sentence in (a) "only large quantities of potatoes are relevant (enough for tonight's 50 person meal). If I have four single potatoes left in the pantry, that is not relevant, and you would still accept my reply [5](a) as true. When I reply to your second question with [5](b), I use ANY to indicate that even potatoes in small quantities –even potatoes that were earlier excluded from the domain of quantification- are no exception: I don't even have potatoes in small quantities." (Kadmon and Landman 1993: 360)

### 2.1.1.3. Strengthening

According to Kadmon and Landman (1993), **any** is licensed only if the widening it induces creates a stronger statement. This condition is met in downward-entailing contexts but not in positive, episodic, contexts. Consider, for instance, the negative sentence in (6). This sentence claims that I have no potatoes at all. This asymmetrically entails any statement in which the domain of relevant potatoes has been narrowed: that is, it entails statements like **I don't have cooking potatoes, I don't have potatoes in small quantities, I don't have red potatoes**, etc. In positive contexts like (7), the entailment relation is reversed. Now, any statement in which the domain of relevant potatoes has been narrowed (e.g., **I have cooking potatoes, I have potatoes in small quantities, I have red potatoes...**) would asymmetrically entail (7). Hence **any** is licensed in (6), but not in (7).

(6) I don't have any potatoes.

(7) \* I have any potatoes.

What about FC **any**? Kadmon and Landman suggest that the generic operator can be analyzed as a modal universal quantifier with a vague restriction. Roughly, on this account, the sentence in (8) will satisfy strengthening if (9) entails (10), provided that the domain is widened across the healthy/sick dimension.



- (8) Any owl hunts mice.
- (9) Every owl, healthy or sick, which is ‘normal’ (where ‘normal’ is compatible with HEALTHY and SICK) hunts mice.
- (10) Every healthy owl which is ‘normal’ (where ‘normal’ may entail HEALTHY) hunts mice.

(Kadmon and Landman 1993: 414)

According to Kadmon and Landman “any plausible semantics for generic statements” will make the entailment from (9) from (10) valid. (Kadmon and Landman 1993: 414).

### **2.1.2. Dayal (1998): FC *any* as a modal universal quantifier**

#### **2.1.2.1. Arguments against an analysis of *any* as a generic indefinite**

Dayal (1998) presents two arguments against Kadmon and Landman's analysis: (i) FC **any** is licensed in contexts where an ordinary indefinite cannot get a generic interpretation and (ii) FC **any**, unlike plain indefinites, does not display quantificational variability effects in connection with adverbs of quantification.

Let us examine each of these arguments in turn.

### 2.1.2.1.1. FC *any* in non-generic contexts

FC **any** is acceptable in contexts where an ordinary indefinite can only get an existential interpretation. This is illustrated by (11) and (12) below, from Dayal (1998). While FC **any** is licensed in (11)a and (12)a, the indefinite DPs in (11)b and (12)b cannot be given a generic interpretation: the sentence in (11)b is not understood as expressing a generalization about flowers, nor is (12)b understood as a generalization over pilots.

(11) (a) You may pick any flower

(b) You may pick a flower

(12) (a) Any pilot could be flying this plane.

(b) A pilot could be flying this plane.

(Dayal 1998: 435-438)

Dayal argues that the acceptability of FC **any** in (11)a and (12)a shows that the universal force of **any** in those examples cannot come from the generic operator. If that were the case, a generic reading should be available for the indefinites in the (b) versions.

### 2.1.2.1.2. Adverbs of quantification

Furthermore, Dayal shows that **any**, unlike plain indefinites, does not exhibit quantificational variability effects in connection with adverbs of quantification. Consider, for instance, the examples in (13) and (14), from Dayal (1998). The sentence in (13) has a reading that can be paraphrased as 'most lions are majestic' and, which, on a Heim/Kamp analysis (Kamp 1981, Heim 1982), corresponds to a structure in which the variable introduced by the indefinite gets bound by the quantificational adverb **usually**, as in (13b). In contrast, the sentence in (14) lacks that reading: this example is odd because the adverb can only get a frequency reading, which is incompatible with the predicate **be majestic**.

- (13) (a) A lion is usually majestic  
(b) **Usually** [x] (**lion** (x); **majestic** (x))

- (14) \* Any lion is usually majestic

(Dayal 1998: 438)

The examples in (15) and (16), which Dayal attributes to Jason Stanley, illustrate the same point: while the sentence in (15) can be understood as 'some philosophers are wrong', (16) can only be interpreted as expressing universal quantification over philosophers: no matter which philosopher you pick, s/he will be wrong on some occasions.

(15) A philosopher is sometimes wrong.

(16) Any philosopher is sometimes wrong.

These examples show that FC **any** cannot inherit its quantificational force from adverbs of quantification: It always has universal force, regardless of the environment it is in.

The facts presented above lead Dayal to conclude that the universal force of FC **any** is DP internal.

#### **2.1.2.2. FC *any* as a modal quantifier**

Dayal claims that FC **any** is a modal quantifier that ranges over the set of possible individuals of the relevant kind. The restriction of the quantifier is provided by the common noun that **any** combines with. Its nuclear scope is determined by the matrix predicate. Dayal gives the sentence in (17), for instance, the representation in (18), which she paraphrases as “all situations *s* that have an owl in them generally extend into situations *s'* in which the owl hunts mice” (Dayal 1998: 448).

(17) Any owl hunts mice.

(18)  $\forall s, x [\text{owl}(x, s) \& C(s)] [\text{GEN } s' [s < s' \& C(s')] \exists y [\text{mice}(y, s') \& \text{hunt}(x, y, s')]]$

On this account, the restricted distribution of FC **any** is derived from its semantics. According to Dayal, the unacceptability of FC **any** in episodic sentences like (19) is due to a clash between the contribution of episodic aspect and the modal character of **any**. On Dayal's proposal the sentence in (19) is represented as in (20). This formula "says that all possible woman situations extend into a situation located at a particular interval, namely yesterday. Now, clearly, there will be many situations that will render the statement false, for example, all those women situations that do not overlap with John's existence." (Dayal 1998: 453). Following a suggestion by Gennaro Chierchia, Dayal proposes that these examples should be treated as cases of presupposition failure: "In using an *any* phrase, the speaker chooses explicitly to talk about all possible situations but in making an assertion about a bounded time interval, she must focus on a restricted set of situations. This results in an unresolvable conflict in presuppositions" (Dayal 1998: 453)<sup>5</sup>.

(19) \* Yesterday, John talked to any woman

(20)  $\forall s, x [\text{woman}(x, s) \& C(s)] \exists s' [s < s' \& \text{yesterday}(s') \& \text{talk}(j, x, s')]$

---

<sup>5</sup> As noted in Chapter 1, sentences like (19) can be rescued by adding a relative clause, as in (i) below. This phenomenon was dubbed "subtrigging" by LeGrand (1975). For Dayal's account of subtrigging, see Dayal 1998, section 2.2.

(i) Yesterday, John talked to any woman who came up to him.

## 2.2. A compositional account in the spirit of Dayal (1998)

**Cualquiera** behaves like FC **any** with respect to Dayal's arguments: (i) it is licensed in contexts where ordinary indefinites can only get an existential interpretation, as illustrated by (21), and (ii) it cannot be bound by adverbs of quantification, as shown by (22), which can only be interpreted as expressing universal quantification over philosophers.

(21) (a) Cualquier piloto podría estar pilotando este avión.

Any pilot could be flying this plane

(b) Un piloto podría estar pilotando este avión.

A pilot could be flying this plane (only existential interpretation)

(22) Cualquier filósofo se equivoca a veces

Any philosopher is sometimes wrong

In what follows, I will explore a compositional account of universal FC items that maintains Dayal's core insights. In the next section, I will present the core facts I set out to explain.

### 2.2.1. Core facts

As noted in Chapter 1, universal FC items have a restricted distribution. For instance, they are licensed in possibility sentences like (23) and ruled out in episodic sentences like (24) and necessity statements like (25)<sup>6</sup>.

(23) Juan puede coger cualquier carta.

Juan can take any card.

(24) \*Juan cogió cualquier carta.

Juan took-pfv. any card.

(25) \* Juan tiene que coger cualquier carta.

Juan must take any card.

Furthermore, universal FC items seem to have obligatory wide scope with respect to possibility modals: Under standard assumptions, the truth conditions of sentences like (26)a) are taken to be captured by giving the FC item wide scope over the possibility modal, as in (26)b).

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<sup>6</sup> As we saw in Chapter 1, the facts are more complicated like this: Universal FC items are licensed in some necessity sentences, as in (ii) below. They are also acceptable in generic sentences like (iii).

(ii) Cualquier estudiante tiene que trabajar duro.  
Any student must work hard.

(iii) Esta impresora imprime cualquier documento.  
This printer prints any document.

Sentences like (iii) will be discussed in Chapter 4; sentences like (ii), in Chapter 5.

(26) (a) (Dados tus ingresos) puedes comprarte cualquiera de estos coches.  
(Given your income) you can buy any of these cars.

(b) true in  $w$  iff for any car  $x$ , there is a world accessible from  $w$  in which you buy  $x$ .

The next section spells out a Dayal-style account that aims to derive both the restricted distribution of universal FC items and their obligatory wide-scope with respect to possibility modals. This account maintains Dayal's core insights: it treats FC items as modal universal quantifiers and proposes that their distribution is determined exclusively by their semantics. However, there are certain differences between the two proposals. I will point to some of these differences as they become relevant.

### 2.2.2. Universal FC items as modal determiners

If we assume a possible worlds semantics for modal elements (see Chapter 1), treating **cualquiera** as a modal determiner will amount to saying that **cualquiera** quantifies over individuals that exist in some world that is accessible from the world of evaluation. If the world of evaluation is the actual world, the domain of quantification of **cualquier hombre** ('any man') will be the set of men that exist in some world accessible from the actual world:

(27)  $\{x: \exists w' (\text{man}'(x)(w') \ \& \ \text{acc}(w_0, w'))\}$



Let us propose that **cualquiera** denotes the function in (28), where  $C$  is a free variable over accessibility relations. This function takes a property of individuals ( $P$ ), a function from individuals to times to propositions ( $R$ ) and a time interval  $t$ , and yields the proposition that is true in a world  $w$  iff all the individuals that satisfy  $P$  in some world accessible from  $w$  satisfy  $R$  at  $t$  in  $w$ <sup>7</sup>.

$$(28) \quad \lambda P_{\langle e, \langle s, t \rangle \rangle} \lambda R_{\langle e, \langle i, \langle s, t \rangle \rangle \rangle} \lambda t_i \lambda w_s \forall x (\exists w' (P(x)(w') \ \& \ C(w)(w')) \rightarrow R(x)(t)(w))$$

In the next three sections, I will show that given certain assumptions about the accessibility relation, the interaction of the formula above with episodic aspect and modal auxiliaries yields impossible truth-conditions for necessity and episodic sentences and for the narrow scope construal of **cualquiera** in possibility sentences.

### 2.2.2.1. Episodic sentences

Let us compute the truth conditions of the (ungrammatical) sentence in (29).

(29) \*Juan habló con cualquier estudiante

Juan talked-**pfv.** with any student.

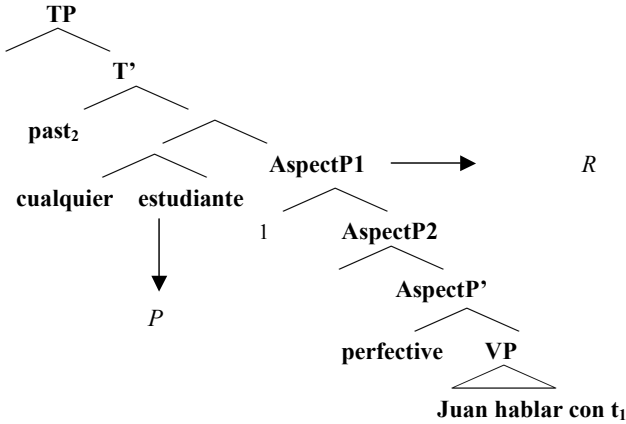
I will assume that this sentence has the Logical Form in (30), where **cualquiera** has raised above the Aspect Phrase. Following Heim and Kratzer (1998), I take quantifier

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<sup>7</sup> As noted in Chapter 1, when necessary, I will indicate the semantic type of variables by means of subscripts. For instance,  $P_{\langle i, \langle s, t \rangle \rangle}$  is a variable of type  $\langle i, \langle s, t \rangle \rangle$ .

movement to introduce an index right below the moved phrase, which will be interpreted as a  $\lambda$ -abductor over the variable corresponding to the trace left by the quantifier (see Predicate Abstraction rule in Chapter 1).

(30)



The first argument of **cualquiera** is the common noun **estudiante**. The second argument is the phrase labeled **AspectP1** in the tree above. The denotation of **estudiante** is given in (31). The computation of the denotation of **Aspect1** is given in (32).

$$(31) \quad [[\text{estudiante}]]^g = \lambda x_e \lambda w_s (\text{student}'(x)(w))$$

$$(32) \quad [[\text{hablar con}]]^g = \lambda x_e \lambda y_e \lambda e_1 \lambda w_s (\text{talk}'(y)(x)(e)(w))$$

$$[[t_1]]^g = g(1)$$

$$[[\text{Juan}]]^g = j$$

$$[[\text{hablar con } t_1]]^g = \lambda y \lambda e \lambda w (\text{talk}'(y)(g(1))(e)(w))$$

by FA

[[**Juan hablar con t<sub>1</sub>**]]<sup>g</sup> =  $\lambda e_1 \lambda w_s (\text{talk}'(j)(g(1))(e)(w))$  by FA

[[**perfective**]]<sup>g</sup> =  $\lambda P_{\langle 1, \langle s, t \rangle \rangle} \lambda t_i \lambda w_s (\exists e (f_{\text{time}}(e) \subseteq t \ \& \ P(e)(w)))$

[[**AspectP'**]]<sup>g</sup> =  $\lambda t \lambda w \exists e (f_{\text{time}}(e) \subseteq t \ \& \ \text{talk}'(j)(g(1))(e)(w))$  by FA

[[**Aspect1**]]<sup>g</sup> =  $\lambda x \lambda t \exists e (f_{\text{time}}(e) \subseteq t \ \& \ \text{talk}'(j)(x)(e)(w))$  by PA

Combining (31) and (32) with **cualquiera**, and applying the resulting function to the tense node, we get:

$$(33) \quad \lambda w \forall x (\exists w' (\text{student}'(x)(w') \ \& \ C(w)(w')) \rightarrow \exists e (f_{\text{time}}(e) \subseteq g(2) \ \& \ \text{talk}'(j)(x)(e)(w)))^8$$

The proposition in (33) will be true in the actual world,  $w_0$ , iff for every x such that x is a student in some world w' accessible from  $w_0$ , in  $w_0$  there is an event of John talking to x whose running time is included in the reference time.

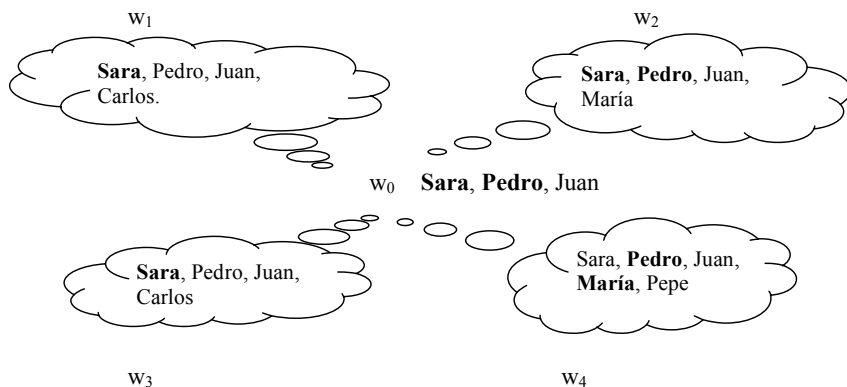
We want to capture Dayal's insight that universal FC items yield impossible truth-conditions in episodic sentences. Have we achieved that goal? Do we get a clash out of the formula above? Only if we can guarantee that there are students that exist in some accessible world but not in the actual world<sup>9</sup>.

<sup>8</sup>  $g(2)$  is the reference time.

<sup>9</sup> I am assuming an ontology under which a given individual can exist in more than one world (see Kripke (1972)).

Consider, for instance, the model depicted in (34), where  $w_1$ ,  $w_2$ ,  $w_3$  and  $w_4$  are all the worlds accessible from the actual world. For each world, the names in bold correspond to the students in that world (as opposed to the existing people in that world.)

(34)



If the formula in (33) is evaluated in the model above, the domain of quantification of **cualquiera** will be the set  $\{Sara, Pedro, María\}$  (since those are all the individuals that are students in some accessible world). Thus, (33) does not stand a chance of being true in the actual world: Juan cannot talk to María in  $w_0$  since María does not exist in  $w_0$ .

The question is, of course, whether it can be argued that the condition I have underlined above necessarily obtains. I will return to this issue in section 2.2. below.

Before moving on to necessity sentences, I would like to note some differences between the analysis presented above and the proposal put forward by Dayal in her 1998 paper.

### 2.2.2.1.1. Ungrammaticality and impossible truth-conditions

On Dayal's account, the ungrammaticality of episodic sentences that contain FC **any** is attributed to a clash in presuppositions. The analysis presented above aims to account for the ungrammaticality of these sentences by assigning contradictory truth-conditions to them.

There are many analyses that attempt to explain the ungrammaticality of a particular construction by saying that the construction at issue expresses a proposition that is always true or always false (e.g., Dowty 1979; Barwise and Cooper 1981; von Stechow 1993).

All these analyses have to face an obvious objection: There are grammatical sentences that express tautologies or contradictions. For instance:

(35) Every woman is a woman.

(36) John is smoking and John is not smoking.

Recent work by Jon Gajewski (Gajewski 2002) puts these analyses on more solid grounds. Gajewski argues that natural language is sensitive to what he calls L(ogical)-analyticity. L-analytic sentences are those that are true or false in virtue of their logical structure. Gajewski gives precise content to the notion of logical structure and L-analyticity, and proposes that L-analytic sentences are ungrammatical.

Gajewski's proposal can be briefly summarized as follows:

- (i) To evaluate L-analyticity we must look at what Gajewski calls the logical skeleton of a sentence. The logical skeleton of a sentence is derived from its LF in the following way:
  - 1. Identify the maximal constituents containing no logical items (where the logical items are permutation invariant elements in the sense of van Benthem (1989).)
  - 2. Replace each such constituent with a distinct variable of the same type.
- (ii) An LF constituent  $\alpha$  of type  $t$  is L-analytic iff  $\alpha$ 's logical skeleton gets the value True (or False) under every variable assignment<sup>10</sup>.
- (iii) A sentence is ungrammatical if its LF contains an L-analytic constituent.

On this account, the tautology in (37)a) and the contradiction in (38)a) are not grammatical because their logical skeleton will get the value True under some variable assignments and the value False, under others.

---

<sup>10</sup> Gajewski is working with an extensional semantics, and, thus, he takes sentences to denote truth values.

- (37) (a) Every woman is a woman.  
 (b) Logical skeleton:  $[[\text{every } v_{1\langle e,t \rangle}] v_{2\langle e,t \rangle}]$   
 (true under some variable assignments; false under others.)
- (38) (a) John is smoking and John is not smoking  
 (b) Logical skeleton:  $[v_{1,t} [\text{and } [\text{not } v_{2,t}]]]$   
 (true under some variable assignments; false under others.)

The ungrammaticality of (39) and (40) is accounted for in the following way: If we adopt von Stechow's analysis of exceptives, then the logical skeleton of (39)a), (39)b), will denote the value False under any variable assignment. And if we adopt Barwise and Cooper's analysis of existential sentences, the logical skeleton of (40)a), (40)b), will get the value True under any variable assignment (see Gajewski's paper for details).

- (39) (a) \* Some man but John arrived  
 (b) Logical skeleton:  $[[\text{some } [v_{1\langle e,t \rangle} [\text{but } v_{2\langle e,t \rangle}]]] v_{3\langle e,t \rangle}]$   
 (false under every variable assignment.)

(40) (a) \*There is every man in the room.

(b) Logical skeleton: [there [is [every  $v_{1<e,t>}$ ]]]

(true under every variable assignment.)

In order to show that Gajewski's proposal applies to the sentences I am dealing with, we would need to prove that universal FC items, episodic aspect and modal auxiliaries come out as logical constants under van Benthem's (1989) definition. I will not attempt to develop this proof here.

#### **2.2.2.1.2. The source of the clash**

In the analysis I have presented above, the clash between universal FC items and episodic aspect would arise because some of the individuals the FC item quantifies over do not exist in the actual world. In Dayal (1998), the clash comes about because some of the individuals in the domain of the modal quantifier do not exist during the time the sentence makes a claim about (the reference time).

The formulation I am adopting here seems closer to the way Dayal describes her proposal in her 2004b paper, where she explains that episodic sentences with FC **any** are rendered unacceptable because "there is a clash between the presupposition that the domain of quantification ranges over possible individuals and a predication that can apply only to actual individuals" (Dayal 2004b: 7, emphasis mine). This is the way Dayal's proposal



seems to have been interpreted in the FC literature. For instance, according to Chierchia (2005), the sentence **I saw any student** says "in essence, that any possible student is such that I saw her". But, this is too strong to be true, because, as Chierchia puts it, "I can only see actually existing students; I cannot see something that does not exist" (Chierchia 2005: 33).

One possible argument for adopting Chierchia's interpretation of Dayal's proposal comes from the subtriggering facts in Spanish. In Spanish, episodic sentences like (41), where **cualquiera** is modified by a relative clause, are still marginal. This would be unexpected if adding a temporal specification were enough to rescue these sentences. (For a discussion of subtriggering and a comparison between Spanish and English, see Chapter 5.)

(41) ?? Juan vio a cualquier estudiante que tuviera preguntas

Juan saw any student that has-**subj** questions.

### 2.2.2.2. Possibility modals

Given standard assumptions about Quantifier Raising, we can in principle derive two LFs for possibility statements like (42): **cualquiera** could be in the scope of the modal auxiliary – as in (43) – or it could have wide scope with respect to the modal, as in (44).

(42) Juan puede hablar con cualquier estudiante  
 Juan may talk to any student.

(43) puede [cualquier estudiante [ $\lambda_1$  [Juan hablar con  $t_1$ ]]]

(44) cualquier estudiante [ $\lambda_1$  [puede [Juan hablar con  $t_1$ ]]]

The denotation of the LF in (43), where **cualquiera** has narrow scope with respect to the modal auxiliary, is given in (45) (I am disregarding the contribution of tense and assuming that the event argument gets existentially closed at some point in the derivation.)

(45)

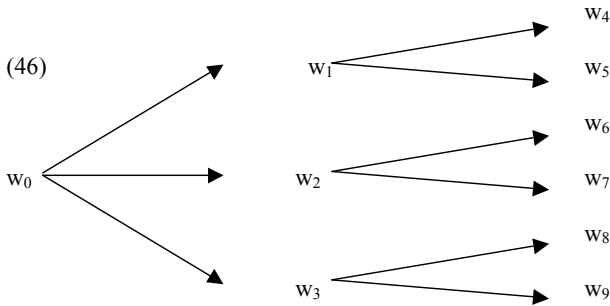
$$\lambda w \exists w' (R(w)(w') \ \& \ \forall x (\exists w'' (\text{student}'(x)(w'') \ \& C(w')(w'')) \rightarrow \exists e (\text{talk}'(j)(x)(e)(w''))))$$

Suppose that the two variables over accessibility relations – the one introduced by the **cualquiera** (C) and the one introduced by the modal auxiliary (R) —are assigned the

same value. Then, on the deontic interpretation of the modal, the formula in (45) will be true in the actual world if and only if there is a world  $w'$  that is deontically accessible from the actual world, and, in  $w'$ , John talks to every student that exists in some world  $w''$  deontically accessible from  $w'$ .

By way of illustration, consider the accessibility relation depicted in (46) below. The formula in (45) will be true if at least one of the following conditions is met:

- (a) In  $w_1$ , John talks to all of the students that exist in  $w_4$  and  $w_5$
- (b) In  $w_2$ , John talks to all of the students that exist in  $w_6$  and  $w_7$
- (c) In  $w_3$ , John talks to all of the students that exist in  $w_8$  and  $w_9$ .



But this is a situation analogous to the one we found in episodic statements. If we can generally assume that the worlds accessible from a given world  $w'$  contain students that

do not exist in w', then the formula in (45) will never be true. Hence, we could rule out the LF in (43) on the grounds that it has contradictory truth-conditions.<sup>11</sup>

The truth conditions for the LF corresponding to the wide scope construal of **cualquiera** – repeated in (47) – are given in (48).

(47) **cualquier estudiante** [ $\lambda_1$  [**puede** [**Juan hablar con t<sub>1</sub>**]]] *wide scope*

(48)  $\lambda w \forall x (\exists w' (C(w)(w') \ \& \ \text{student}'(x)(w')) \rightarrow \exists w'' (R(w)(w'') \ \& \ \exists e$   
 $(\text{talk}'(j)(x)(e)(w''))))$

The formula above will be true in the actual world  $w_0$  iff for every  $x$  such that  $x$  is a student in some world  $w'$  that is deontically accessible from  $w_0$ , there is a world  $w''$  deontically accessible from  $w_0$  in which Juan talks to  $x$ . This formula CAN be true. Thus, we expect FC items to be compatible with possibility modals when the FC item scopes over the modal.

---

<sup>11</sup> Dayal (1998) does not attempt to derive the wide-scope of FC **any**. For other explanations of why FC **any** has scope over modal operators see Eisner (1994) and Dayal (1995).

### 2.2.2.3. Necessity modals

Let us now turn to (ungrammatical) necessity statements like (49) below.

(49) \*Juan tiene que hablar con cualquier estudiante

Juan must talk to any student.

Again, we could in principle derive two Logical Forms, depending on whether the FC item takes wide scope ((50)) or narrow scope ((51)) with respect to the modal auxiliary:

(50) **cualquier estudiante** [ $\lambda_1$  [**tiene que** [**Juan hablar con**  $t_1$ ]]]

(51) **tiene que** [**cualquier estudiante** [ $\lambda_1$  [**Juan hablar con**  $t_1$ ]]]

The denotation of the LF in (51), where **cualquiera** has narrow scope, is given in (52).

The resulting formula presents the same problem we found with the narrow scope configuration of **cualquiera** in possibility statements.

(52)

$\lambda w \forall w' (R(w)(w') \rightarrow \forall x (\exists w'' (\text{student}'(x)(w'') \& C(w')(w'')) \rightarrow \exists e (\text{talk}'(j)(x)(e)(w'))))$

The denotation for the wide scope configuration in (50) is given in (53).

(53)

$$\lambda w \forall x (\exists w' (\text{student}'(x)(w') \ \& \ C(w)(w')) \rightarrow \forall w'' (R(w)(w'') \rightarrow \exists e(\text{talk}'(j)(x)(e)(w''))))$$

This formula will be true in the actual world if and only in every world accessible from the actual world John talks to every student that exists in some accessible world  $w'$ . Let us assume again that the two variables over accessibility relation get the same value. Do we get a clash here? Only if we can assume that the domain of quantification in (53) includes individuals that exist in some accessible worlds but not in others.

To sum up, we have seen that my proposed denotation for **cualquiera** yields contradictory truth-conditions for both episodic and necessity sentences and for the narrow scope construal of **cualquiera** in possibility sentences ONLY under the following assumptions:

- (i) The domain of quantification of **cualquiera** includes some individuals that do not exist in the evaluation world.
- (ii) The domain of quantification of **cualquiera** includes some individuals that exist in some accessible worlds but not in others.

The following section discusses the status of these assumptions.

### 2.2.3. The problem: the value of C <sup>12</sup>

The denotation for **cualquiera** that I have put forward contains a free variable over accessibility relations (underlined in the formula below).

$$(54) \quad \lambda P_{\langle e \langle s, t \rangle \rangle} \lambda R_{\langle e \langle i \langle s, t \rangle \rangle}. \lambda t_i. \lambda w_s. \forall x ((\exists w' (P(x)(w') \ \& \ \underline{C}(w)(w'))) \rightarrow R(x)(t)(w))$$

There are certain values for this variable that would give us models where the formulas corresponding to (55) and (56) could come out true.

(55) \*Juan tiene que hablar con cualquier estudiante.

John must talk to any student.

(56) \* Juan habló con cualquier estudiante

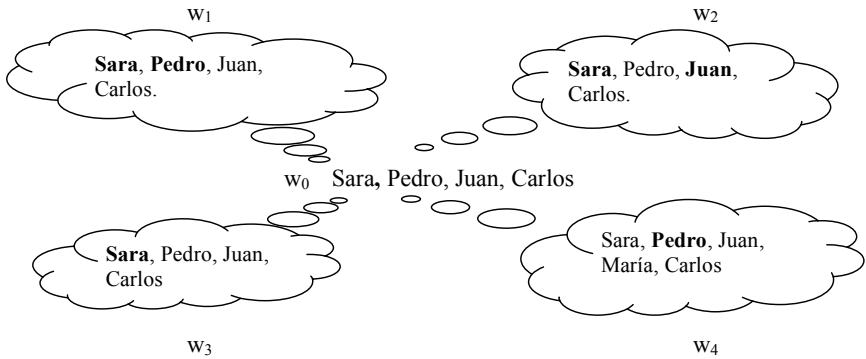
John talked to any student.

For instance, suppose that C is assigned as its value an accessibility relation that maps  $w_0$  to a set of worlds that contain exactly the same individuals as  $w_0$ , e.g., (52) below. (Again, for each world, the bold-faced names represent the students in that world.)

---

<sup>12</sup> Many thanks to Angelika Kratzer and Chris Potts for extensive discussions on this issue.

(57)



Given the model above, the domain of quantification of **cualquiera** would be the set {Sara, Pedro, Juan}. In this case, both (55) and (56) could be true: Since all the possible students exist in the actual world, (56) can be true. And since all of them exist in every accessible world, (55) can be true as well.

### 2.2.3.1. A potential reply

We could try to argue that accessibility relations like (57) above would not be supported by any context. Here is an attempt to formulate such an argument.

Deontic accessibility relations are determined by bodies of law. Since bodies of law do not usually rule on who may exist, the populations of deontically accessible worlds are expected to vary greatly.



Next, consider epistemic accessibility relations, which are determined by the evidence available in the utterance situation. The same reasoning as above applies: We will not normally have evidence that allows us to determine exactly what individuals exist in our world. The domain of individuals is, thus, expected to vary across the epistemically accessible worlds.

Knowledge-based accessibility relations are determined by sets of facts. But in order for a knowledge-based accessibility relation to look like (57) we would have to know exactly which individuals compose the actual world's population. This is not a piece of knowledge that we should expect speakers to have access to.

#### **2.2.3.2. A problem for the reply**

a) *Every possible woman*

As noted by Angelika Kratzer (p.c.), the reply above does not account for the contrast between (58), which sounds perfectly fine, and (59).

(58) John talked to every possible woman

(59) \*John talked to any woman.

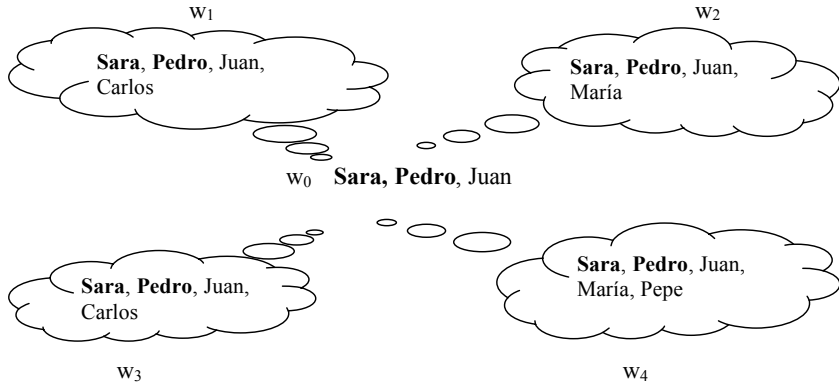
The interpretation we assign to (58) seems to be something like ‘John talked to every woman that it was possible for him to talk to (given the circumstances)’. But then we would expect (58) to be fine if C were assigned as its value a circumstantial accessibility relation of this sort. However, this option is not available: the sentence below still seems odd.

(60) Given the circumstances, John talked to any woman.

*b) The extension of the common noun*

Models where all the accessible worlds contain exactly the same individuals as the actual world are not the only ones where the formulas corresponding to episodic sentences like (56) could come out true. These formulas can also be true in a model like (61) below, where  $w_1$ ,  $w_2$ ,  $w_3$  and  $w_4$  are the only worlds accessible from  $w_0$ , the domain of individuals varies from world to world but the set of students (represented by bold-faced names) is the same in every world.

(61)



Accessibility relations like the above can definitely be contextually supplied. Consider, for instance, the scenario in (62).

(62) Ms. Smith, the English teacher, is organizing a writing contest. She has decided that the participants in the contest will be John, Sally and Mary, her three best students. No other student will be allowed to participate.

If we are Ms. Smith's students, then in all of our deontic alternatives w', the set of participants in the contest is {John, Sally, Mary}.

What to do now? A natural move would be to claim that universal FC items imposes constraints on the range of accessibility relations that C can take as its value. The following section explores this possibility<sup>13</sup>.

#### 2.2.4. Conditions on the accessibility relation

Suppose that the accessibility relations that C can take as its value have the following properties:

---

<sup>13</sup> In principle, another alternative would be to say that that FC items do not impose any restrictions whatsoever on modal accessibility, unlike other modal elements.

If we made this modification, the sentence in (iv) would denote the proposition in (v) – disregarding tense. This proposition is necessarily false: If we look at ALL possible worlds, there will definitely be some possible students that do not exist in the actual world.

- (iv) \*Juan habló con cualquier estudiante  
John talked to any student.
- (v)  $\lambda w \forall x (\exists w' (\text{student}'(x)(w')) \rightarrow \exists e (\text{talk}'(j)(x)(e)(w)))$

We also get the desired result for necessity statements: If we quantify over ALL possible individuals, the formula in (vii) which corresponds to (vi), will never be true.

- (vi) \*Juan tiene que hablar con cualquier estudiante  
John must talk to any student
- (vii)  $\lambda w \forall x (\exists w' (\text{student}'(x)(w')) \rightarrow \forall w'' (R(w, w'') \rightarrow \exists e (\text{talk}'(j)(x)(e)(w''))))$

However, as pointed out to me by Angelika Kratzer, this move makes wrong predictions for possibility statements like (viii): they come out as necessarily false: First, suppose that the modal quantifies over all possible worlds. The sentence will be false: there surely are logically possible worlds in which three-year olds do not talk. Next, suppose that we take the accessibility relation for the modal to be narrower. Let us assume, for instance, that this accessibility relation maps a world  $w$  to the set of worlds where the laws of biology in  $w$  hold. Then, the sentence in (viii) should be bad for the same reason as episodic sentences are: there will be three-year olds that exist in some logically possible world, but that don't exist in any of the accessible worlds.

- (viii) Cualquier niño de tres años puede hablar.  
Any three-year old can talk.
- (ix)  $\lambda w \forall x (\exists w' (\text{three-year-old}'(x)(w')) \rightarrow \exists w'' (R(w, w'') \& \exists e (\text{talk}'(j)(x)(e)(w''))))$

(63) There is at least an individual  $b$  such that (i)  $b$  is  $P$  in some world  $C$ -accessible from the evaluation world and (ii)  $b$  does not exist in the evaluation world.

(where  $P$  is the denotation of the common noun that combines with **cualquiera**).

(64) There are at least two worlds  $w_1$  and  $w_2$  such that (i) both  $w_1$  and  $w_2$  are  $C$ -accessible from the evaluation world (ii)  $w_1$  is not identical to  $w_2$ , and (iii) there is at least an individual  $b$  such that  $b$  is  $P$  in  $w_1$  and  $b$  does not exist in  $w_2$ .

(where  $P$  is the denotation of the common noun that combines with **cualquiera**).

The condition in (63) says that when we interpret the phrase **cualquier estudiante** we must consider worlds that contain students that do not exist in the evaluation world. (As pointed out to me by Ana Arregui (p.c.), this makes intuitive sense: why would we want to use a modal determiner if the domain of quantification only contained individuals that exist in the actual world?). This rules out the use of **cualquiera** in episodic sentences like (65) below.

(65) \*Juan habló con cualquier estudiante

John talked to any student.

On the current proposal, the sentence in (65) will be true in the actual world iff, in the actual world, Juan talked to every student that exists in some accessible world. But, by (63), some of the accessible worlds will contain students that do not exist in the actual world. Thus, (65) can never be true.

The condition in (64) states that the domain of **cualquier estudiante** will contain students that do not exist in all the accessible worlds. This rules out **cualquiera** in necessity statements: According to the current hypothesis, the sentence (66) will be true in the actual world iff, in every world accessible from the actual world, John talks to every student that exists in some accessible world. But, according to (64), there will be at least one student that doesn't exist in every accessible world. Thus, there is no world in which (66) can be true.

(66) \*Juan tiene que hablar con cualquier estudiante

John must talk to any student

Unfortunately, the two conditions in (63) and (64) make wrong predictions:

Suppose that we have evidence that the students in the department are Sara, Pedro and Juan. That is, in all our epistemic alternatives  $w'$  the set of students in the department would be {Sara, Pedro, Juan}.

Since this model is ruled out by the condition in (64), we predict that we will not be able to use the phrase **cualquier estudiante del departamento** in the situation above. This is wrong. The sentence in (67) can be felicitously used in a situation where we have evidence that the only students in the department are Sara, Pedro and Juan.

(67) Ahora mismo, Juan puede estar hablando con cualquier estudiante del departamento.

Right now, Juan might be talking to any of the students in the department.

Cases where **cualquiera** is modified by a deictic partitive provide evidence against condition (63): in those cases, the domain of quantification of **cualquiera** contains only individuals that exist in the actual world.

For instance, suppose that Luis is showing me how to play a card game. He pulls a deck of cards out of his pocket and says (68).

(68) Puedes coger cualquiera de las cartas de esta baraja.

You can take any of the cards in this deck.

In this situation, the domain of quantification is a set of actual cards, the ones that I have in front of me.

Or suppose that we are investigating a murder case. The police have arrested three suspicious men. After you and I have interrogated them, I tell you (69).

(69) El asesino puede haber estado en contacto con cualquiera de estos hombres.

The murderer might have been in touch with any of these men.

In this situation, the domain of quantification is a set of actual men, the ones you and I have interrogated.

The condition in (63) predicts sentences like (68) and (69) to be bad, since the domain of quantification does not include any possible individuals that do not exist in the actual world.

Summing up: The universal modal account that I have explored above can account for the distributional properties of universal FC items and their obligatory wide scope with respect to possibility modals only if we assume that universal FC items impose constraints on the accessibility relation that is relevant for determining their domain of quantification. However, the constraints that we were forced to assume rule out perfectly acceptable sentences, for instance, possibility sentences where the FC item is modified by a deictic partitive.



In the following chapter, I will show that this account runs into another problem, namely that it yields wrong truth-conditions for possibility sentences like (70): it predicts them to be true in cases where there is no complete freedom of choice.

(70) Puedes coger cualquiera de las cartas de esta baraja.

You may take any of the cards in this deck.

### CHAPTER 3

#### FREEDOM OF CHOICE

An essential feature of items like **cualquiera** is what Vendler (1967) dubbed "freedom of choice". When uttering the sentence in (1), I inform my addressee that all the cards in this deck are permitted possibilities for her and thus I grant her "the unrestricted liberty of individual choice" (Vendler 1967: 80).

(1) Puedes coger cualquiera de las cartas de esta baraja.

You may take any of the cards in this deck

In Chapter 2, I have argued that treating universal FC items as modal quantifiers is not enough to derive their distribution. In this chapter, I will show that this type of analysis also makes wrong predictions with respect to the interaction of FC items and possibility modals. Surprisingly, analyzing universal FC items as wide-scope universals (modal or not) does not guarantee freedom of choice.

The chapter is organized as follows: In section 1, I show that a standard wide-scope universal account yields wrong truth-conditions for possibility sentences that contain universal FC items. In particular, it predicts them to be true in situations where freedom of choice is limited. In section 2, I contend that this problem can be overcome by adding an exclusiveness requirement. On this view, the sentence in (1) expresses the proposition that is true in a world  $w$  iff for every  $x$  such that  $x$  is a combination of cards in this deck,

there is a world accessible from  $w$  where (i) Juan takes  $x$  and (ii) Juan does not take any cards that are not part of  $x$ . Section 3 shows that this analysis also accounts for the distribution restrictions of universal FC items by assigning impossible truth-conditions to sentences like (2) and (3) below.

(2) \*Juan cogió cualquiera de las cartas de esta baraja.

Juan took-pfv. any of the cards in this deck.

(3) \* Juan tiene que coger cualquiera de las cartas de esta baraja.

Juan must take any of the cards in this deck.

Sections 4 and 5 deal with the technical implementation of the proposal. In section 4, I explore, and ultimately reject, an analysis that treats universal FC items as generalized quantifiers, as in Chapter 2. In section 5, I develop an implementation cast in the Hamblin semantics put forward in Kratzer and Shimoyama 2002.

### 3.1 Wide scope universal quantification does not guarantee freedom of choice

Suppose that we treat **cualquiera**<sup>1</sup> as a wide-scope universal quantifier. Then, the sentence in (4) will denote the proposition in (5).

(4) Puedes coger cualquiera de las cartas del mazo.

You may take any of the cards in the discard pile.

---

<sup>1</sup> In the remainder of this chapter I will use only Spanish examples.

- (5) The proposition that is true in a world  $w$  iff for every  $x$  such that  $x$  is a combination of cards in the discard pile, there is a world accessible from  $w$  in which you take  $x$ .<sup>2</sup>

This formalization does not give us the right truth-conditions for (4). To see why, let us look at the following scenario.

### Scenario 1: Canasta<sup>3</sup>

One of the rules of the card game Canasta is: when a player has two cards that match the top card of the discard pile, she has two options: (i) she can take all the cards in the discard pile or (ii) she can take no card from the discard pile (but take the top card of the regular pile instead). Those are her two only options.

Now, consider the sentence in (6). Is this sentence true in the scenario above?

- (6) En Canasta, puedes coger cualquiera de las cartas del mazo cuando tienes dos cartas que son del mismo palo que la de arriba del mazo.

In Canasta, you can take any of the cards from the discard pile when you have two cards that match its top card.

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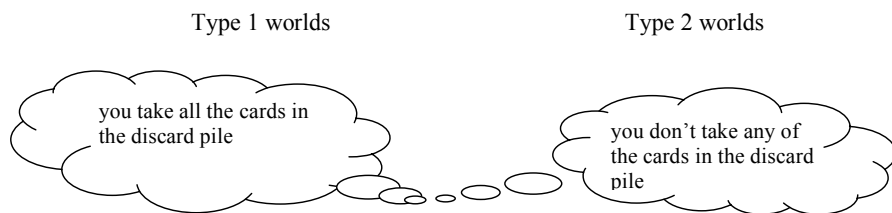
<sup>2</sup> Here, I am using the informal term ‘combination of cards’ to cover both individual cards and sums of cards (Link 1983).

<sup>3</sup> Many thanks to Angelika Kratzer and Florian Schwarz for long and extremely helpful discussions about the scenarios.

No. Given the rules of Canasta, the sentence in (6) is clearly false (the player does not have "unrestricted liberty": there is no complete freedom of choice.) However, the formalization in (5) predicts (6) to be true. Let us see why.

Given the scenario described above, if you have two cards that match the top card of the discard pile, your deontic alternatives will look as follows.

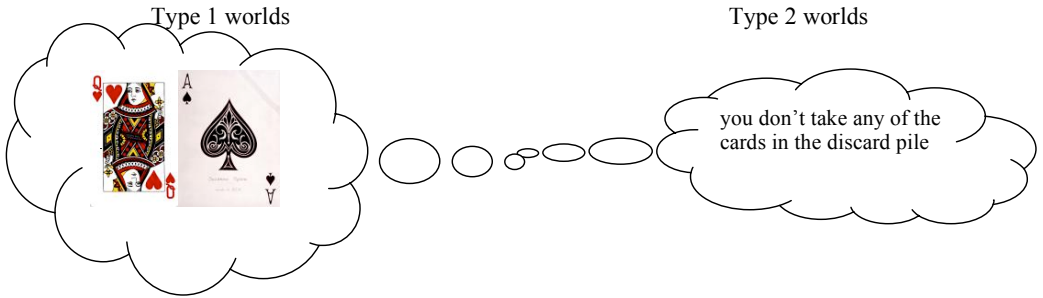
(7)



That is, there are two types of permitted worlds: (i) worlds in which you take all the cards in the discard pile and (ii) worlds in which you take no card in the discard pile.

Suppose that the only cards left in the discard pile are the Queen of Hearts and the Ace of Spades. Then, your deontic alternatives will look as in (8) below. There are permitted worlds in which you take both the Queen of Hearts and the Ace of Spades and there are permitted worlds in which you take neither of those cards. Those are your only two options.

(8)



Then, given the wide-scope universal paraphrase in (10), the sentence in (9) will be true in the actual world,  $w_0$ , if and only if the three conditions in (11) are satisfied.

(9) Puedes coger cualquiera de las cartas del mazo.

You can take any of the cards of the discard pile.

(10) The proposition that is true in a world  $w$  iff for every  $x$  such that  $x$  is a combination of cards in the discard pile, there is at least a world accessible from  $w$  in which you take  $x$ .

(11)

- (i) There is a world accessible from  $w_0$  in which you take the Queen of Hearts
- (ii) There is a world accessible from  $w_0$  in which you take the Ace of Spades
- (iii) There is a world accessible from  $w_0$  in which you take the Queen of Hearts and the Ace of Spades.

And these three conditions are indeed met in the situation depicted in (8):

- (i) There are worlds accessible from  $w_0$  in which you take the Queen of Hearts, namely all the type 1 worlds.
- (ii) There are worlds accessible from  $w_0$  in which you take the Ace of Spades, namely all the type 1 worlds.
- (iii) There are worlds accessible from  $w_0$  in which you take the Queen of Hearts and the Ace of Spades, namely all the type 1 worlds.

Hence, given a standard wide-scope universal analysis, the sentence in (6) comes out true in a scenario where there is no complete freedom of choice.

The following scenario illustrates the same point:

## Scenario 2: The competition

To enter a certain competition, you must answer at least three questions out of a list of four. You can choose which questions you answer.

Now, consider the sentence in (12).

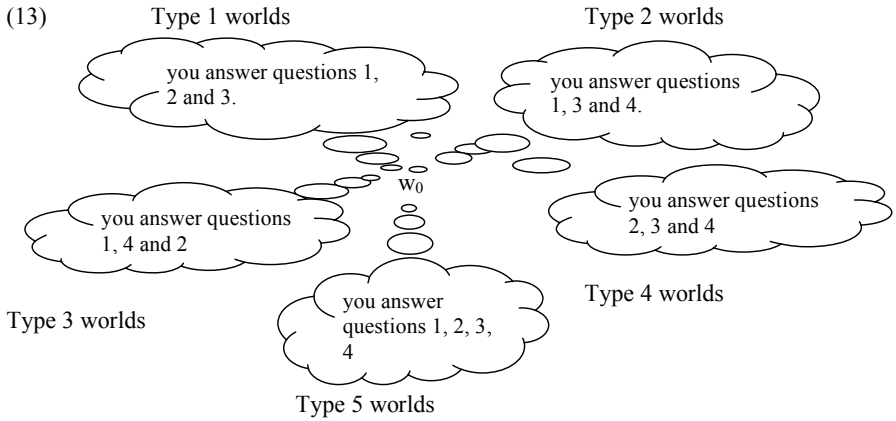
(12) Para participar en la competición, puedes contestar cualquier combinación de esas preguntas.

To enter the competition, you can answer any combination of those questions.

This sentence is false in Scenario 2: given the rules of the competition, you are not free to choose just two questions, for instance. However, the wide-scope universal analysis predicts the sentence to be true.



Given the scenario, your options look as follows:



On the standard wide-scope universal analysis, the relevant portion of (12) is given the truth-conditions in (14).

- (14) The proposition that is true in a world  $w$  iff for every  $x$  such that  $x$  is a combination of questions, there is a world accessible from  $w$  in which you answer  $x$ .

And the truth-conditions in (14) are satisfied in (13):

(i) There is an accessible world where you answer all the questions (all the Type 5 worlds).

(ii) For each combination x of three questions, there is an accessible world in which you answer x:

There is an accessible world in which you answer 1, 2 and 3 (e.g., Type 1 worlds)

There is an accessible world in which you answer 1, 3 and 4 (e.g., Type 2 worlds)

There is an accessible world in which you answer 1, 4 and 2 (e.g., Type 3 worlds)

There is an accessible world in which you answer 2, 3 and 4 (e.g., Type 4 worlds)

(iii) And for each combination x of two questions, there is an accessible world in which you answer x:

There is an accessible world in which you answer 1 and 2 (e.g., Type 1 worlds)

There is an accessible world in which you answer 1 and 3 (e.g., Type 1 worlds)

There is an accessible world in which you answer 1 and 4 (e.g., Type 2 worlds)

... and so on for all the combinations of two cards.

The examples above show that a standard wide-scope universal account wrongly predicts possibility sentences with **cualquiera** to be true in cases where freedom of choice is limited. In the next section, I will put forward a proposal that derives the right truth-conditions for sentences like (9) and (12).

### 3.2. The solution: Universal Quantification with Exclusiveness

As we saw in section 1, the formalization in (10), repeated below as (16), runs into problems because it does not guarantee that for every combination of cards  $x$ , there is a distinct world in which you take  $x$ .

(15) Puedes coger cualquiera de las cartas del mazo.

You can take any of the cards from the discard pile.

(16) The proposition that is true in a world  $w$  iff for every  $x$  such that  $x$  is a combination of cards in the discard pile, there is a world accessible from  $w$  in which you take  $x$ .

I contend that in order to capture the FC effect, we need to add an exclusiveness requirement to the paraphrase in (16). On this proposal, the sentence in (15) will be

paraphrased as in (17) below. Let us dub this the "Universal Quantification with Exclusiveness Hypothesis".

(17) The proposition that is true in a world  $w$  iff for every  $x$  such that  $x$  is a combination of cards in the discard pile, there is a world accessible from  $w$  in which you take  $x$  and no other cards that are not part of  $x$ .

(As we will see, implementing this idea is far from trivial. In sections 4 and 5, I will discuss what motivates the exclusiveness requirement and how this requirement is introduced into the representation.)

The paraphrase in (17) gives us the desired Free Choice effect. To illustrate this, let us go back to the scenarios above.

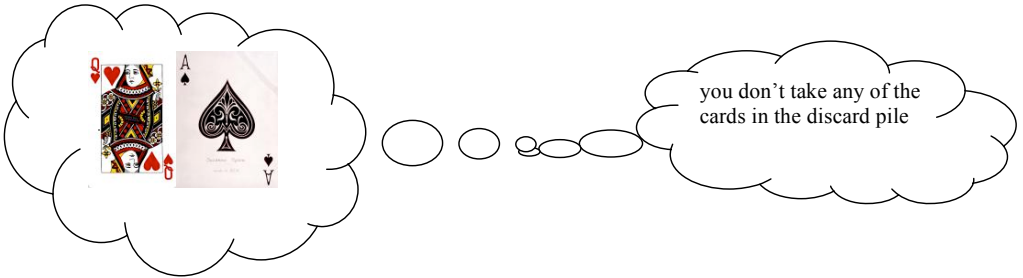
#### The Canasta scenario revisited

Again, suppose that the only cards in the discard pile are the Queen of Hearts and the Ace of Spades, as in (18).

(18)

Type 1 worlds

Type 2 worlds



According to the proposal in (17), the sentence in (15) will be true in  $w_0$  iff all the conditions in (i) through (iii) are met:

- (i) There is a world accessible from  $w_0$  in which you take the Queen of Hearts but not the Ace of Spades.
- (ii) There is a world accessible from  $w_0$  in which you take the Ace of Spades but not the Queen of Hearts.
- (iii) There is a world accessible from  $w_0$  in which you take the Ace of Spades and the Queen of Hearts.

Conditions (i) and (ii) are not met in the Canasta scenario. Hence, (15) is correctly predicted to be false in that scenario.

The competition scenario revisited

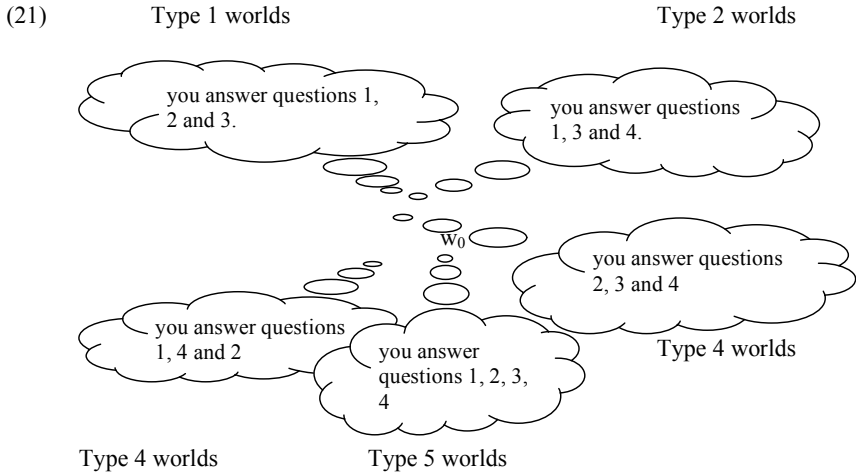
The sentence in (12), repeated below as (19), will now be paraphrased as in (20).

(19) Para participar en la competición, puedes contestar cualquier combinación de esas preguntas.

To enter the competition, you can answer any combination of those questions

(20) The proposition that is true in a world  $w$  iff for every  $x$  such that  $x$  is a combination of those questions, there is a world accessible from  $w$  in which you answer  $x$  and no other questions that are not part of  $x$ .

And (20) is false in the competition scenario, repeated in (21) below. Take, for instance, the combination of questions 1 and 2: There is no accessible world in which you answer questions 1 and 2, and no other questions.



By adding the exclusiveness requirement above, we have derived Vendler’s insight: the essential feature of (items like) **any** is freedom of choice. The next section shows that this very same proposal accounts for the ungrammaticality of episodic sentences like (22) and necessity sentences like (23).

(22) \*Juan cogió cualquiera de las cartas del mazo.  
 Juan took-pfv. any of the cards from the discard pile

(23) \* Juan tiene que coger cualquiera de las cartas del mazo  
 Juan must take any of the cards from the discard pile.

### 3.3. Deriving the distribution restrictions

The Universal Quantification with Exclusiveness Hypothesis automatically rules out the sentences in (24) and (25): by adding the exclusiveness requirement "and no other cards that are not part of x" to the standard wide-scope paraphrases corresponding to these sentences, we will get contradictory truth-conditions.

(24) \*Juan cogió cualquiera de las cartas del mazo.

Juan took-pfv. any of the cards from the discard pile

(25) \* Juan tiene que coger cualquiera de las cartas del mazo

Juan must take any of the cards from the discard pile.

Let us look at each of these cases in turn.

#### 3.3.1. Episodic sentences

If we take the standard wide-scope universal paraphrase of (26) and we add the exclusiveness requirement, we will get the denotation in (27).

(26) \*Juan cogió cualquiera de las cartas del mazo

Juan took-pfv. any of the cards from the discard pile.



(27) The proposition that is true in a world  $w$  iff for every  $x$  such that  $x$  is a combination of cards in the discard pile, in  $w$ , at the reference time, Juan took  $x$  and no other cards that are not part of  $x$ .

Again, let us assume that the only cards left in the discard pile are the Queen of Hearts and the Ace of Spades. Then, (27) will be true in a world  $w$  iff the three conditions below are satisfied:

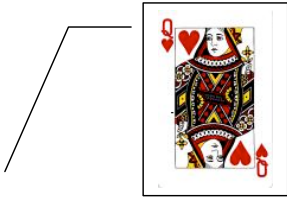
- (i) In  $w$ , at the reference time, Juan took the Queen of Hearts but not the Ace of Spades.
- (ii) In  $w$ , at the reference time, Juan took the Ace of Spades but not the Queen of Hearts.
- (iii) In  $w$ , at the reference time, Juan took the Ace of Spades and the Queen of Hearts.

No matter what Juan does, (27) will come out as false: If Juan takes only the Queen of Hearts, conditions (ii) and (iii) will not be satisfied. If he takes only the Ace of Spades instead, conditions (i) and (iii) will not be met. If he takes both cards, neither (i) nor (ii) will be met. And, finally, if he does not take any card, none of the conditions above will be met. This situation is depicted in the chart below, which displays the consequences of all possible actions for Juan.

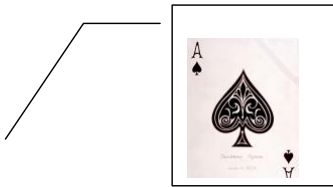
(28)

POSSIBLE ACTIONS

CONSEQUENCE



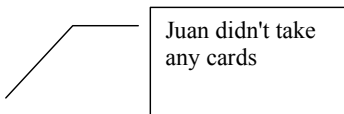
(27) is false!



(27) is false!



(27) is false!



(27) is false!

The sentence in (26), then, expresses a contradiction: there is no world in which the proposition in (27) is true. If Gajewski's analysis can be extended to these cases (see Chapter 2 for discussion), the ungrammaticality of (26) will follow<sup>4</sup>.

### 3.3.2. Necessity sentences

If we add the exclusiveness requirement ("and no other cards that are not part of x"), to the standard wide-scope paraphrase of (29), we will get the proposition in (30).

(29) \*Juan tiene que coger cualquier carta del mazo.

Juan must take any of the cards from the discard pile.

(30) The proposition that is true in a world  $w$  iff for every world  $w'$  accessible from  $w$ , for every  $x$  such that  $x$  is a combination of cards in the discard pile, in  $w'$  Juan takes  $x$  and no other cards that are not part of  $x$ .

The proposition in (30) will be true in a world  $w$  iff the conditions in (i) through (iii) are met:

---

<sup>4</sup> But suppose that there is only one card in the discard pile. Then, according to what we have said, the sentence in (26) will not denote a contradiction. However, in that situation, **cualquiera** would be ruled out for independent reasons. A sentence like **Juan can take any of the cards in the discard pile** is infelicitous if the discard pile contains just one card (see Vendler 1967).

- (i) In all the worlds accessible from w Juan takes the Queen of Hearts but not the Ace of Spades.
- (ii) In all the worlds accessible from w Juan takes the Ace of Spades but not the Queen of Hearts
- (iii) In all the worlds accessible from w Juan takes the Ace of Spades and the Queen of Hearts.

But there is no world in which all these conditions can be met. Hence, on this account, necessity sentences also come out as contradictions.

In this section we have seen that the Universal Quantification with Exclusiveness Hypothesis not only captures the Free Choice effect in possibility sentences, but also derives the ungrammaticality of **cualquiera** in examples like (26) and (29)<sup>5</sup> <sup>6</sup>. The next step will be to explain what motivates the exclusiveness condition and how this condition is introduced into the representation. This turns out not to be a trivial task. In section 4, I

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<sup>5</sup> While I have exemplified solely with deontic modals, the proposal above carries over to modal sentences that involve other accessibility relations, such as the epistemic sentences below.

- (i) Juan puede haber cogido cualquiera de estas cartas.  
Juan may have taken any of these cards.
- (ii) \*Juan tiene que haber cogido cualquiera de estas cartas.  
Juan must have taken any of these cards.

<sup>6</sup> As noted above, there are some necessity sentences where universal FC items are grammatical, namely cases like (iii) below. I will examine these cases in Chapter 5.

- (iii) Cualquier estudiante tiene que trabajar duro.  
Any student must work hard.

will explore a way of introducing exclusiveness that maintains as much as possible of the analysis put forward in Chapter 2. I will ultimately reject this account on the grounds that it forces us to make *ad hoc* assumptions. In section 5, I will put forward a proposal cast in the Hamblin system put forward in Kratzer and Shimoyama (2002), and I will show how the architecture of this system allows us to formulate the exclusiveness condition in a principled way.

### 3.4. Introducing exclusiveness: first try

The informal proposal presented above assigns the sentences in (31)a (32)a and (33)a the paraphrases in (31)b, (32)b and (33)b, respectively.

(31) (a) Juan puede coger cualquiera de las cartas del mazo  
Juan can take any of the cards in the discard pile.

(b) The proposition that is true in a world  $w$  iff for every  $x$  such that  $x$  is a combination of cards in the discard pile, there is a world accessible from  $w$  in which you take  $x$  and no other cards that are not part of  $x$ .

- (32) (a) \*Juan cogió cualquiera de las cartas del mazo  
Juan took-pfv. any of the cards in the discard pile.
- (b) The proposition that is true in a world  $w$  iff for every  $x$  such that  $x$  is a combination of cards in the discard pile, in  $w$ , at the reference time, Juan took  $x$  and no other cards that are not part of  $x$ .
- (33) (a) \* Juan tiene que coger cualquiera de las cartas del mazo.  
Juan must pick any of the cards in the discard pile.
- (b) The proposition that is true in a world  $w$  iff for every world  $w'$  accessible from  $w$ , for every  $x$  such that  $x$  is a combination of cards in the discard pile, in  $w'$  Juan takes  $x$  and no other cards that are not part of  $x$ .

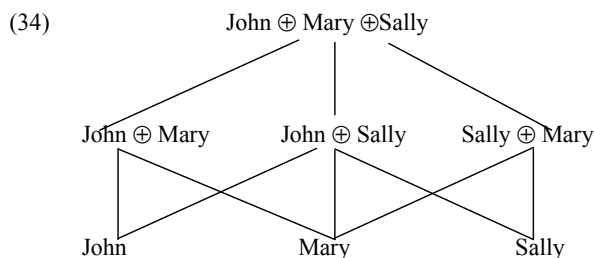
In order to formalize these paraphrases, I will need to make explicit my assumptions about partitives: the following section is devoted to this task.

### 3.4.1. Partitives

I will adopt the semantics for partitive complements assumed in Link 1991 (see also Ladusaw 1982). This proposal is cast in the system put forward in Link 1983. In what follows, I will briefly sketch the relevant features of this system.

In Link 1983, the domain of individuals  $D$  is endowed with an algebraic structure:  $D$  is partially ordered by the ‘part of’ relation between individuals, ‘ $\leq$ ’. Furthermore, there is a join operation (represented below by ‘ $\oplus$ ’), which forms the sum of any two individuals in the domain.

Suppose that the only students in the actual world are John, Mary and Sally. Then, the domain of students in the actual world will look as in (34).



John, Mary and Sally are atomic individuals.  $\text{John} \oplus \text{Mary}$ ,  $\text{John} \oplus \text{Sally}$ ,  $\text{Sally} \oplus \text{Mary}$  and  $\text{John} \oplus \text{Mary} \oplus \text{Sally}$  are plural individuals, which result from joining atomic individuals by means of the join operation. For instance,  $\text{John} \oplus \text{Mary}$  is the individual sum or plural object of John and Mary. Sums are partially ordered through the ‘part of’ relation, represented by lines in the diagram above (e.g., both Mary and John are parts of the plural individual  $\text{John} \oplus \text{Mary}$ ).

Predicates may apply (i) only to atomic individuals, (ii) to atomic and plural individuals both or (iii) only to plural individuals. The operator ‘\*’ takes a one place predicate  $P$  and

yields a predicate that is true of all the individual sums of members of the extension of P. That is, the extension of P is the complete join semilattice generated by the extension of P. For instance, given the domain of students in (34), the extension of the one-place predicate *student*' is the set {John, Mary, Sally} whereas the extension of *\*student*' is {John, Mary, Sally, John⊕Mary, John⊕Sally, Sally⊕Mary, John⊕Mary⊕Sally}. The operator '★' takes a one place predicate P and yields a predicate that is true of exactly the non-atomic sums in the extension of \* P. In our example, the extension of *\*student*' is {John⊕ Mary, John⊕ Sally, Sally ⊕ Mary, John ⊕Mary ⊕Sally}

The sum and the proper sum of the P's,  $\sigma xPx$  and  $\sigma^* xPx$ , are defined as the supremum of all the objects that are \*P and \*P, respectively. That is:

$$(35) \quad \sigma xPx := \iota x (*Px \ \& \ \forall y (*Py \rightarrow y \leq x))$$

$$(36) \quad \sigma x^* Px := \iota x (*Px \ \& \ \forall y (*Py \rightarrow y \leq x))$$

('ι' is the description operator)

$\sigma x^* Px$  presupposes that there are at least two individuals of which P is true. In this case,  $\sigma xPx = \sigma x^* Px$ . In our example, the sum of all the students is identical to the proper sum of all the students, that is, John⊕Mary⊕Sally.

With all this in place, partitive complements can be analyzed in the following way:



(i) A plural definite DP, **the N's** denotes the sum of the contextually relevant N's<sup>7</sup>.

Leaving context dependency aside:

(37)  $[[\text{los estudiantes}]]^g = \sigma^* x \text{ student}'(x)$

(ii) Partitive **de** is a function of type  $\langle e \langle e, t \rangle \rangle$  that takes the plural individual denoted by the definite DP and returns (the characteristic function of) the set that contains all the parts of that plural individual. For instance, **de los estudiantes** will have the denotation in (38).<sup>8</sup>

(38)  $[[\text{de los estudiantes}]]^g = \lambda y (y \leq \sigma^* x \text{ student}'(x))$

The predicate calculus developed in Link (1983) is an extensional system. In order to be able to make use of it, we will have to bring world variables in the picture. Since the partitives we are dealing with in this section are deictic partitives, I will assume that they are anchored to the actual world, as in (39) below:

(39)  $[[\text{de los estudiantes}]]^g = \lambda y (y \leq \sigma^* x \text{ student}'(x)(w_0))$

---

<sup>7</sup> See Link 1991. In Link 1983, definite DPs are taken to be quantificational.

<sup>8</sup> Link 1991 discusses the denotation of definite DPs and the denotation of DPs containing partitive complements, but doesn't assign a denotation to the partitive phrase itself. The semantics assumed above follows Ladusaw (1982), who proposes that a partitive complement of **the N** denotes the set of all contextually relevant N's.

Given all this, the partitive **de las cartas del mazo** will denote the characteristic function of the set of individuals that are part of the sum of the cards in the discard pile in the actual world.

$$(40) \quad [[\text{de las cartas del mazo}]]^g = \lambda x (x \leq \sigma^* y (\text{card}'(y)(w_0) \ \& \ \text{in-the-discard-pile}'(y)(w_0)))$$

(In our example, the individuals that satisfy this property are: The Queen of Hearts, The Ace of Spades, The Queen of Hearts $\oplus$ The Ace of Spades.)

Given these assumptions, the paraphrases I have provided above will be formalized as follows:

- (41) (a) Juan puede coger cualquiera de las cartas del mazo  
 Juan can take any of the cards in the discard pile.
- (b) The proposition that is true in a world  $w$  iff for every  $x$  such that  $x$  is a combination of cards in the discard pile, there is a world accessible from  $w$  in which you take  $x$  and no other cards that are not part of  $x$ .
- (c)  $\lambda w \forall x (x \leq \sigma^* y (\text{card}'(y)(w_0) \ \& \ \text{in-the-discard-pile}'(y)(w_0)) \rightarrow \exists w'' (R(w)(w'') \ \& \ \exists e (\text{take}'(j)(x)(e)(w'') \ \& \ \forall z ((z \leq \sigma^* y (\text{card}'(y)(w_0) \ \& \ \text{in-the-discard-pile}'(y)(w_0)) \ \& \ \exists e (\text{take}'(j)(z)(e)(w'')) \rightarrow z \leq x)))$

- (42) (a) \*Juan cogió cualquiera de las cartas del mazo  
 Juan took-pfv. any of the cards in the discard pile.
- (b) The proposition that is true in a world  $w$  iff for every  $x$  such that  $x$  is a combination of cards in the discard pile, in  $w$ , at the reference time, Juan took  $x$  and no other cards that are not part of  $x$ .
- (c)  $\lambda w \forall x (x \leq \sigma^* y (\text{card}'(y)(w_0) \ \& \ \text{in-the-discard-pile}'(y)(w_0)) \rightarrow \exists e$   
 $(f_{\text{time}}(e) \subseteq t \ \& \ \text{take}'(j)(x)(e)(w) \ \& \ \forall z ((z \leq \sigma^* y (\text{card}'(y)(w_0) \ \& \ \text{in-the-}$   
 $\text{discard pile}'(y)(w_0)) \ \& \ \exists e (f_{\text{time}}(e) \subseteq t \ \& \ \text{take}'(j)(z)(e)(w))) \rightarrow z \leq x))$ <sup>9</sup>
- (43) (a) \* Juan tiene que coger cualquiera de las cartas del mazo.  
 Juan must pick any of the cards in the discard pile.
- (b) The proposition that is true in a world  $w$  iff for every world  $w'$  accessible from  $w$ , for every  $x$  such that  $x$  is a combination of cards in the discard pile, in  $w'$  Juan takes  $x$  and no other cards that are not part of  $x$ .
- (c)  $\lambda w \forall x (x \leq \sigma^* y (\text{card}'(y)(w_0) \ \& \ \text{in-the-discard-pile}'(y)(w_0)) \rightarrow \forall w'$   
 $(R(w)(w') \rightarrow \exists e (\text{take}'(j)(x)(e)(w') \ \& \ \forall z ((z \leq \sigma^* y (\text{card}'(y)(w_0) \ \& \ \text{in-the-discard pile}'(y)(w_0)) \ \& \ \exists e (\text{take}'(j)(z)(e)(w')) \rightarrow z \leq x)))$

---

<sup>9</sup> In this formula, 't' represents the reference time.

These paraphrases are the result of taking a wide-scope universal paraphrase and adding the exclusiveness requirement 'no other cards that are not part of x' (underlined in the formulas above). The task ahead is to deliver the beginnings of an explanation of why we would have exclusiveness here.

### 3.4.2. Introducing exclusiveness

Let us take as our starting point the denotation for **cualquiera** put forward in Chapter 2 (disregarding tense):

$$(44) \quad \lambda P_{\langle e \langle s, t \rangle \rangle} \lambda R_{\langle e \langle s, t \rangle \rangle} \lambda w_s \forall x (\exists w' (P(x)(w') \ \& \ C(w)(w'))) \rightarrow R(x)(w))$$

Since in this section we will be looking only at cases where the **cualquiera** phrase has a deictic restriction, let us ignore the quantification over possible individuals and treat **cualquiera** as a regular universal quantifier, as in (45). This will not affect any of the arguments made in what follows.

$$(45) \quad \lambda P_{\langle e \langle s, t \rangle \rangle} \lambda R_{\langle e \langle s, t \rangle \rangle} \lambda w_s \forall x (P(x)(w) \rightarrow R(x)(w))$$

How is the exclusiveness requirement introduced? In the following two sections, I will discuss two possibilities:

- (i) The exclusiveness requirement is part of the lexical entry of **cualquiera**. (section 4.2.1.)
- (ii) The exclusiveness requirement is introduced by a covert operator akin to **only**, such as the one proposed by Fox (2004). (section 4.2.2.)

**3.4.2.1. Possibility 1: The exclusiveness condition is introduced by *cualquiera***

Let us hypothesize that the exclusiveness requirement is part of the lexical entry of **cualquiera**, as in (46) below. The formula in (46) says that **cualquiera de las cartas del mazo** combines with a property of individuals R and yields the proposition that is true in a world w iff for every combination x of cards in the discard pile, x has the property R in w and no card that is not part of x has the property R in w.

$$\begin{aligned}
 (46) \quad & [[\text{cualquiera de las cartas del mazo}]]^{\mathbb{E}} = \\
 & \lambda R \lambda w \forall x (x \leq \sigma^* y \text{ (card}'(y)(w_0) \ \& \ \text{in-the-discard-pile}'(y)(w_0)) \rightarrow \\
 & (R(x)(w) \ \& \ \forall z \text{ ((z} \leq \sigma^* y \text{ (card}'(y)(w_0) \ \& \ \text{in-the-discard-pile}'(y)(w_0)) \ \& \ } \\
 & \underline{R(z)(w)} \rightarrow z \leq x))
 \end{aligned}$$

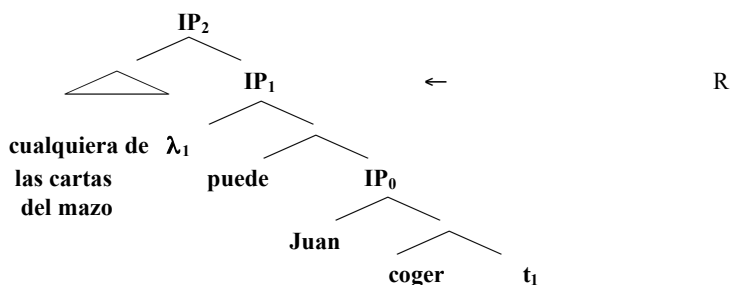
Unfortunately, this hypothesis makes wrong predictions: Adopting the denotation in (46) would give us wrong truth-conditions for modal sentences. Let us see why.

If **cualquiera** is a wide-scope quantifier, the sentence in (47) will have the LF in (48) (again, disregarding tense and aspect).

(47) Juan puede coger cualquiera de las cartas del mazo.

Juan can take any of the cards in the discard pile.

(48)



The second argument of **cualquiera**, the constituent that I have labeled **IP<sub>1</sub>**, denotes the property in (49)—assuming that the event argument gets existentially closed at some point in the derivation.

(49)  $\lambda x \lambda w \exists w' (R(w)(w') \ \& \ \exists e \text{ (take' (j)(x)(e)(w'))})$

Combining (49) with (46) we get the formula in (50).

$$(50) \quad \lambda w \forall x (x \leq \sigma^* y (\text{card}'(y)(w_0) \ \& \ \text{in-the-discard-pile}'(y)(w_0)) \rightarrow \exists w'(R(w)(w') \\ \& \exists e (\text{take}'(j)(x)(e)(w'))) \ \& \ \forall z ((z \leq \sigma^* y (\text{card}'(y)(w_0) \ \& \ \text{in-the-discard-pile}' \\ (y)(w_0)) \ \& \ \exists w''(R(w)(w'')) \ \& \ \exists e (\text{take}'(j)(z)(e)(w'')))) \rightarrow z \leq x))$$

Let us assume again that there are just two cards in the discard pile, the Queen of Hearts and the Ace of Spades. The formula above will be true in a world  $w$  iff the following three conditions are met:

- (i) There is a world accessible from  $w$  where John takes the Queen of Hearts and there is no world accessible from  $w$  where John takes another card.
- (ii) There is a world accessible from  $w$  where John takes the Ace of Spades and there is no world accessible from  $w$  where John takes another card.
- (iii) There is a world accessible from  $w$  where John takes both the Queen of Hearts and the Ace of Spades.

But there is no world in which these three conditions can be satisfied, and, thus, the formula in (50) denotes a contradiction. This is not what we want!

The difficulty in making the exclusiveness condition come out of the lexical entry of **cualquiera** lies in the fact that, given our current assumptions, **cualquiera** combines with the constituent  $[\lambda_1 [\text{puede} [\text{Juan coger } t_1]]]$  and, hence, it cannot 'see' the proposition in

the scope of the modal. In the following section, I will explore the possibility that the exclusiveness condition is contributed by a silent operator that combines directly with the proposition denoted by the clause [**Juan coger t<sub>1</sub>**].

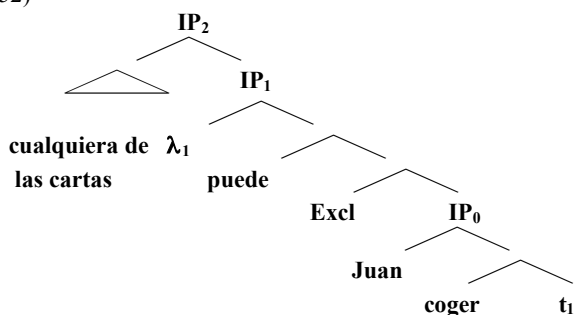
### 3.4.2.2. Possibility 2: A silent *only*.

We have seen that **cualquiera** itself cannot contribute the exclusiveness requirement. As an alternative, let us assume that exclusiveness is supplied by a covert operator akin to **only**, such as the one argued by Fox (2004) to play a role in the computation of scalar implicatures<sup>10</sup>. In (51), this operator would combine with the clause [**Juan coger t<sub>1</sub>**]. That is, (51) would have the structure in (52).

(51) Juan puede coger cualquiera de las cartas del mazo.

Juan can take any of the cards in the discard pile

(52)



<sup>10</sup> See also Lee (2005), who argues for the existence of a silent **only** in Korean.



I will assume that the covert exclusiveness operator in the structure above has the denotation proposed by Fox (2004) (inspired by Rooth 1985, 1992):

$$(53) \quad [[\mathbf{Excl}]]^g = \lambda C_{\langle st,t \rangle} \lambda p \lambda w (p(w) \ \& \ \forall q (C(q) \ \& \ q(w)) \rightarrow (p \Rightarrow q))$$

$$p \Rightarrow q =_{\text{def}} \forall w (p(w) \rightarrow q(w))$$

In order to see what motivates the formula in (53) let us take a brief look at sentences with overt **only**, such as (54), from Rooth (1985).

(54) Mary only introduced [Bill]<sub>F</sub> to Sue.

Intuitively, this sentence conveys that (i) Mary introduced Bill to Sue and (ii) Mary didn't introduce anybody else to Sue. We can capture these truth conditions if we take **only** to denote a function that takes a proposition *p* (in our example, the proposition that Mary introduced Bill to Sue), and a set of propositional alternatives *C* (here, the set of propositions of the form 'that Mary introduced *x* to Sue'), and yields the proposition that is true in a world *w* iff *p* is true in *w*<sup>11</sup> and no other proposition in *C* is true in *w*. That is:

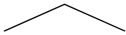
$$(55) \quad [[\mathbf{only}]]^g = \lambda C_{\langle st,t \rangle} \lambda p \lambda w (p(w) \ \& \ \forall q ((C(q) \ \& \ q(w)) \rightarrow p = q))$$

In order to find out what the set of alternatives quantified over is, we need to rely on the focus structure of the sentence (see Rooth 1985, 1992). Let us assume that the structure

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<sup>11</sup> The question of whether *p* is part of the truth-conditions, or merely presupposed (or implicated) is the subject of much debate. See, e.g., Horn (1992, 1996), and Atlas (1993).

of (54) is (56) below, where C is an implicit argument of type  $\langle\langle s,t \rangle, t \rangle$  (see von Stechow 1997).

(56)  **only**<sub>C</sub> Mary **only** introduced [Bill]<sub>F</sub> to Sue

Following Rooth (1992), we can take C to be a contextually relevant subset of the focus value of the sister of **only** containing at least the denotation of the sister of **only** and one other element. Informally, we get the focus value of a sentence by making substitutions in the position corresponding to the focused phrase. For instance, in the example above, the focus value of **Mary introduced [Bill]<sub>F</sub> to Sue** is the set of propositions of the form ‘Mary introduced x to Sue’.

While the denotation in (55) works for cases like (54), it makes wrong predictions for sentences like (57) below.<sup>12</sup>

(57) Mary only introduced [Bill and John]<sub>F</sub> to Sue.

According to (55), (57) will be true in a world w iff (i) Mary introduced Bill and John to Sue in w (ii) all the relevant alternatives are false in w. But if it is true that Mary introduced Bill and John to Sue some of the alternatives must be true as well, namely the ones that are logically entailed by the proposition that Mary introduced Bill and John to Sue (i.e., that Mary introduced Bill to Sue, that Mary introduced John to Sue.)

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<sup>12</sup> See Rooth 1992, footnote 2.

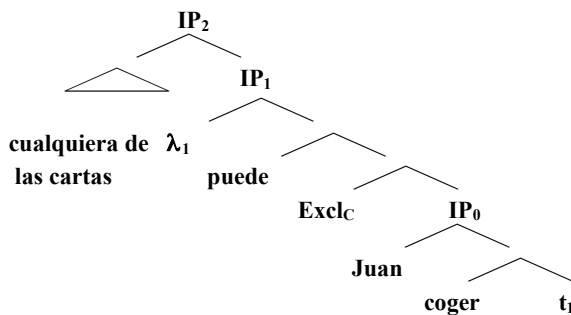
Adopting the denotation for **only** in (53) above, repeated below as (58), will solve this problem (see von Stechow 1997 for discussion). On this proposal, **only** is a function that takes a set of propositions  $C$  and a proposition  $p$  and yields the proposition that is true in a world  $w$  iff  $p$  is true in  $w$  and no proposition in  $C$  is true in  $w$  unless it is logically entailed by  $p$ <sup>13</sup>.

$$(58) \quad [[\mathbf{only}]]^g = \lambda C_{\langle st, t \rangle} \lambda p \lambda w (p(w) \ \& \ \forall q (C(q) \ \& \ q(w)) \rightarrow (p \Rightarrow q))$$

$$p \Rightarrow q =_{\text{def}} \forall w (p(w) \rightarrow q(w))$$

Let us go back to the LF we are seeking to interpret, (59) below:

(59)



In order to be able to apply **Excl** to the denotation of **IP<sub>0</sub>**, the proposition in (60) below, we will have to assume that this constituent introduces a set of alternatives, the set of propositions of the form ‘that John takes  $x$ ’, i.e., (61) below.

<sup>13</sup> An alternative would be to assume that the propositions entailed by  $p$  do not constitute legitimate alternatives to  $p$  (see von Stechow 1997).

$$(60) \quad \lambda w \exists e (\text{take}'(j)(g(1))(e)(w))$$

$$(61) \quad \{ \lambda w \exists e (\text{take}'(j)(a)(e)(w)), \lambda w \exists e (\text{take}'(j)(b)(e)(w)), \lambda w \exists e (\text{take}'(j)(c)(e)(w)) \dots \}$$

Applying **Excl** to (60), then, we will get the proposition that is true iff (60) is true and no other proposition in (61) is true, unless logically entailed by (60). In order for a proposition in (61) to be logically entailed by (60), the individual taken by John must be part of or identical to  $g(1)$ . Thus, applying **Excl** to (60) will give us the proposition that John takes  $g(1)$  and he doesn't take any other individual that is not  $g(1)$  or part of  $g(1)$ . In symbols:

$$(62) \quad \lambda w \exists e (\text{take}'(j)(g(1))(e)(w) \ \& \ \forall z (\exists e (\text{take}'(j)(z)(e)(w)) \rightarrow z \leq g(1)))$$

When we combine this with the modal, we get the proposition that is true in  $w$  iff there is a world accessible from  $w$  in which John takes  $g(1)$  and he doesn't take any other individual that is not  $g(1)$  or part of  $g(1)$ . That is:

$$(63) \quad \lambda w \exists w' (R(w)(w') \ \& \ \exists e (\text{take}'(j)(g(1))(e)(w')) \ \& \ \forall z (\exists e (\text{take}'(j)(z)(e)(w')) \rightarrow z \leq g(1)))$$

The denotation of  $\mathbf{IP}_1$  will then be (64), the result of abstracting over  $g(1)$  (by Predicate Abstraction).

$$(64) \quad \lambda x \lambda w \exists w' (R(w)(w') \ \& \ \exists e (\text{take}'(j)(x)(e)(w') \ \& \ \forall z (\exists e (\text{take}'(j)(z)(e)(w')) \rightarrow z \leq x)))$$

And combining this with the denotation of **cualquiera de las cartas del mazo** we get:

$$(65) \quad \lambda w \forall x ((x \leq \sigma^* y (\text{card}'(y)(w_0) \ \& \ \text{in-the-discard-pile}'(y)(w_0))) \rightarrow \exists w' (R(w)(w') \ \& \ \exists e (\text{take}'(j)(x)(e)(w') \ \& \ \forall z (\exists e (\text{take}'(j)(z)(e)(w')) \rightarrow z \leq x)))$$

That is, the proposition that for every  $x$  such that  $x$  is a combination of cards in the discard pile, there is an accessible world in which Juan takes  $x$  and he does not take any individual that is not  $x$  or part of  $x$ . But this is the wrong result! The sentence **John can take any of the cards from the discard pile** can be true if John takes, say, the apple that is on his kitchen table.

Let us look again at the desired paraphrase for (66), the formula in (67).

- (66) (a) Juan puede coger cualquiera de las cartas del mazo  
 Juan can take any of the cards in the discard pile.

$$(67) \quad \lambda w \forall x (x \leq \sigma^* y (\text{card}'(y)(w_0) \ \& \ \text{in-the-discard-pile}'(y)(w_0))) \rightarrow \exists w' (R(w)(w') \ \& \ \exists e (\text{take}'(j)(x)(e)(w') \ \& \ \forall z ((z \leq \sigma^* y (\text{card}'(y)(w_0) \ \& \ \text{in-the-discard-pile}'(y)(w_0)) \ \& \ \exists e (\text{take}'(j)(z)(e)(w')) \rightarrow z \leq x)))$$

(The proposition that is true in a world  $w$  iff for every  $x$  such that  $x$  is a combination of cards in the discard pile, there is a world accessible from  $w$  in which you take  $x$  and no other cards that are not part of  $x$ .)

In order to derive this formula we would need **Excl** to operate over the proposition 'that John takes  $g(1)$  and  $g(1)$  is a card in the discard pile'. That is, we would need the restriction of **cualquiera de las cartas del mazo**, to be interpreted both *in situ* and in the position where **cualquiera** has raised. The semantics for operator-variable constructions put forward in Fox (2002) gives us a way to do just that. In what follows, I will first present Fox's proposal and then apply it to the case we are dealing with.

#### **3.4.2.3. Trace Conversion: Fox 2002**

Fox (2002) adopts the copy theory of movement (Chomsky 1993, 1995), according to which movement operations create a chain of identical copies of the moved constituent. For instance, by moving **every boy** in the sentence **a girl talked to every boy**, we will get the representation in (68) below.

(68) [Every boy] a girl talked to [every boy]

On Fox's proposal, the copy at the tail of the chain is interpreted as a definite description. This is achieved by an operation dubbed Trace Conversion, which consists of two sub-operations: Variable Insertion and Determiner Replacement<sup>14</sup>.

(69) Trace Conversion

a. Variable Insertion: (Det) Pred  $\rightarrow$  (Det) [Pred  $\lambda y$  ( $y = x$ )]

b. Determiner Replacement: (Det) [Pred  $\lambda y$  ( $y = x$ )]  $\rightarrow$  the [Pred  $\lambda y$  ( $y = x$ )]

(Fox 2002: 67)

*Pred* and  $\lambda y$  ( $y = x$ ) are combined by Predicate modification, yielding  $\lambda y$  (*Pred*( $y$ ) &  $y = x$ ). Applying *the* to  $\lambda y$  (*Pred*( $y$ ) &  $y = x$ ), we get  $t_y$  (*Pred* ( $y$ ) &  $y = x$ ). That is, the unique  $y$  that satisfies *Pred* and that is equal to  $x$ <sup>15</sup>.

Applying Trace Conversion to the example in (68) we get:

(70) a. every boy  $\rightarrow$  every (boy ( $\lambda y$  ( $y = x$ ))) [by Variable Insertion]

b. every (boy ( $\lambda y$  ( $y = x$ )))  $\rightarrow$   $t_y$  (boy ( $z$ ) &  $y = x$ ) [by Det. Replacement]

Fox assumes that movement of a phrase triggers the introduction of a  $\lambda$ -binder (as in Heim and Kratzer 1998). As a result, the structure assigned to the example in (68) is (71)

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<sup>14</sup> See also Fox (1999) and Sauerland (2004). Sauerland (2004) discusses two alternative proposals for the semantics of chains. For the present purposes, the semantics sketched above will suffice.

<sup>15</sup> Fox's notation is *the* [*Pred*  $\lambda y$  ( $y = x$ )].

below, which can be paraphrased as ‘for every boy  $x$ , there is a girl that talked to the unique  $z$  such that  $z$  is a boy and  $z$  is identical to  $x$ ’.

(71) Every boy  $\lambda x$  [a girl talked to *the boy*  $x$ ]

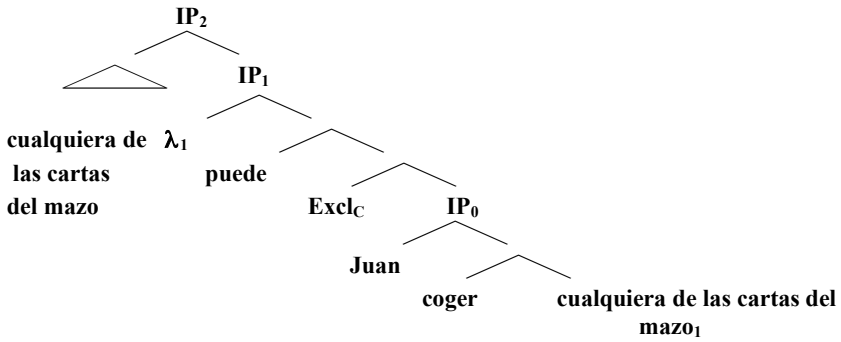
#### 3.4.2.4. Deriving exclusiveness

Let us assume the copy theory of movement. Putting this together with our previous assumptions, the sentence in (72) will be assigned the LF in (73), where an exclusiveness operator has been inserted right below the modal, and **cualquiera** has raised to a position above the modal, leaving a copy in its base position.

(72) Juan puede coger cualquiera de las cartas del mazo  
Juan can take any of the cards in the discard pile.



(73)



Furthermore, let us assume Fox’s proposal for interpreting chains. The truth-conditions for (73) will then be computed as follows.

Step 1: Applying Trace Conversion

If we apply Trace Conversion to the lower copy of **cualquiera de las cartas del mazo**, **IP<sub>0</sub>** will be interpreted as in (74). That is, the proposition that is true in a world *w* iff, in *w*, Juan takes the unique combination of cards in the discard pile that is identical to *g*(1).

$$(74) \quad \lambda w \exists e (\text{take}'(j) (\text{ty} (y \leq \sigma^* z (\text{card}'(z)(w_0) \ \& \ \text{in-the-discard pile}'(z)(w_0)) \ \& \\ y = g(1))(e)(w))$$

Step 2: Exclusiveness

Now, we need to apply **Excl** to (74). The set of alternatives of (74) will be a set of propositions of the form 'that John takes the unique combination of cards in the discard pile that is identical to x':

$$(75) \quad \{\lambda w \exists e (\text{take}'(j) (\iota y (y \leq \sigma^* z (\text{card}'(z)(w_0) \ \& \ \text{in-the-discard pile}'(z)(w_0)) \ \& \ y = a))(e)(w)), \lambda w \exists e (\text{take}'(j) (\iota y (y \leq \sigma^* z (\text{card}'(z)(w_0) \ \& \ \text{in-the-discard pile}'(z)(w_0)) \ \& \ y = b))(e)(w)), \lambda w \exists e (\text{take}'(j) (\iota y (y \leq \sigma^* z (\text{card}'(z)(w_0) \ \& \ \text{in-the-discard pile}'(z)(w_0)) \ \& \ y = c))(e)(w)) \dots \}$$

({that Juan takes the unique combination of cards in the discard pile that is identical to a, that Juan takes the unique combination of cards in the discard pile that is identical to b, that Juan takes the unique combination of cards in the discard pile that is identical to c...})

After applying **Excl**, we will get the proposition that is true in  $w$  iff (74) is true and no other proposition in (75) is true unless it is entailed by (74). That is:

(76)  $\lambda w \exists e (\text{take}'(j) (\iota y (y \leq \sigma^* z (\text{card}'(z)(w_0) \ \& \ \text{in-the-discard pile}'(z)(w_0)) \ \& \ y = g(1))(e)(w)) \ \& \ \forall r (\exists e (\text{take}'(j) (\iota y (y \leq \sigma^* z (\text{card}'(z)(w_0) \ \& \ \text{in-the-discard pile}'(z)(w_0)) \ \& \ y = r) (e)(w)) \rightarrow r \leq g(1)))$

(that John takes the unique card in the discard pile that is identical to  $g(1)$  and John does not take any other card in the discard pile unless it is part of  $g(1)$ )

After combining (76) with the modal and applying  $\lambda$ -abstraction we will get:

(77)  $\lambda x \lambda w \exists w' (R(w)(w') \ \& \ \exists e (\text{take}'(j) (\iota y (y \leq \sigma^* z (\text{card}'(z)(w_0) \ \& \ \text{in-the-discard pile}'(z)(w_0)) \ \& \ y = x))(e)(w')) \ \& \ \forall r (\exists e (\text{take}'(j) (\iota y (y \leq \sigma^* z (\text{card}'(z)(w_0) \ \& \ \text{in-the-discard pile}'(z)(w_0)) \ \& \ y = r) (e)(w')) \rightarrow r \leq x))$

And combining this with the **cualquiera**-phrase yields (78) below:

(78)  $\lambda w \forall x (x \leq \sigma^* z (\text{card}'(z)(w_0) \ \& \ \text{in-the-discard pile}'(z)(w_0)) \rightarrow \exists w' (R(w)(w') \ \& \ \exists e (\text{take}'(j) (\iota y (y \leq \sigma^* z (\text{card}'(z)(w_0) \ \& \ \text{in-the-discard pile}'(z)(w_0)) (e)(w') \ \& \ y = x) \ \& \ \forall r (\exists e (\text{take}'(j) (\iota y (y \leq \sigma^* z (\text{card}'(z)(w_0) \ \& \ \text{in-the-discard pile}'(z)(w_0)) (e)(w') \ \& \ y = r)) \rightarrow r \leq x)))$

This is the desired result: for every combination  $x$  of cards in the discard pile, there is a world where Juan takes  $x$  and no other cards in the discard pile unless they are part of  $x$ .

The implementation I have just presented has two key components: (i) it makes use of a mechanism that allows us to interpret the DP that combines with **cualquiera** in its base position (Trace Conversion), and (ii) it employs a covert exclusiveness operator akin to **only** (after Fox 2004).

Adopting this implementation forces us to assume that the proposition denoted by the constituent [**Juan [coger t<sub>i</sub>]**] introduces a set of alternatives. But this assumption is problematic: it is not clear how the alternatives would be introduced in the absence of focus.

In the following section, I will pursue an analysis cast in the alternative semantics for indefinites developed in Kratzer and Shimoyama (2002)<sup>16</sup>. By making this move, we will be able to maintain the desirable features of the account above without the problematic assumption. As we will see, in Kratzer and Shimoyama's system, the propositional alternatives that the exclusiveness operator applies to are generated by the semantic composition itself.

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<sup>16</sup> Other alternative based analysis of FC items are Aloni 2002, Giannakidou 2001 and Farkas 2005.

### 3.5. An alternative-semantics implementation

#### 3.5.1. Background: Kratzer & Shimoyama (2002)

##### 3.5.1.1. A Hamblin semantics for indeterminate pronouns

In the Hamblin semantics put forward in Kratzer and Shimoyama (2002), all expressions denote sets. Most lexical items denote singleton sets containing their traditional denotations. For instance, **arrived** will denote the property ‘arrived’.

$$(79) \quad [[\mathbf{arrived}]]^{w,g} = \{\lambda x \lambda w' (\text{arrived } (x)(w'))\}$$

Indeterminate pronouns and phrases denote sets of individual alternatives. For instance, the denotation of **a man** in a world  $w$  is the set of men in  $w$ :

$$(80) \quad [[\mathbf{a man}]]^{w,g} = \{x: \text{man } (x)(w)\}$$

Via pointwise functional application the alternatives created by indeterminate phrases can expand, i.e., they can give rise to alternatives of a higher type. For instance, in order to combine **arrived** with **a man**, we apply the function in the denotation of **arrived** to each

of the elements in the denotation of **a man**<sup>17</sup>. The result is the set of propositional alternatives in (81). That is, the set of propositions {that Juan arrived, that Pedro arrived, that Carlos arrived...}

$$(81) \quad [[\mathbf{a\ man\ arrived}]]^{w,g} = \{p: \exists x (\text{man}(x)(w) \ \& \ p = \lambda w'(\text{arrived}(x)(w')))\}$$

The alternatives keep expanding until they meet an operator. For instance, the denotation of **A man arrived** is the result of combining the set of propositions in (81) with the propositional operator  $[\exists]$ :

(82) For any set of propositions A:

$$[\exists](A) =$$

{the proposition that is true in all worlds in which some proposition in A is true}

$$(83) \quad [\exists] ([[ \mathbf{a\ man\ arrived} ]])^{w,g} =$$

{the proposition that is true in a world w iff at least one man arrived in w}

Here is a list of the propositional<sup>18</sup> operators in Kratzer and Shimoyama (2002).

Let A be a set of propositions,

<sup>17</sup> Formally, Hamblin Functional Application is defined as follows:

If  $\alpha$  is a branching node with daughters  $\beta$  and  $\gamma$ , and  $[[\beta]]^{w,g} \subseteq D_\sigma$  and  $[[\gamma]]^{w,g} \subseteq D_{\langle \sigma, \tau \rangle}$ , then  $[[\alpha]]^{w,g} = \{a \in D_\tau: \exists b \exists c [b \in [[\beta]]^{w,g} \ \& \ c \in [[\gamma]]^{w,g} \ \& \ a = c(b)]\}$ .

(Kratzer and Shimoyama 2002: 7)

<sup>18</sup> In Kratzer and Shimoyama's system, there are two types of operator: (i) operators that range over propositional alternatives and (ii) operators that range over individual alternatives. In this chapter, only the propositional operators will be relevant.

$[\exists](A)$  = {the proposition that is true in all worlds in which some proposition in A is true}

$[\forall](A)$ = {the proposition that is true in all worlds in which every proposition in A is true}

$[\text{Neg}](A)$ = {the proposition that is true in all worlds in which no proposition in A is true}

$[Q](A)$ =  $A^{19}$

### 3.5.1.2. Unselective vs. selective indeterminate pronouns

Some indeterminate phrases are unselective: The alternatives they generate can combine with any operator. A case in point is that of Japanese indeterminate pronouns, which can have existential, universal, interrogative, negative polarity or free choice readings depending on what operator they associate with. This is illustrated in the examples below,

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<sup>19</sup> The question operator above yields a Hamblin-style question denotation (Hamblin 1973). Kratzer and Shimoyama (2002) also consider the operator in (iv), which yields a Groenendijk and Stokhof question denotation (Groenendijk and Stokhof 1984). In her 2005 LSA lectures, Angelika Kratzer mentions the denotation in (v), which yields a Karttunen-style question denotation (Karttunen 1977).

(iv)  $[Q](A) = \{\lambda w \forall p[p \in A \rightarrow [p(w) \leftrightarrow p(w_0)]]\}$

(v)  $[Q](A) = \{p: p \in A \ \& \ p(w_0)\}$  (LSA lecture July 19, 2005)





interpretable operators<sup>20</sup>. On this view, **irgendein** would have to agree with an existential ([ $\exists$ ]) operator; **niemand** with a negative operator ([Neg]).

In what follows, I will show how the proposal in sections 2 and 3 can be implemented in this system.

### 3.5.2. *Cualquiera* in a Hamblin semantics

I contend that Spanish **cualquiera** is a universal indeterminate pronoun, that is, an item that

(i) introduces a set of alternatives. For instance:

(86)  $[[\text{cualquiera de las cartas del mazo}]]^{\text{w.g}} =$   
{The Queen, the Ace, the Queen $\oplus$ the Ace}

(ii) must agree with the [ $\forall$ ] propositional quantifier in (87):

(87) For any set of propositions A,

$[\forall](A) =$  {the proposition that is true in all worlds in which every proposition in A is true}

(Kratzer and Shimoyama 2002: 6)

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<sup>20</sup> See Kratzer (2005). Kratzer and Shimoyama (2002) consider a feature-checking analysis instead.

This will derive wide-scope universal paraphrases for sentences that contain **cualquiera**.

The next section discusses how the exclusiveness requirement comes about.

### 3.5.3. Introducing exclusiveness: The Exclusiveness Hypothesis

We can capture the FC effect if we assume that the propositional alternatives generated by **cualquiera** are mapped into a set of mutually exclusive propositions as soon as they come into existence. Let us dub this the Exclusiveness Hypothesis.

The exclusiveness operator that I am assuming here is defined in (88) below.

$$(88) \quad \mathbf{Excl}(A) = \{\lambda w (p(w) \ \& \ \forall q ((q \in A \ \& \ q(w)) \rightarrow (p \Rightarrow q))) : p \in A\}$$

$$p \Rightarrow q =_{\text{def}} \forall w (p(w) \rightarrow q(w))$$

That is, if  $A$  is a set of propositions, we get  $\mathbf{Excl}(A)$  by mapping each proposition  $p$  in  $A$  into the proposition that is true in a world  $w$  iff the two conditions below are satisfied.

- (i)  $p$  is true in  $w$
- (ii) no other proposition in  $A$  is true in  $w$ , unless it is logically entailed by  $p$ .

This operator will map the set of propositions in (89) into the set in (90)<sup>21</sup>.

(89) A = {that Juan took the Queen, that Juan took the Ace, that Juan took the Queen and the Ace}

(90) **Excl**(A) = {that Juan took the Queen but not the Ace,  
that Juan took the Ace but not the Queen,  
that Juan took the Queen and the Ace}

Now, we are ready to derive the truth conditions of episodic, necessity and possibility sentences that contain **cualquiera**.

### 3.5.4. The analysis at work

#### 3.5.4.1. Episodic sentences

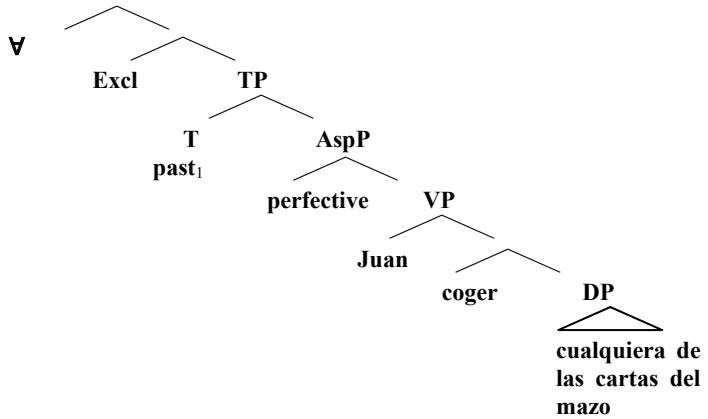
Given what I have said so far, the episodic sentence in (91) will have the LF in (92) below, where **Excl** is the exclusiveness operator and  $\forall$  represents the universal propositional quantifier. By the Exclusiveness Hypothesis, **Excl** operates on the first node that denotes a set of propositions, i.e., the TP.

---

<sup>21</sup> This operator runs into problems with sentences with multiple plural DPs such as **Three boys ate two pizzas**. (See Lahiri (2002) for an alternative definition of the exclusiveness operator.) However, for the cases I am discussing here, the definition above will suffice.

- (91) \*Juan cogió cualquiera de las cartas del mazo  
 Juan took-pfv. any of the cards in the discard pile

(92)



Let us compute the denotation of (96) step by step.

Step 1: The individual alternatives

Assuming that the only two cards left in the discard pile are the Queen of Hearts and the Ace of Spades, **las cartas del mazo** will denote the plural individual the Queen of Hearts  $\oplus$  the Ace of Spades.

The partitive complement **de las cartas del mazo** ('of the cards in the discard pile') denotes the property of individuals that are part of the plural individual denoted by **las**

**cartas del mazo** (see section 4.1. above). The individuals that satisfy this property are:  
The Queen of Hearts, the Ace of Spades, the Queen of Hearts⊕the Ace of Spades.

The denotation of **cualquiera de las cartas del mazo** is the set of individuals that satisfy the property denoted by **de las cartas del mazo**. That is:

$$(93) \quad [[\text{cualquiera de las cartas del mazo}]]^{w,g} = \\ \{\text{The Queen, the Ace, the Queen}\oplus\text{the Ace}\}$$

Step 2: Getting propositional alternatives

Lexical items that do not introduce alternatives denote singleton sets containing their traditional denotations. Thus, assuming the denotations in Chapter 1, we get:

$$(94) \quad [[\text{Juan}]]^{w,g} = \{\text{Juan}\}$$

$$(95) \quad [[\text{coger}]]^{w,g} = \{\lambda x \lambda y \lambda e \lambda w' (\text{take}' (y)(x)(e)(w'))\}$$

$$(96) \quad [[\text{perfective}]]^{w,g} = \{\lambda P \lambda t \lambda w' (\exists e (f_{\text{time}}(e) \subseteq t \ \& \ P(e)(w')))\}$$

$$(97) \quad [[\text{past}_1]]^{w,g} = \text{is only defined if } g(1) \text{ is an interval } t \text{ that precedes } t_0, \text{ the utterance} \\ \text{time. If defined, then } [[\text{past}]]^{w,g} = \{g(1)\}$$

Combining the denotation of the verb pointwise with the denotation of the object, and applying the result to the denotation of the subject, we will get the following set of alternatives of type  $\langle 1 \langle s \langle t \rangle \rangle \rangle$  :

$$(98) \quad [[\mathbf{VP}]]^{w,g} = \\ \{\lambda e \lambda w' (\text{take}'(\text{Juan})(\text{the Queen})(e)(w')), \lambda e \lambda w' (\text{take}'(\text{Juan})(\text{the Ace})(e)(w')), \\ \lambda e \lambda w' (\text{take}'(\text{Juan})(\text{the Queen} \oplus \text{The Ace})(e)(w'))\}$$

And combining (98) with the denotation of aspect and tense, we will get the set of propositional alternatives in (99). That is, {that Juan took the Queen, that Juan took the Ace, that Juan took the Queen and the Ace}

$$(99) \quad [[\mathbf{TP}]]^{w,g} = \\ \{\lambda w' \exists e (f_{\text{time}}(e) \subseteq t \ \& \ \text{take}'(\text{Juan})(\text{the Queen})(e)(w')), \lambda w' \exists e (f_{\text{time}}(e) \subseteq t \ \& \\ \text{take}'(\text{Juan})(\text{the Ace})(e)(w')), \lambda w' \exists e (f_{\text{time}}(e) \subseteq t \ \& \ \text{take}'(\text{Juan})(\text{the Queen} \oplus \text{the} \\ \text{Ace})(e)(w'))\}^{22}$$

Step 3: Exclusiveness

Applying **Excl** to (99), we get the set of mutually exclusive propositions in (100). That is, the set {that Juan took the Queen but not the Ace, that Juan took the Ace but not the

---

<sup>22</sup> Here, and in what follows, I am using 't' to represent the reference time. That is, I am assuming that  $g(1) = t$ .

Queen, that Juan took the Queen and the Ace}.

$$(100) \{ \lambda w' (\exists e (f_{\text{time}}(e) \subseteq t \ \& \ \text{take}'(\text{Juan})(\text{the Queen})(e)(w'))) \ \& \ \sim \exists e (f_{\text{time}}(e) \subseteq t \ \& \ \text{take}'(\text{Juan})(\text{the Ace})(e)(w'))) , \ \lambda w' (\exists e (f_{\text{time}}(e) \subseteq t \ \& \ \text{take}'(\text{Juan})(\text{the Ace})(e)(w'))) \ \& \ \sim \exists e (f_{\text{time}}(e) \subseteq t \ \& \ \text{take}'(\text{Juan})(\text{the Queen})(e)(w'))) , \ \lambda w' \exists e (f_{\text{time}}(e) \subseteq t \ \& \ \text{take}'(\text{Juan})(\text{the Queen} \oplus \text{the Ace})(e)(w')) \}$$

Step 4: Universal quantification

The propositional quantifier  $\mathbf{V}$  applies to a set of propositions A and yields a singleton set that contains the proposition that is true in a world w iff every proposition in A is true in w (see section 5.2. above). That is:

$$(101) \text{ For all } [[\alpha]]^{w, g} \subseteq D_{\langle s, t \rangle}$$

$$[[\mathbf{V}\alpha]] = \{ \lambda w' \forall p (p \in [[\alpha]]^{w, g} \rightarrow p(w')) \}$$

(Kratzer and Shimoyama 2002:7)

When we apply the denotation of  $\mathbf{V}$  to the set of propositions in (100) we get the singleton set containing the proposition that is true in a world w iff the following three conditions are met:

- (i) in w Juan took the Queen of Hearts but not the Ace of Spades.
- (ii) in w Juan took the Ace of Spades but not the Queen of Hearts.
- (iii) in w Juan took the Ace of Spades and the Queen of Hearts.

These are exactly the truth conditions that we wanted to derive (see section 2). Since there is no world in which these three conditions are met, the sentence in (91) denotes a contradiction.

### 3.5.4.2. Modal sentences

In the case of episodic sentences, there is only one place in the structure where [**V**] could apply to a set of propositions, namely the position above **Excl** (see the LF in (92)). In modal sentences, there are in principle several options. As we will see, in necessity sentences, [**V**] would give rise to a contradiction in any position. In possibility sentences, placing [**V**] below the modal would yield a contradictory statement, but placing it above the modal gives us the right truth-conditions (i.e., the truth-conditions that capture the FC effect). In view of these facts, I will hypothesize that the distribution of [**V**] is constrained by interpretability (see section 7 for further discussion).

Let us start by looking at necessity sentences.



### 3.5.4.2.1. Necessity sentences

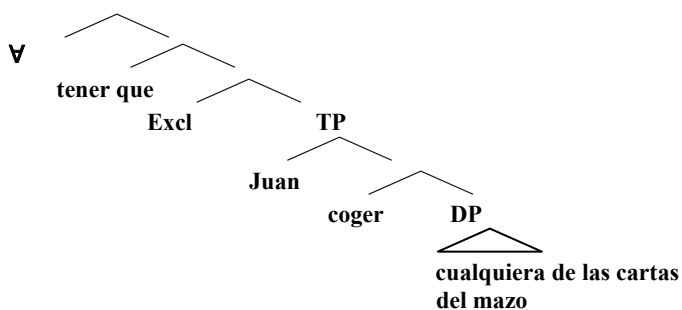
Consider the necessity sentence in (102):

(102) \* Juan tiene que coger cualquiera de las cartas del mazo.

Juan must take any of the cards in the discard pile.

Let us first compute the truth-conditions for the LF in (103) where [**V**] is above the modal.

(103)



In order for the account presented above to give us the right results for modal sentences, modal auxiliaries should let the alternatives project up the tree. Let us assume the following denotation for the necessity modal **tener que**<sup>23</sup>:

<sup>23</sup> The denotations for modal auxiliaries assumed here differ from the ones in Kratzer and Shimoyama (2002). See section 7 for discussion.

$$(104) \quad [[\text{tener que}]]^{w,g} = \{\lambda R_{\langle s, s, t \rangle} \lambda p \lambda w' \forall w'' (R(w')(w'') \rightarrow p(w''))\}$$

The denotation of the clause in the scope of the modal is the set of propositions in (105).

After applying **Excl** to this set of propositional alternatives we get (106).

$$(105) \quad [[\text{TP}]]^{w,g} = \{\text{that Juan takes the Queen, that Juan takes the Ace, that Juan takes the Queen and the Ace}\}$$

$$(106) \quad \text{Excl}([[\text{TP}]]^{w,g}) = \{\text{that Juan takes the Queen but not the Ace, that Juan takes the Ace but not the Queen, that Juan takes the Queen and the Ace}\}$$

Applying the denotation of the necessity modal to (106), we get (107). That is, {that in all accessible worlds Juan takes the Queen but not the Ace, that in all accessible worlds Juan takes the Ace but not the Queen, that in all accessible worlds Juan takes the Queen and the Ace}

$$(107) \quad \{\lambda w' \forall w'' (R(w')(w'') \rightarrow (\exists e(\text{take}'(\text{Juan})(\text{the Queen})(e)(w'')) \& \sim \exists e(\text{take}'(\text{Juan})(\text{the Ace})(e)(w'')))) \& \sim \exists e(\text{take}'(\text{Juan})(\text{the Queen})(e)(w''))), \lambda w' \forall w'' (R(w')(w'') \rightarrow (\exists e(\text{take}'(\text{Juan})(\text{the Ace})(e)(w'')) \& \sim \exists e(\text{take}'(\text{Juan})(\text{the Queen})(e)(w'')))) \& \sim \exists e(\text{take}'(\text{Juan})(\text{The Queen} \oplus \text{the Ace})(e)(w'')))\}$$

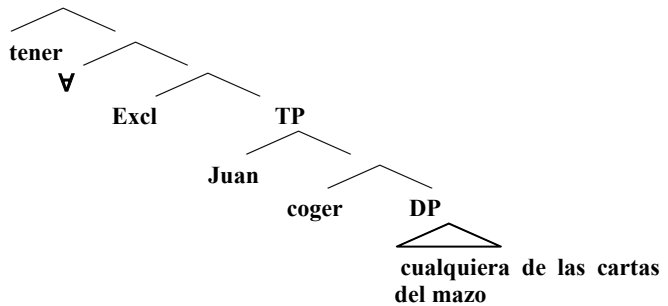
When we apply  $\forall$  to the set of propositional alternatives above, we get the set containing the proposition that is true in a world  $w$  iff

- (i) in all the worlds accessible from  $w$  Juan takes the Queen but not the Ace.
- (ii) in all the worlds accessible from  $w$  Juan takes the Ace but not the Queen.
- (iii) in all the worlds accessible from  $w$ , Juan takes the Ace and the Queen.

There is no world in which this proposition can be true. Hence, the LF in (103) denotes a contradiction.

Let us now consider the case where  $[\forall]$  is below the modal. By the Exclusiveness Hypothesis, **Excl** applies as soon as we get propositional alternatives. Hence,  $[\forall]$  would have to be above **Excl**, as in (108) below:

(108)



The denotation of **Excl(TP)** is repeated below:

(109) {that Juan takes the Queen but not the Ace, that Juan takes the Ace but not the Queen, that Juan takes the Queen and the Ace }

Applying [**V**] to the set in (109) yields the set containing the proposition that is true in a world  $w$  if and only all the propositions in (109) are true in  $w$ . But this is a contradiction: there is no world in which all these propositions are true. Thus, applying the modal to **Excl (TP)** would also yield a contradiction: the proposition that is true in a world  $w$  iff all the propositions in (109) are true in all the worlds accessible from  $w$ .

### 3.5.4.2.2. Possibility sentences

Let us assume the following denotation for the possibility modal **poder**:

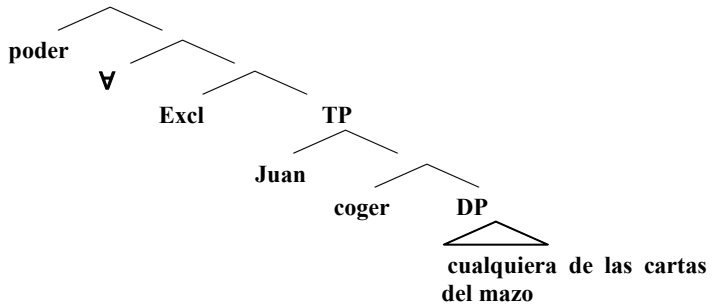
(110)  $[[\mathbf{poder}]]^{w,g} = \{\lambda R_{\langle s,s,t \rangle} \lambda p \lambda w' \exists w'' (R(w')(w'') \ \& \ p(w''))\}$

Consider again the sentence in (111)

(111) Juan puede coger cualquiera de las cartas del mazo  
 Juan can take any of the cards in the discard pile

Let us first look at the LF in (112) where [**V**] is placed below the modal auxiliary:

(112)



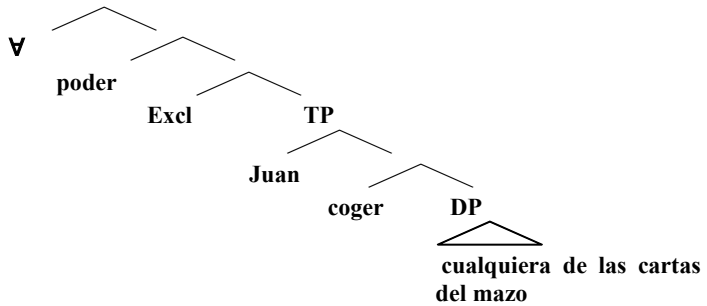
Again, the denotation of  $\text{Excl}(\text{TP})$  is the set of mutually exclusive propositions below:

(113) {that Juan takes the Queen but not the Ace, that Juan takes the Ace but not the Queen, that Juan takes the Queen and the Ace }

Applying  $[\mathbf{V}]$  to the set in (113) yields the contradictory proposition that is true in a world  $w$  if and only all the propositions in (113) are true in  $w$ . When we combine this proposition with the possibility modal we will get a contradiction again, namely, the proposition that is true in a world  $w$  iff there is a world accessible from  $w$  where all the propositions in (113) are true.

Let us now look at the LF in (114), where  $[\mathbf{V}]$  is above the modal auxiliary.

(114)



Applying the denotation of the possibility modal to the denotation of **Excl(TP)** – the set of propositions in (113) above– we get the set of propositions in (115). That is, {that there is an accessible world where Juan takes the Queen but not the Ace, that there is an accessible world where Juan takes the Ace but not the Queen, that there is an accessible world where Juan takes the Queen and the Ace}

(115)  $\{\lambda w' \exists w'' (R(w')(w'') \ \& \ \exists e(\text{take}' \ (\text{Juan})(\text{the Queen})(e)(w'')) \ \& \ \sim \exists e(\text{take}' \ (\text{Juan})(\text{the Ace})(e)(w''))), \lambda w' \exists w'' (R(w')(w'') \ \& \ \exists e(\text{take}' \ (\text{Juan})(\text{the Ace})(e)(w'')) \ \& \ \sim \exists e(\text{take}' \ (\text{Juan})(\text{the Queen})(e)(w''))), \lambda w' \exists w'' (R(w')(w'') \ \& \ \exists e(\text{take}' \ (\text{Juan})(\text{the Queen} \oplus \text{the Ace})(e)(w'')))\}$

Applying the universal quantifier to this set of propositions, gives us the Free Choice effect. The proposition corresponding to the LF in (114) will be true in a world  $w$  iff

- (i) there is a world accessible from  $w$  where Juan takes the Queen but not the Ace.
  
- (ii) there is a world accessible from  $w$  where Juan takes the Ace but not the Queen.
  
- (iii) there is a world accessible from  $w$  where Juan takes the Ace and the Queen.

As shown in section 2, this predicts the sentence in (111) to be true in the Canasta scenario – as desired.

The analysis presented above can be summarized as follows: I have proposed that **cualquiera** is an indeterminate pronoun that must agree with a universal propositional quantifier, whose distribution is constrained by interpretability (see section 7 for further discussion). Furthermore, I have hypothesized that the propositional alternatives generated by **cualquiera** are mapped into a set of mutually exclusive propositions. Putting these two pieces together with a standard semantics for modals and episodic aspect, we derive the right truth conditions for possibility sentences that contain **cualquiera** and the ungrammaticality of **cualquiera** in episodic and necessity sentences. Adopting the Hamblin semantics in Kratzer and Shimoyama (2002) allows us to state the exclusiveness condition in a principled way: the alternatives **Excl** operates on are created by the semantic composition.

The analysis just presented raises a series of questions, which I will discuss in the remainder of the chapter:

- (i) What are the consequences of the Exclusiveness Hypothesis? (section 6)
- (ii) What is the nature of the universal propositional quantifier? Where does it come from? How is its distribution constrained? (section 7)
- (iii) What is the nature of the individual alternatives introduced by **cualquiera**? (section 8)

### 3.6. Mutually exclusive alternatives

Central to the analysis presented in section 3.5 is the idea that the propositional alternatives created by **cualquiera** are mapped into a set of mutually exclusive propositions. But claiming that **cualquiera** itself introduces the exclusiveness requirement does not seem plausible: there is no obvious way of tying exclusiveness to the lexical entry of **cualquiera** (see section 4 above<sup>24</sup>). Angelika Kratzer suggests we adopt the working hypothesis that propositional alternatives are always excluded. On this hypothesis, **Excl** would apply as soon as possible after each introduction of an indeterminate (where ‘as soon as possible’ means ‘as soon as we get propositional alternatives’)<sup>25, 26</sup>. Let us dub this the Obligatory Exclusification Hypothesis.

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<sup>24</sup> Furthermore, there are additional reasons for not wanting to hard-wire the exclusiveness condition in the semantics of **cualquiera**. As we will see in Chapter 5, there are some constructions with **cualquiera** that do not seem to involve exclusiveness.

<sup>25</sup> LSA lecture, MIT, July 19 2005.

<sup>26</sup> As Danny Fox (p.c.) pointed out to me, we would need exclusification to apply only at the lowest point possible. Otherwise, we would predict possibility sentences with **cualquiera** to denote contradictions. The issue of how exactly to impose this constraint deserves further investigation.



In this section, I will explore the consequences this move has for other constructions that involve propositional alternatives. First, I will show that the Obligatory Exclusification Hypothesis derives wrong truth conditions for sentences like **Juan has two cats**. Second, I will discuss how this problem may disappear if we adopt the account of scalar implicatures put forward in Kratzer (2003)<sup>27</sup>

In the Hamblin semantics I am adopting here, all indeterminate pronouns introduce alternatives. This, together with the Obligatory Exclusification Hypothesis, yields wrong results for sentences that contain scalar items. In particular, we predict scalar implicatures to be part of the truth-conditional content of the sentence. In order to see why, let us compute the denotation of the sentence in (116).

(116) Juan has two cats

In the current framework, the denotation of **two cats** in a world  $w$  will be the set of all sums of cats that are composed of two atomic cats in  $w$ :

(117)  $[[\mathbf{two\ cats}]]^{w,g} = \{x: \text{cat}(x)(w) \ \& \ /x/ = 2\}$ <sup>28</sup>

Let us assume that there are only three cats in  $w$ , Yoli, Piti and Moti. The denotation of **two cats** in  $w$  will then be:

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<sup>27</sup> These issues have been discussed by Angelika Kratzer in her 2005 LSA lectures.

<sup>28</sup>  $/x/ = n$  stands for 'x consists of n atomic individuals.'

(118)  $[[\text{two cats}]]^{w,g} = \{\text{Yoli}\oplus\text{Piti}, \text{Yoli}\oplus\text{Moti}, \text{Moti}\oplus\text{Piti}\}$

Combining **two cats** with **Juan** and **has**, and applying **Excl** to the result we will get the set of propositional alternatives in (119).

(119) {that Juan has Yoli $\oplus$ Piti and no other cats, that Juan has Yoli $\oplus$ Moti and no other cats, that Juan has Moti $\oplus$ Piti and no other cats}

**Two cats** can only have an existential reading (the sentence **Juan has two cats** can be paraphrased as ‘there are two cats that Juan has’). Thus, the set in (119) will be operated on by the  $\exists$  quantifier. As a result, the sentence in (116) will denote the singleton set containing the proposition that is true in a world  $w$  iff at least one of the propositions in (119) is true in  $w$ . But these propositions are true only in worlds where Juan has exactly two cats. Thus, we predict the meaning of (116) to be the singleton set containing the proposition that Juan has exactly two cats. This is wrong. The ‘exactly’ inference associated with sentences like (116) is a mere conversational implicature, a pragmatic inference that the hearer draws based on the assumption that the speaker is obeying Grice’s Maxims of Conversation. Examples like (120) show that this inference can be cancelled without contradiction and, hence, that is not part of the truth-conditional content of the sentence.

(120) Juan has two cats. In fact, he has three.

The same situation arises with other indeterminate pronouns that trigger scalar implicatures: For instance, we will predict that **Juan eat some of the cookies** is false if Juan ate all of the cookies.

So there seems to be no hope for the idea that propositional alternatives are always excluded... Or is there? Kratzer (2003) has argued that if we work within a situation semantics we can maintain that the ‘exactly’ inference of sentences like (116) is part of the truth-conditions after all. In what follows, I will present Kratzer’s proposal.

I will start by introducing the basic ingredients of the situation semantics developed in Kratzer (1989a).

In Kratzer’s situation semantics, possible situations are parts of possible worlds. The ‘part of’ relation  $\leq$  determines a partial order on the set of all possible situations  $S$  such that the following condition is satisfied:

(121) For all  $s \in S$ , there is a unique  $s' \in S$  such that  $s \leq s'$  and for all  $s'' \in S$ , if  $s' \leq s''$ , then  $s'' = s'$ . (Kratzer 2002: 660)

That is, every possible situation  $s$  is related to a unique maximal situation, which is the world of  $s$ .

In this system, propositions are sets of possible situations, rather than sets of possible worlds. The notion of truth in a situation is defined as follows:

(122) A proposition  $p$  is true in a situation  $s \in S$  iff  $s \in p$ .

It is possible for a proposition  $p$  to be true in a situation  $s$  and false in the world of  $s$ . Consider, for instance, the sentence in (123)a) On the system presented above, this sentence will denote the proposition in (123)b), the set of situations in which there are exactly two books.

- (123) (a) There are exactly two books.
- (b)  $\{s: \text{there are exactly two books in } s\}$

Suppose that there are exactly two books in my office. Then, the actual situation  $s_1$  that contains just my office belongs to the set in (123)b) and, hence, the proposition expressed by (123)a) is true in  $s_1$ . But the proposition expressed by (123)a) is definitely not true in the actual world. The actual world contains many more than two books, and, therefore, is not an element of the set in (123)b)<sup>29</sup>.

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<sup>29</sup> This is the view presented in Kratzer (2003). In her 1989 article, Kratzer analyzes cases like (123) in a different way. According to Kratzer (1989a), all propositions expressible by utterances of natural language sentences are persistent (a proposition  $p$  is persistent iff whenever  $p$  is true a situation  $s$ ,  $p$  is also true in all the situations of which  $s$  is a part). This entails that if a proposition  $p$  is true in  $s$ ,  $p$  is also true in the world of  $s$ . The sentence in (123) will not be a counterexample for this claim as long as we assume that the domain of books we are considering may be restricted by the context of utterance. On this account, which proposition is expressed by an utterance of (123) will depend on the utterance situation. It may be the proposition that there are exactly two books in my office, or that there are exactly two books in the department, or that there are exactly two books in my house...

Now, what about the proposition expressed by the sentence (124)?

(124) There are two books.

Kratzer claims that assertions come in two kinds, strong assertions and weak assertions. A strong assertion of a proposition  $p$  conveys the information that  $p$  is true in a contextually salient situation. A weak assertion of the proposition  $p$  says that there is some actual situation in which  $p$  is true.

(125) (a) Strong assertion:

$p(s_0)$

(b) Weak assertion:

$\exists s [s \leq w_0 \ \& \ p(s)]$

The strong assertion  $p(s_0)$  logically implies the weak assertion  $\exists s [s \leq w_0 \ \& \ p(s)]$ .

Let us assume that the sentence in (124) has as its basic meaning ‘that there are exactly two books’. Out of context, the maxim of quantity (be as informative as possible) will create a bias in favor of strong assertion. In those cases, when we utter the sentence in (124), we will be saying that the proposition that there are exactly two books is true in a contextually salient situation. Then, we will get the strong meaning that is traditionally argued to be the conjunction of the truth-conditional meaning (Juan has at least two

books) and a scalar implicature (Juan doesn't have more than two books.) Cases of 'implicature cancellation' will be analyzed as cases of weak assertion. Here is an example from Kratzer (2003).

- (126) You: Did anybody use two towels?  
Me: Yes, I did. In fact, I even used three.

(Kratzer 2003: 18)

What is at issue here is the existence of a situation in which at the reference time somebody used (exactly) two towels. My answer is thus, an example of weak assertion: there is a situation s in which I used exactly two towels. This is compatible with my having used a total of more than two towels. Hence, the addition of the second sentence ('in fact, I even used three') doesn't create a contradictory discourse.

Compare this with the example below, where what is at issue is the maximal number of towels I used, that is, the exact number of towels that I used in the actual world at the reference time.

- (127) You: How many towels did you use?  
Me: #Two. In fact, I even used three.

Kratzer's proposal opens up the possibility that exclusification of propositional alternatives is obligatory after all. In order for all the pieces to fit together, the analysis in

section 5 would need to be recast in a situation semantics, something that I will have to leave for future work.

### 3.7. The status of [V]

Kratzer and Shimoyama suggest in passing that the operators indeterminate pronouns associate with may be contributed by inflectional categories: “like ‘episodic’ or ‘generic aspect’, inflectional negation and wh-complementizers” (Kratzer and Shimoyama 2002: 26). On this view, the [V] operator would be introduced by generic (imperfective) aspect.<sup>30</sup> As a result, **cualquiera** would be ruled out in episodic sentences like (128) simply because its [V] feature does not have an operator to agree with.

(128) \*Juan cogió cualquiera de las cartas del mazo.

Juan took-pfv. any of the cards in the discard pile.

There is evidence, however, that [V] is not supplied by generic aspect: As Dayal (1998) noted for FC **any**, universal FC items are acceptable in sentences that do not involve verbal genericity, witness (129).

(129) Cualquier estudiante podría haber estado aquí ayer.

Any student could have been here yesterday.

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<sup>30</sup> For the connection between imperfective aspect in Romance and universal quantification, see Bonomi (1997).

If [∀] is not contributed by inflectional morphology, where does it come from? How is it introduced into the representation? As anticipated by the discussion in 5.4.2., I will hypothesize that [∀] is freely inserted, up to interpretability<sup>31,32</sup>. According to this hypothesis, [∀] can be inserted in any place in the structure in which it (i) can agree with a universal FC item, (ii) can operate over a set of propositional alternatives, (iii) does not produce a fatal contradiction and (iv) does not block agreement between another indeterminate and its corresponding matching operator (i.e., does not create an intervention effect<sup>33</sup>). As shown in 5.4.2., this hypothesis predicts that, in possibility sentences, [∀] will necessarily occupy a position above the modal – if placed below the modal, it would give rise to a contradiction.

If the distribution of [∀] is constrained by its semantics in the way described above, then episodic and necessity sentences with **cualquiera** will be ruled out because the universal propositional quantifier that **cualquiera** must agree with is not licensed in those constructions.

My proposed analysis of **cualquiera** also has consequences for the distribution of the existential propositional quantifier.

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<sup>31</sup> This possibility was suggested to me by Angelika Kratzer (p.c.).

<sup>32</sup> An alternative possibility would be to assume that indeterminate pronouns that are specified as existentials, negative, or universal introduce existential, negative or universal operators themselves. On this view, these selective indeterminate pronouns could be seen as split quantifiers, which would contribute both a set of individual alternatives and a propositional quantifier. However, the analysis for necessity sentences like (v) below that I will propose in Chapter 5 is incompatible with this possibility.

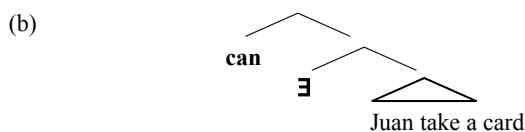
(v) Cualquier estudiante trabaja duro.  
Any student works hard.

<sup>33</sup> For discussion of intervention effects, see Kratzer and Shimoyama (2002).



As noted above, the denotation of the modals I have assumed differs from that adopted in Kratzer and Shimoyama (2002). Kratzer and Shimoyama assume that the scope of the modal operator is immediately closed by the operator  $\exists$ , as shown below. (Existential closure of the scope of certain operators has been argued for in Heim 1982.)

(130) (a) Juan can take a card



This assumption is necessary in order to derive the truth conditions of sentences like **Juan can take a card** – on the narrow scope reading of **a card**:

(131)  $[[\text{Juan can take a card}]]^{w,g} =$   
 $\{\lambda w' \forall w'' (R(w')(w'') \rightarrow \exists x (\text{card}(x)(w'') \ \& \ \exists e (\text{take}(j)(x)(e)(w''))))\}$

But assuming obligatory Existential Closure in the scope of a modal would yield wrong results for **cualquiera**. Given my analysis, in order to get the right truth-conditions for sentences like (132), the modal must let the alternatives project up the tree.

(132) Juan puede coger cualquier carta

Juan can take any card.

To derive the right truth conditions for both (130) and (132), we need to assume that Existential Closure of the scope of the modal operator may apply only when the proposition in the scope of the modal contains an existential indeterminate pronoun. This is exactly what we would get if all propositional operators were freely available up to interpretability. Thus, we can tentatively formulate the following hypothesis:

(133) Propositional quantifiers are freely available up to interpretability.

Further research is needed to determine the consequences of this hypothesis.

### **3.8. The nature of the individual alternatives**

In this section, I briefly discuss the nature of the individual alternatives introduced by **cualquiera**. Section 8.1. shows that we need to assume that the set denoted by a **cualquier**-phrase contains both singular and plural individuals. Section 8.2. suggests that the alternatives introduced by **cualquiera** may include possible individuals.

#### **3.8.1. Number**

The following example shows that the set of alternatives introduced by **cualquiera** always contains both singular and plural individuals, even in cases where **cualquiera** combines with a singular count noun.

Suppose that we are investigating a robbery, and we suspect Juan. We need to interrogate all the students in the department Juan may have talked to about his plans. At this point in our investigations, we have no way of discarding any possibilities. Let us assume that the only students in the department are Sally, Martha and Bob. Then, our epistemic alternatives are as in (134). That is, according to the evidence we have, Juan may have talked only to Sally, only to Martha, only to Bob, only to Sally and Martha, only to Martha and Bob, only to Bob and Sally, or to all three students.

- (134) w1            Juan talked to Sally and to no other student in the department  
w2            Juan talked to Martha and to no other student in the department  
w3            Juan talked to Bob and to no other student in the department  
w4            Juan talked to Sally $\oplus$ Martha and to no other student in the department.  
w5            Juan talked to Martha $\oplus$ Bob and to no other student in the department.  
w6            Juan talked to Sally $\oplus$ Bob and to no other student in the department.  
w7            Juan talked to Sally $\oplus$ Martha $\oplus$ Bob.

The sentence in (135) can felicitously describe this scenario.

(135) Juan puede haber hablado sobre sus planes con cualquier estudiante del departamento.

Juan might have talked about his plans to any student in the department.

However, if the set of alternatives introduced by **cualquiera** consisted only of the three atomic individuals Sally, Martha and Bob, the epistemic alternatives of the speaker would look as in (136) and, hence, the sentence in (134) would be predicted to be false in the scenario above – contrary to fact.

(136)

- w1            Juan talked to Sally and to no other student in the department
- w2            Juan talked to Martha and to no other student in the department
- w3            Juan talked to Bob and to no other student in the department

To make the right prediction, we will need **cualquier estudiante** to denote the set {Sally, Martha, Bob, Sally $\oplus$ Martha, Martha $\oplus$ Bob, Sally $\oplus$ Bob, Sally $\oplus$ Martha $\oplus$ Bob}. That is, all the elements of the complete semi-lattice generated by the set of atomic individuals {Sally, Martha, Bob}.

In order to get this result, we will need to assume that Spanish nouns that bear singular morphology are number-neutral, i.e., that they denote predicates that are true of both singular and plural individuals. On this view, the denotation of **estudiante** in w will be

the set of individuals that consist at least of one atomic student in  $w$  and that do not have any part that is not a student in  $w$ .

Support for the number-neutral hypothesis comes from the denotation of **algún** –NPs. Sentences like (137) below, from Alonso Ovalle and Menéndez-Benito (2003), can felicitously describe situations where two or more Finnish authors discuss Spanish indefinites (see Alarcos Llorach (1994))

(137) **Algún** autor finlandés habla de los indefinidos en español

Some Finnish author talks about the indefinites in Spanish

On the other hand, the sentence in (138), which contains the indefinite **un**, strongly suggests that there is only one Finnish author that discusses Spanish indefinites.

(138) **Un** autor finlandés habla de los indefinidos en español

A Finnish author talks about the indefinites in Spanish

This suggests that whether an indeterminate phrase denotes a set of atoms or not would depend on the indeterminate pronoun.<sup>34</sup>

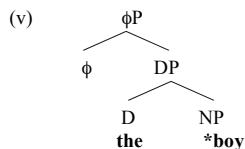
### 3.8.2. Possible individuals

Recent accounts of universal FC items argue that these items have an intensional component (see, e.g., Dayal 1998, 2004a, 2004b; Giannakidou 2001; Saeboe 2001). Given what I have said in this chapter, do we still need the modal assumption?

This assumption is not necessary to account for the ungrammaticality of universal FC items in episodic and necessity sentences. In fact, in the examples we have analyzed, only actual individuals were under consideration. However, there are reasons to believe that the individual alternatives introduced by universal FC items also include possible individuals that are not actual: Both FC **any** (see Vendler 1967) and **cualquiera** are counterfactual supporting. For instance, the sentence in (139) supports the counterfactual in (140).

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<sup>34</sup> This idea might fit with the view of number features put forward in Sauerland (2003). Sauerland claims that the DP **the boy** has the syntactic structure below, where **\*boy** is a number-neutral predicate, and the semantically contentful number features are expressed in the  $\phi$  head.



(139) Mata-Hari puede seducir a cualquier diplomático

Mata-Hari can seduce any diplomat.

(140) If you were a diplomat, Mata-Hari could seduce you.

While an analysis of this fact is beyond of the scope of this work, I take it to suggest that the set of alternatives introduced by universal FC items include possible individuals, as in (141).

(141)  $[[\text{cualquier estudiante}]]^{w,g} = \{x: \exists w' (C(w)(w') \ \& \ \text{student}'(x)(w'))\}$

By making this move, we incorporate one of the key components of Dayal's theory, according to which FC items – understood as modal quantifiers – range over possible individuals.

## CHAPTER 4

### DISPOSITIONAL SENTENCES

The account developed in Chapter 3 predicts universal FC items to be good in possibility sentences like (1): in such sentences, a contradiction is avoided since the possibility modal distributes the mutually exclusive propositions generated by the FC item across different worlds.

- (1) Puedes coger cualquier carta.

You may take any card.

In this chapter, I will investigate another type of sentences in which universal FC items are licensed, namely cases like (2) through (4) below.

- (2) Esta impresora imprime cualquier documento.

This printer prints any document.

- (3) Este coche funciona con cualquier gasolina.

This car works with any gas.

- (4) Juan bebe cualquier (tipo de) cerveza.

Juan drinks any (kind of) beer.



I will argue that sentences like the above contain a covert possibility modal and, thus, that they fall under the general explanation given for possibility sentences in Chapter 3. This discussion will shed light on the semantics of verbal genericity, and will make a contribution to the research program that investigates the distribution and interpretation of covert modality (see, e.g., Bhatt 1999).

The bulk of the chapter is devoted to the semantics of sentences like (5), which do not contain a FC item. At the end of the chapter, I will briefly return to sentences like (2) through (4).

(5) Esta impresora imprime cien páginas por minuto.

This printer prints a hundred pages a minute

#### 4.1. Dispositional sentences

Generic sentences like (6)<sup>1,2</sup> are often claimed to have two distinct readings: a dispositional<sup>3</sup> reading and a habitual reading (see Lawler 1973, Dahl 1975, Schubert and Pelletier 1989, Green 2000, among others). On its dispositional reading, (6) means that the printer has the ability of printing a hundred pages a minute. On its habitual reading, (6) says that the printer habitually prints a hundred pages a minute.

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<sup>1</sup> In this section, I will use only English examples. Everything I say here applies to the corresponding Spanish examples as well.

<sup>2</sup> Green (2000) discusses African American English examples like (i) below

(i) This printer print a hundred pages a minute.

<sup>3</sup> Some authors (e.g., Green 2000) use the term 'capacity reading' instead.

(6) This printer prints a hundred pages a minute.

The same point is illustrated by the examples in (7) through (9). On their dispositional reading, these sentences are interpreted as saying that the car is able to go 200 kph, that Kim can read German and that Mary does not object to eating meat. On their habitual reading, they convey that the car regularly goes 200 kph, that Kim habitually reads German, and that Mary eats meat regularly.

(7) This car goes 200 kph. (Schubert and Pelletier 1989: 216)

(8) Kim reads German. (Schubert and Pelletier 1989: 216)

(9) Mary eats meat.

On their dispositional reading, generic sentences license universal FC items, as illustrated by the examples below.

(10) (a) This printer prints any document.

‘This printer is able to...’

(b) Esta impresora imprime cualquier documento.

This printer prints any document

‘This printer is able to...’

(11) (a) Mary eats any (kind of) meat.

‘Mary does not object to...’

(b) Mary come cualquier (tipo de) carne

Mary eats any (kind of) meat

‘Mary does not object to...’

A widespread approach to genericity takes all generic sentences to involve universal quantification over worlds (see Krifka et al. 1995 for discussion and references). On this view, which I will dub “the Universal Modal Approach”, the acceptability of universal FC items in dispositional sentences is puzzling, given the analysis presented in Chapter 3. In section 2, I will discuss the Universal Modal Approach and argue that it can only account for the semantics of dispositional sentences under some assumptions that are not empirically justified. In section 3 I will explore the hypothesis, originally put forward by Dahl (1975), that dispositional sentences express possibilities i.e., that they involve existential quantification over worlds. I will suggest that the immediate difficulties faced by this proposal may be overcome once we take a closer look at the type of modality expressed.

## 4.2. The Universal Modal Approach

### 4.2.1. The structure of generic sentences

As we have seen in Chapter 2, according to one widespread view sentences like (12) contain an invisible adverbial quantifier ("the generic operator", **GEN**) close in meaning to **usually** or **typically** (see, for instance, Farkas and Sugioka 1983, Krifka 1987, Wilkinson 1986, Krika et al 1995, Cohen 1999). On this account, the sentence in (12) is represented as (13), which can be roughly paraphrased as 'typically, if x is a dog, x barks'.

(12) A dog barks.

(13) **GEN** [x] (x is a dog ; x barks)

While in sentences like (12) **GEN** can be taken to range over individuals, in other cases it clearly quantifies over situations or events<sup>4</sup>. For instance, Krifka et al. (1995) give the sentence in (14) the representation in (15), where s is a variable over situations.

(14) Mary smokes when she comes home.

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<sup>4</sup> There has been much discussion about whether adverbs of quantification are unselective binders (as proposed by Lewis 1975), or bind only situation or event variables. (For the latter view, see, e.g., Schubert and Pelletier 1989, Heim 1990, von Stechow 1994, 1995 and Percus 1997, among many others.) The arguments I present in this chapter are compatible with both views.

(15) GEN [x, s] (x = **Mary & Mary** in s & **Mary comes home** in s; x **smokes** in s)

(Krifka et al. 1995: 30)

Quantifying over situations is a tricky business due to the part-whole structure of the domain. In what follows, I will sketch the main issues that arise when we quantify over situations, as discussed by Kai von Stechow and Angelika Kratzer (von Stechow 1995; Kratzer 1990, 1998b, 2002), and present the semantics for adverbs of quantification put forward in von Stechow 1995, with modifications taken from Kratzer's work and from Rothstein 1995.

#### 4.2.1.1. Quantifying over situations

As argued by von Stechow (1995)<sup>5</sup>, when we count situations we do not count situations of just any size. Consider von Stechow's example below:

(16) John climbed Mt. Holyoke twice.

(von Stechow 1995: 5)

If the domain of the adverb **twice** consisted of all situations in which John climbed Mt Holyoke, the sentence above would come out true in a world in which John only climbed Mt. Holyoke once. Even if John climbed Mt Holyoke only once, there will be

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<sup>5</sup> At the time of writing, von Stechow posted some notes on counting situations (<http://mit.edu/stechow/www/counting.pdf>), which, due to time constraints, I have been unable to incorporate into this work.

many situations in which John climbed Mt Holyoke. Take for instance, the situation that contains both John's climbing and the dinner he had afterwards. (von Fintel 1995: 5).

In order to solve this problem, von Fintel proposes that what we count are minimal situations in which John climbed Mt. Holyoke. Minimality is defined as follows:

(17) For any set of situations S, the set of minimal situations in S,  $\min(S) =$

$$\{s \in S: \forall s' \in S (s' \leq s \Rightarrow s' = s)\}$$

(Berman 1987, Heim 1990)

That is, the minimal situations in a set of situations S are those that do not have proper parts that are also in S.

Von Fintel goes on to claim that adverbs of quantification like **always** or **often** quantify over the minimal situations in their first argument: an adverbially quantified sentence **d-when p-q** (where **d** is the adverb of quantification) will be true in a situation s iff d-many of the minimal p-situations that are accessible from s<sup>6</sup> are part of a q-situation (von Fintel 1995: 7). For instance, the sentence in (18) will be true in s iff many of the minimal situations s' in which Kim visits her parents and that are accessible from s are part of a situation s'' in which Kim takes the train.

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<sup>6</sup> The accessibility relation is included to account for the modal character of some adverbs of quantification (e.g., **usually**, **traditionally**).

(18) When Kim visits her parents, she often takes the train.

(von Fintel 1995: 3)

But, as pointed out by Angelika Krater (in p.c. to von Fintel), there are propositions that do not seem to have minimal situations, namely atelic propositions. Consider, for instance, an atelic predicate like **run**: any running situation has proper parts that are also running situations. And, as von Fintel himself notes, even if we could identify some very small indivisible running situations, those would not be what adverbs of quantification range over. For, instance, when we interpret the sentence in (19), we seem to be counting situations in which John "starts to run, runs and stops" (von Fintel 1995: 5).

(19) Often, when John runs, he wears his old tennis shoes.

(von Fintel 1995: 5)

Angelika Kratzer argues that when we count situations, what we are counting are situations that exemplify the relevant proposition. The notion of situation that exemplifies a proposition is defined in (20) (see Kratzer 1990, 1998b, 2002)

(20) A situation  $s$  exemplifies a proposition iff

(i)  $p$  is true in  $s$

and

(ii) any subsituation of  $s$  in which  $p$  is not true can be extended into a subsituation of  $s$  that is a minimal situation in which  $p$  is true.

In her 2005 LSA lectures, Angelika Kratzer added the requirement that the situations we count be maximal spatiotemporally connected situations that exemplify the relevant proposition. For instance, in (19) we would be counting maximal spatiotemporally connected situations that exemplify the proposition 'John runs' (that is, situations in which John starts to run, runs and stops.)

So can we paraphrase (19) as below<sup>7</sup>?

(21) Many maximal spatiotemporally connected situations that exemplify the proposition 'John runs' are part of a situation in which John wears his old tennis shoes.

No. This paraphrase makes wrong predictions: Suppose that John has gone for twenty runs in his life, and worn his old tennis shoes only in one occasion. In this scenario, the

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<sup>7</sup> Here and in what follows, I will leave the accessibility relation out for simplicity's sake.



sentence in (19) is clearly false. However, the paraphrase in (21) is true: many (in fact, all) of the maximal spatiotemporally connected situations that exemplify the proposition 'John runs' are part of a situation in which John wears his old tennis shoes –the situation that comprises John's life so far.

We need to be able to map different situations in the first argument of the quantifier onto different situations in the second argument. That is, we need something like Rothstein's Matching Function (Rothstein 1995). Rothstein assigns the sentence in (22) the representation in (23), where  $M$  is a function that maps events onto events. This formula says that for every bell-ringing event  $e$  there is an event  $e'$  of opening the door by Mary that is mapped to  $e$ . The matching function  $M$  ensures that there will be at least as many door openings as bell ringings.

(22) Every time the bell rings, Mary opens the door.

(23)  $\forall e$  [[RING ( $e$ ) & Th( $e$ , THE BELL)]  $\rightarrow$   $\exists e'$  [OPEN ( $e'$ ) & Ag( $e'$ ) = MARY & Th( $e'$ ) = THE DOOR &  $M(e') = e$ ]]

Adding the matching function to (21), we get:

(24) Many situations  $s$  that are maximal spatiotemporally connected situations that exemplify the proposition 'John runs' are part of a situation  $s'$  such that John wears his old tennis shoes in  $s'$  and  $M(s') = s$ .

More generally, I will take adverbially quantified sentences of the form **d-when p-q** to be paraphrased as follows: d-many situations *s* that are maximal spatiotemporally connected situations that exemplify *p* are part of a situation *s'* such that *q* is true in *s'* and  $M(s') = s$ .

Let us go back to generic sentences with no overt adverb of quantification.

In cases like (14) above, repeated below as (25), the **when**-clause provides the restriction for the generic operator.

(25) Mary smokes when she comes home.

(26) **GEN** [*x, s*] (*x* = **Mary & Mary in s & Mary comes home in s**; *x* **smokes in s**)

What about examples like (27), which do not have an overt restrictor?

(27) Mary smokes

Krifka et al. (1995) propose that this sentence should be represented as in (28), and that **GEN** is interpreted "in such a way that, in and of itself, it takes into account only those situations that are relevant for the generalization at hand" (Krifka et al. 1995: 31). In the following section, I discuss such an approach to the semantics of the generic operator: the Universal Modal Approach.

(28) GEN [x, s] (x = **Mary & Mary** in s; x **smokes** in s))

#### 4.2.2. GEN as a modal quantifier

The modal analysis of the generic operator, as presented by Krifka et al. (1995), assumes the semantics for modal elements in natural language put forward in Kratzer (1981, 1991). In what follows, I will very briefly present the key elements of Kratzer's theory of modality.

##### 4.2.2.1. Kratzer's theory of modality

According to Kratzer (1981,1991), modal statements are evaluated with respect to two conversational backgrounds (functions from possible worlds to sets of propositions): a modal base and an ordering source.

The modal base determines, for every world, the set of worlds that are accessible from it. For instance, in (29), **in view of what we know** signals that the intended modal base is the function that maps a possible world to the set of propositions that we know in that world. Given this modal base, the set of worlds accessible from a world of evaluation  $w$  will be those worlds in which all the propositions we know in  $w$  are true.

(29) In view of what we know, John must have murdered Smith.

The ordering source imposes a partial order on the worlds selected by the modal base. To see why this second parameter is necessary, consider the following example, from von Fintel and Heim (2005)<sup>8</sup>.

(30) John must pay a fine.

The truth of (30) in a world  $w$  depends on (i) what the facts in  $w$  are (what John has done), and (ii) what the law in  $w$  is. For instance, (30) will be judged as true if (i) the law states that nobody obstructs a driveway, (ii) the law states that anybody who obstructs a driveway pays a fine, and (iii) John has obstructed a driveway. However, the facts and the law cannot have the same weight in determining the set of worlds that we quantify over. Suppose that they did. Then, given a world of evaluation  $w$ , the domain of quantification of the modal would be the set in (31) below.

(31)  $\{w': \text{what happened in } w' \text{ up to now is the same as what happened in } w \text{ and } w' \text{ conforms to what the law in } w \text{ states}\}$

But this cannot be right. Unless there have been no infractions of the law in  $w$ , the domain of quantification of the modal will be empty. So, given that **must** expresses universal quantification over worlds, the sentence in (29) is predicted to follow logically from the proposition that John broke some law.

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<sup>8</sup> The discussion below follows the presentation in von Fintel and Heim (2005) closely.

In Kratzer's proposal, this problem is avoided by ordering the worlds in the domain of quantification according to how well they conform to the law in  $w$ . Let us see how.

The sentence in (30) is evaluated with respect to a circumstantial modal base, a function that assigns to any world the set of relevant circumstances in that world. Suppose that in the evaluation world, John has obstructed a driveway. Then, the set of worlds quantified over will only contain worlds in which John has obstructed a driveway. The ordering source is deontic, a function that assigns to every world the set of propositions that constitute the law in that world. We can use such a set of propositions to order the worlds in the modal base, as follows:

- (32) For any pair of worlds,  $w_1$  and  $w_2$ ,  $w_1$  comes closer than  $w_2$  ( $w_1 <_P w_2$ ) to the ideal set up by a set of propositions  $P$  iff the set of propositions belonging to  $P$  that are true in  $w_2$  is a proper subset of the set of propositions belonging to  $P$  that are true in  $w_1$ .

In our example, any world where John pays a fine will be closer to the ideal set up by the law than any world where he doesn't.

Let us now define a function that selects the best worlds from any set  $X$  of worlds with respect to a partial order  $<_P$ .

- (33)  $\forall X \subseteq W: \max_P(X) = \{w \in W: \sim \exists w' \in X: w' <_P w\}$

And, finally, let us formulate the semantics of **must** so that it makes a claim only about the worlds in the modal base that are the best worlds with respect to the ordering source.

$$(34) \quad [[\mathbf{must}]]^w = \lambda f_{\langle s, s, t \rangle} \lambda g_{\langle s, s, t \rangle} \lambda q_{\langle s, t \rangle} \lambda w \forall w' \in \max_{g(w)}(\cap f(w)): q(w')$$

[f is the modal base; g is the ordering source]

That is, **must** (**q**) will be true in a world *w*, with respect to a modal base *f*, and a ordering source *g*, iff *q* is true in all the worlds where all the propositions in *f*(*w*) are true and that are closest to the ideal set up by *g*(*w*)<sup>9</sup>.

Since, in our scenario, the best worlds in the modal base, with respect to the ordering source, are the worlds in which John pays a fine, (30) comes out true in that scenario. But note that now (30) is not predicted to follow logically from the proposition that John broke some law. This is the right result.

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<sup>9</sup> The definitions above, from von Stechow and Heim (2005) ((34) has been modified slightly so as to make it consistent with the framework I am using here), constitute a simplification of Kratzer's proposal. The semantics for modal statements presented above only works if we can in general assume that there are always accessible worlds that come closest to the ideal set up by the ordering source. Lewis (1973) argued that we cannot make this assumption, which he calls the Limit Assumption. Kratzer follows Lewis in this respect and, hence, her semantics for modals is more complicated than what I have presented here. The reader is referred to Kratzer 1981, 1991 for details.

#### 4.2.2.1.1. Two types of modal bases

Kratzer (1991) argues that we need to distinguish two types of modal bases: epistemic modal bases and circumstantial modal bases.

Consider the two sentences below, from Kratzer (1991).

- (35) (a) Hydrangeas can grow here.  
(b) There might be hydrangeas growing here.

The two examples differ in meaning as follows: "Suppose I acquire a piece of land in a far away country and discover that soil and climate are very much like at home, where hydrangeas prosper everywhere. Since hydrangeas are my favorite plants, I wonder whether they would grow in this place and inquire about it. The answer is [(35)a)] In such a situation, the proposition expressed by [(35)a)] is true. It is true regardless of whether it is or isn't likely that there are already hydrangeas in the country we are considering. All that matters is climate, soil, the special properties of hydrangeas, and the like. Suppose now that the country we are in has never had any contacts whatsoever with Asia or America, and the vegetation is altogether different from ours. Given this evidence, my utterance of [(35)b)] would express a false proposition. What counts here is the complete evidence available. And this evidence is not compatible with the existence of hydrangeas. [(35)a)] together with our scenario illustrates the pure circumstantial reading of the modal *can*. The pure circumstantial reading of modals is

characterized by a circumstantial modal base and an empty ordering source [PMB: the function which assigns the empty set to every possible world] [(35b)] together with our scenario illustrates the epistemic reading of modals (the ordering source may or may not be empty here). Circumstantial and epistemic conversational backgrounds involve different kinds of facts. In using an epistemic modal, we are interested in what else may or must be the case in our world given all the evidence available. " (Kratzer 1991: 646).

#### **4.2.2.1.2. Types of ordering sources for circumstantial modal bases**

Both circumstantial and epistemic modal bases can be combined with different types of ordering sources. Since the modal sentences I will be focusing on this chapter involve circumstantial modal bases, in what follows I will not discuss the ordering sources that can combine with epistemic modal bases.

As noted above, the pure circumstantial reading of modals involves a circumstantial modal base and an empty ordering source. That is, on the pure circumstantial reading, the domain of quantification of a modal statement will consist of all the worlds where the relevant circumstances are true.

Apart from the empty conversational background, circumstantial modal bases can combine with normative ordering sources such as "what the law provides, what is good for you, what is moral, what we aim at, what we hope, what is rational, what is normal, what you recommended, what we want..." (Kratzer 1991: 647).



#### 4.2.2.2. The modal analysis of GEN

According to the modal account, the generic operator is interpreted as in (36).

- (36) **GEN** [ $x_1 \dots x_i$ ;  $y_1 \dots y_i$ ] (**Restrictor**; **Matrix**) is true in  $w$  relative to a modal base  $B_w$  and an ordering source  $\leq_w$  iff

For every  $x_1 \dots x_i$  and every  $w' \in B_w$  such that  $w'$  is among the best worlds with respect to  $\leq_w$  and such that **Restrictor** [ $x_1 \dots x_i$ ] is true in  $w'$ ,  $\exists y_1 \dots y_i$ , **Matrix** [ $\{x_i\}, \dots \{x_j\}, y_1 \dots y_i$ ] is true in  $w'$ .<sup>10,11</sup>

Thus, the sentence in (37) will receive the interpretation in (38).

- (37) A lion has a bushy tail

- (38) **GEN** [ $x$ ;  $y$ ] (**x is a lion**; **y is a bushy tail & x has y**) is true in  $w$  relative to a modal base  $B_w$  and an ordering source  $\leq_w$  iff for every  $x$ , for every  $w' \in B_w$  such that  $w'$  is among the best worlds with respect to  $\leq_w$  and such that 'x is a lion' is true in  $w'$ ,  $\exists y$  [**y is a bushy tail & x has y**] is true in  $w'$ .

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<sup>10</sup> This is a simplified version of the definition in Krifka et al. They follow Kratzer in not making the Limit Assumption and, thus, their definition is more complicated (see Krifka et al 1995: 52). The simplification does not affect any of the arguments in this chapter.

<sup>11</sup> Note that this use of 'modal base' does not exactly correspond to the way the term is defined in Kratzer 1981, 1991. As we saw in the previous section, in Kratzer's work modal bases are functions from worlds to sets of propositions.

This states that in all the optimal worlds (i.e., the worlds selected by the modal base that are closest to the ideal set up by the ordering source), all lions have bushy tails. As Krifka et al. note, “this does not presuppose the existence of lions in the real world ( $B_w$  might not include  $w$ ). It also does not require that every lion has a bushy tail, not even of those lions in  $B_w$  worlds. It merely states that a world which contains a lion without a bushy tail is less normal than a world in which that lion has a bushy tail”. (Krifka et al. 1995: 52)

As we have seen, in the case of sentences like (39), the generic operator ranges over situations:<sup>12 13</sup>

- (39) (a) Mary smokes when she comes home.
- (b) **GEN** [ $x, s$ ] ( $x = \text{Mary} \ \& \ \text{Mary in } s \ \& \ \text{Mary comes home in } s; x \text{ smokes in } s$ )

Putting together the modal approach with the semantics for adverbs of quantification sketched in section 2., we can paraphrase (39) as:

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<sup>12</sup> Krifka et al. do not discuss sentences with an overt restrictor when presenting the modal approach.

<sup>13</sup> For a modal analysis of habitual sentences that takes **GEN** to quantify over events see Lenci and Bertinetto 2000.

- (40) In all the worlds selected by the modal base that are closest to the ideal set up by the ordering source, every situation  $s$  that is a maximal spatiotemporally connected situation that exemplifies the proposition 'Mary comes home' is part of a situation  $s'$  in which Mary smokes and such that  $M(s') = s$ .

Krifka et al. argue that all generic sentences are represented by structures like (39)b). In the next section, I will concentrate on the results that this analysis delivers for dispositional sentences.

#### 4.2.2.3. Applying the account to dispositional sentences

How would the analysis above account for the sentence in (41)?

- (41) This car goes 200 kph.

Presumably, in this case we would be quantifying over (maximal spatiotemporally connected) situations in which the car is being driven. That is:

- (42) GEN  $[x; s]$  (**this car is driven in  $s$ ; this car goes 200 kph in  $s$** )

Given what I have said so far, this representation will be interpreted as in (43).

- (43) In all the most normal worlds<sup>14</sup>, every situation  $s$  that is a maximal spatiotemporally connected situation that exemplifies the proposition 'this car is being driven', is part of a situation  $s'$  in which the car goes 200 km/hour and
- $$M(s') = s$$

This is not the right result.

First, the paraphrase in (43) does not seem to capture our intuitions about (41). To see why, let us compare (41) with (37), repeated below as (44).

- (44) A lion has a bushy tail

It seems reasonable to say that (44) conveys the information that a lion with a bushy tail is more normal—with respect to the relevant standards of normalcy—than a lion that doesn't have a bushy tail. The modal account captures this intuition by stating that the worlds in which every lion has a bushy tail are more normal than the worlds in which not every lion has a bushy tail.

According to (43), the most normal worlds are those in which every time the car is driven, it goes 200 kph. But this does not correspond to the way we understand (41): Suppose that yesterday Rob was driving this car in a highway where the maximum speed limit is 100 kph. Rob stayed in the highway for the duration of his drive and,

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<sup>14</sup> In what follows, I will use 'the most normal worlds' to refer to the worlds selected by the modal base that are optimal with respect to the ordering source.

being the law-abiding guy that he is, never went faster than 100 kph. We can judge (41) as true without thinking that Rob's drive is abnormal in any way.

Second, the analysis in (43) presupposes that in order to evaluate (41) we take a non-empty ordering source into consideration. This does not seem to be the case.

The sentence in (41) is interpreted with respect to a circumstantial modal base– the relevant circumstances being the way the car is designed and the condition the car is in the actual world. Suppose that the car is actually designed to go 200 kph and the car's engine is in proper condition in the actual world. The accessible worlds will then be those worlds in which these facts also obtain. Clearly, in some of these worlds the car will not go at 200 kph every time it is driven. (Take for instance, all the worlds in which 200 kph is above the maximum speed limit permitted by the law and the driver of this car does not do anything illegal, the worlds in which the driver dislikes going 200 kph and the driver gets what he wants, the worlds in which the driver only goes 200 kph when he is in hurry, but he goes slower when he is not... etc.)

If the most normal (ideal) worlds amongst those selected by the modal base are worlds in which the car always goes at 200 kph, what could the ordering source be? Suppose that this car's driver really wants to drive as fast as he can, and that this the only thing that he wants. Then, in all the worlds in which the relevant circumstances obtain and in which the driver gets what he wants, every time the car is driven it goes at 200 kph.

However, when evaluating (41), we do not seem to take into account ideals like what the driver wants (In fact, (41) can be true in scenarios in which the car has never been used, and in which nobody owns it yet.) Nor do we seem to consider other ideals that would constitute proper ordering sources for a circumstantial modal base (what is good, what the law provides, what is advisable...). The only things that we consider are the way the car's engine is designed and the condition of the engine in the actual world. Sentences like (41) seem to be cases of pure circumstantial modality (that is, they are evaluated with respect to an empty ordering source).

Given this, the universal modal analysis of the generic operator will give us wrong truth-conditions. Since there are accessible worlds in which the car doesn't go 200 kph every time it is driven, the sentence in (41) will be predicted to be false in the actual world no matter what the car's design and condition actually are.

Let us consider another example:

(45) John drinks beer

According to Krifka et. al. (1995), the dispositional reading of (45) should be represented as in (46) below:

(46) John DRINKS beer

**GEN**[x, y, s] (x= **John** & y **is beer** & y **in s** & x **in** ; x **drinks y in s**)

(Krifka et al. 1995: 42)

In the modal account as I have presented it above, this representation would be (roughly) paraphrased as:

- (47) In all the most normal worlds, every situation  $s$  that exemplifies the proposition 'there is beer and there is John' is part of a situation  $s''$  such that John drinks beer in  $s''$  and  $M(s'') = s$ .

The formulation in (47) does not reflect our intuitions about the sentence in (45). (47) says that a world where John drinks beer whenever it is available is more normal than a world where he doesn't (this is actually the way the dispositional reading is paraphrased in Krifka et al.). But we do not take the sentence in (46) to say that a situation where John does not drink beer and beer is available is an abnormal situation. This sentence will be true as long as John does not abstain from drinking beer in principle. For instance, suppose that that John hardly ever drinks alcoholic beverages. When he goes to a bar with his friends, he usually asks for mineral water or cranberry juice. But he doesn't object to drinking alcohol, and he does drink beer sometimes. In this scenario, the sentence in (46) is judged as true, even though occasions where beer is available but John does not drink it are fairly normal.

Again, in order for (46) to come out true we would need to consider a non-empty ordering source. Maybe John really wants to drink beer but does not do so for health reasons. If so, then in all the worlds in which John gets what he wants, he drinks beer every time beer is available. But when we judge the sentence at issue we do not seem to

take this kind of information into consideration. Rather, we evaluate this sentence based only on information about John's code of behavior in the actual world.

#### **4.3. Dispositional sentences as possibility sentences (Dahl 1975)**

In this section, I will explore the hypothesis, put forward by Dahl (1975), that dispositional sentences involve existential quantification over worlds.

According to Dahl, the sentence in (48) has two interpretations, which he paraphrases as in (49) (the paraphrase in (b) corresponds to what I have been calling the dispositional interpretation.)

(48) Does John eat artichokes?

- (49) a. Does John have a habit of eating artichokes?  
b. Do John's principles of behavior allow him to eat artichokes?

On Dahl's account, (49) is analyzed as:

- (50) Is there an alternative world compatible with John's principles of behavior where he eats artichokes?



Dahl's hypothesis reappears in subsequent work. Kratzer (1981) notes that the German counterparts of the sentences in (51) and (52) have a modalized reading: they seem to have an inherent modal element, which is explicit in the sentences in (53) and (54), with an overt possibility modal (Kratzer 1981: 290).

(51) Nobody runs from Andenchs to Aufhausen in 10 minutes.

(52) This car goes twenty miles an hour.

(53) Nobody is able to run from Andenchs in Aufhausen in 10 minutes.

(54) This car can go twenty miles an hour.

And, according to Chierchia and McConnell Ginnnet (2000), one of the main functions of generic sentences seems to expressing capability or possibility. This, they say, is illustrated by the fact that the sentences in (55) below can be paraphrased by using an overt possibility modal, as in (56).

(55) a) John runs 50 miles without ever stopping

b) This program parses complicated sentences

(56) a) John can run 50 miles without ever stopping

b) This program can parse complicated sentences.

(Chierchia and McConnell Ginnnet 2000: 294)

In line with the work reported above, I will hypothesize that dispositional sentences involve a covert possibility modal. Let us call this hypothesis "The Possibility Approach".

#### **4.3.1. But is this too weak?**

The Possibility Approach seems especially well-suited for sentences like (57). As noted above, (57) can be true even if there are no actual events of the car going 200 kph, just like the sentence in (58), with an overt possibility modal.

(57) This car goes 200 kph.

(58) The car can go 200 kph.

However, there are other examples where a sentence with an overt possibility modal and its 'bare generic' counterpart behave differently. Consider the scenario below:

### Scenario 1: Bob the athlete

Suppose that Bob is an athlete training for an international competition. His goal is to jump at least 8.90 meters. He has not achieved this goal yet. Bob's coach takes him to a renowned sports doctor, who is to determine Bob's potential by examining Bob's physical condition.

Given this scenario, consider the sentences in (59) and (60).

(59) Bob can jump 8.90 meters.

(60) Bob jumps 8.90 (Krifka et al. 1995: 55)

While the doctor could utter (59) as his expert option, he could definitely not utter (60). Bob's jumping 8.90 in some alternative state of affairs compatible with Bob's current physical condition is not enough to guarantee the truth of (60). As Krifka et al (1995) point out, in order for this sentence to be true Bob has to have jumped 8.90 at least once. In this case, the Possibility Approach seems to be too weak.

Now, suppose that Bob is a robot that has been designed to perform athletic feats. He is programmed to jump at least 8.90 m. Bob has never been switched on yet. Thus, so far he has never jumped any distance at all. In this scenario, the engineer who designed Bob can truthfully say both (59) and (60). The Possibility Approach makes the right prediction for this case.

How can we derive this pattern? Why is it that the Possibility Approach makes the right predictions in some cases but not in others?

In what follows, I will try to show that an analysis of dispositional sentences as possibility sentences is, after all, on the right track. The difference between dispositional sentences and sentences with an overt possibility modal lies on the types of conversational background allowed in each case: The silent possibility modal present in dispositional sentences can only be used to express a sub-type of circumstantial modality.

#### **4.3.2. Types of circumstantial modality**

Kratzer (1981) notes that when we evaluate a circumstantial modal statement, we may take into account a variety of facts. Consider the sentence below:

(61) I cannot play the trombone

When discussing the German counterpart of (61), Kratzer (1981) says: "Depending on the situation in which I utter this sentence, I may say quite different things. It may mean that I don't know how to play the trombone. I am sure that there is something in a person's mind which becomes different when he or she starts learning how to play the trombone. A programme is filled in. And it is view of this programme that it may be possible that I play the trombone.

Or suppose that I suffer from asthma. I can hardly breathe. In view of my physical condition I am not able to play the trombone, although I know how to do it. I may express that by uttering [(61)] Or else imagine that I am traveling by sea. The ship sinks and so does my trombone. I manage to get to a lonely island and sadly mumble [(61)]. I could play the trombone in view of my head and my lungs, but the trombone is out of reach." (Kratzer 1981: 54).

Kratzer goes on to say that some modals can only be evaluated with respect to a particular type of circumstances. For instance, the Hungarian suffix **-hat/-het** can only express possibilities in virtue of the outside situation. And the phrase **imstande sein** ('to be able') is evaluated with respect to circumstances that "are concerned with the strength of our body character or intellect". I could utter the phrase in (62) if "I have asthma or weak nerves or if I am just too stupid. I doubt whether I would say it in a situation where I haven't learnt how to play the trombone. And I could never say it on the island with my trombone lost at sea" (Kratzer 1981: 54-55).

(62) Ich bin nicht imstande, Posaune zu spielen  
I am not able trombone to play

In the following section, I will argue that the implicit possibility modal in dispositional sentences expresses 'inner dispositions' of the sort involved in the first of the scenarios above.

### 4.3.3. Dispositional sentences express a sub-type of circumstantial modality

Let us take stock: Dahl (1975) claimed that dispositional sentences like (64) are possibility statements. However, (64) contrasts with (63), with an overt possibility modal: While (63) can be true even if John has never played the trombone, (64) cannot (at least if John is a human being in the actual world). This seems like an obvious counterexample for the Possibility Approach.

(63) John can play the trombone.

(64) John plays the trombone.

In what follows, I will argue that, once we select the "in view of this program" conversational background, (63) behaves exactly as (64). Thus, we can maintain that sentences like (64) contain a covert possibility modal (which needs to be evaluated with respect to a particular type of circumstances.)

If we evaluate (63) with respect to circumstances concerning the outside world, John's physical condition or John's natural talent, the sentence can be true even if John has never played the trombone in his life. This is illustrated by the scenarios in (a) through (c)

(a) Circumstances concerning the outside world

John has never played the trombone in his life. But he has always thought that the trombone was a cool instrument, and he is considering taking lessons. However, he worries that he will not have enough time. When I talk to my friend Pepa about this, she says

(65) Of course, John can play the trombone. He has more than enough time. He has Wednesday afternoons off, and he has the weekends.

In this scenario, we evaluate the truth of (63) with respect to circumstances concerning the outside situation (John's schedule). The fact that John has never played the trombone is completely irrelevant for the truth of (63).

(b) Circumstances concerning John's physical condition.

John has never played the trombone in his life. But he has always thought that the trombone was a cool instrument, and he is considering taking lessons. However, he has had respiratory problems in the past. John's mom worries that these problems will prevent John from playing the trombone. She consults the family doctor, who has recently examined John. The doctor replies:

(66) Don't worry. In view of John's current condition, he can definitely play the trombone.

In this scenario, the relevant circumstances involve John's physical condition. Again, the fact that John has never played yet is irrelevant for the truth of (63).

(c) Natural talent

John has never played the trombone in his life. But he has always thought that the trombone was a cool instrument, and he is considering taking lessons. However, it looks very difficult, and he has very low self-esteem. He worries that he is not talented enough. The local music school offers an aptitude test. John takes it. After examining the results, one of the examiners says to his colleague.

(67) In view of John's aptitude, he can definitely play the trombone.

Here, the relevant circumstances concern John's natural talents. Again, whether John has played the trombone or not is irrelevant.

But when the sentence in (63) is used to convey the information that John knows how to play the trombone (that is, when we select the "in view of this program" conversational background), it cannot be used to describe a scenario in which John has never played the trombone. The following discourse is distinctly odd.



(68) John can play the trombone. He definitely knows how to play it. He just has never played it yet.

The discourse in (68) is strange because it requires us to assume that one can learn to play the trombone without having played it once, and this conflicts with our world-knowledge: humans in our world just do not work like that. However, this discourse can become acceptable if John is not a human being, or if the world of evaluation is such that humans can learn to play the trombone in other ways. Consider the following two scenarios.

Scenario 2: John the robot

Suppose that John is a robot that has been programmed to play the trombone and that has never been switched on yet. In this context, (68) becomes perfectly acceptable: The sentence in (63) is true in this scenario with the reading 'in view of his program, John can play the trombone' (John's mental program has been filled in by the engineer that designed him.)

Scenario 3: A different type of learning

Or suppose that we live in a world where people can learn how to play the trombone in the following way: they are deep-frozen for several months and, while they are in that

state, they are fed a liquid that instills the skill of playing the trombone in their brains.<sup>15</sup>

Once they are de-frosted they know how to play the trombone, just as if they had been practicing for years. John has just undergone this procedure – and, therefore, knows how to play the trombone—but has not practiced his newly acquired skill yet.

Again, in this context, the discourse in (68) is appropriate and the sentence in (63) true.

Now, let us turn to the sentence in (64), repeated below as (69). This sentence behaves exactly as the possibility sentence in (63) does on the "in view of this program" reading: It is judged as false if John is an actual person who has never played the trombone, but is considered true in Scenarios 2 and 3 above. This pattern will be accounted for if (69) is a possibility sentence that selects for the "in view of this program" modal base.

(69) John plays the trombone.

Let us go back to the jumping example, repeated below.

(70) Bob can jump 8.90 meters.

In the scenario presented in section 3.1., the relevant circumstances for evaluating (70) were facts concerning Bob's physical condition. Circumstances concerning the outside situation could also be relevant: the likelihood of Bob's jumping 8.90 meters may depend on the weather conditions, for instance (for instance, given that today there is no

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<sup>15</sup> Thanks to Jan Anderssen for suggesting this type of scenario.

wind/it is sunny/the ground is not muddy, Bob can jump 8.90 meters). If my hypothesis is correct these types of facts cannot be relevant for evaluating (71).

(71) Bob jumps 8.90.

This sentence would mean something like 'Bob has the skill of jumping 8.90 meters'. But humans in our world can only be said to have acquired that skill when they have actually accomplished this feat once. In the case of Bob, the robot, things are different: the skill is hard-wired. Hence, the sentence is considered false if Bob is an (actual) human being who has never jumped 8.90 meters but true in the robot scenario.

What about cases like (72) below?

(72) Mary eats meat.

This sentence can be true even if Mary has never eaten meat. Consider the scenario below:

#### Scenario 4: Mary the vegetarian

Mary has never eaten meat in her life. Both her parents are vegetarian, and they never fed her meat when she was growing up. When she was old enough to make her own choices, she decided that her parents were right and that eating meat was morally blameworthy. She made a conscious decision never to eat meat, and she has stuck to it

so far. But she is undergoing some sort of crisis. She has been reevaluating her way of life. She thinks that her decision to become a vegetarian was motivated not by moral principles, but by an unconscious desire to imitate her parents. Yesterday, she decided to start eating meat, and she called me to inform me of her decision. She also told me that she hasn't eaten any meat so far, but she will do so in the first occasion where meat is available.

We are throwing a dinner party next weekend, and we are discussing what food to cook.

You say:

(73) And, of course, there has to be at least a vegetarian dish. Mary is coming.

I reply by uttering (72). Given the scenario above, I am telling the truth.

In this scenario, Mary's decision is enough to fill Mary's "mental program" and, hence, the sentence **Mary eats meat** can be true even though there are no actual events of Mary eating meat in the actual world.

To sum up: Following up on work by Dahl (1975), I have argued that dispositional sentences contain a covert possibility modal. This covert modal selects for a particular modal base, namely one involving the "inner disposition" or "program" of the individual denoted by the subject of the sentence.

#### 4.4. Back to FC items

As noted at the beginning of this chapter, universal FC items are good in dispositional sentences:

(74) (a) Esta impresora imprime cualquier documento.

This printer prints any document.

(b) This printer prints any document.

(75) (a) Este coche funciona con cualquier gasolina.

This car works with any gas.

(b) This car works with any gas.

(76) (a) Juan bebe cualquier cerveza.

Juan drinks any beer.

(b) Juan drinks any beer.

Analyzing dispositional sentences as possibility sentences renders the acceptability of examples like the above unproblematic, since FC items are licensed in possibility sentences across-the-board. Thus, nothing special needs to be said about these cases.

## CHAPTER 5

### MORE ON GENERICITY

This chapter addresses two issues that the discussion so far has left open.

The first one concerns the licensing of universal FC items in necessity sentences. In Chapter 3, I put forward an analysis that rules out these items in necessity sentences across-the-board, hence predicting the ungrammaticality of examples like (1). However, as noted by Dayal (1998), there are some necessity statements where universal FC items are acceptable, witness (2).

- (1) \*Juan tiene que coger cualquiera de estas cartas.

Juan must take any of these cards.

- (2) C'qualquier estudiante tiene que trabajar duro.

Any student must work hard.

In this chapter, I will propose that the acceptability of (2) can be accounted for if universal FC items have two interpretational possibilities: (i) agreeing with a universal propositional quantifier (as proposed in Chapter 3) and (ii) agreeing with the generic operator responsible for the generic reading of plain indefinites. This proposal makes interesting predictions regarding the interpretation of universal FC items in possibility sentences.

The second issue has to do with the status of "subtriggering": It has long been observed that English FC **any** can be rescued in examples like (3) by adding a relative clause, as in (4). This strategy, dubbed "subtriggering" by LeGrand (1975), does not seem available in Spanish: the example in (6), the result of adding a relative to the ungrammatical sentence in (5), is still marginal.

(3) \*John talked to any woman.

(4) John talked to any woman who came up to him.

(5) \* Juan habló con cualquier mujer.

John talked-pfv. to any woman.

(6) ??Juan habló con cualquier mujer que se le acercara.

John talked-pfv. to any woman who came up-subj. to him.

Building on work by Josep Quer (Quer 1998, 2000), I will hypothesize that the contrast between English and Spanish is due to the difference between the English and Spanish verbal systems. Additionally, I will present some experimental results that suggest that episodic sentences like (6) improve when the events they describe can be plausibly understood as being the result of a policy or rule. As **cualquiera** is licensed in generic sentences but not in episodic ones, these data open up the interesting possibility that

perceivers can to some extent mimic the effect of generic morphology by non-morphological means.

By investigating the two topics above, we will gain a better understanding of the interaction of FC items with verbal genericity, continuing the project started in Chapter 4.

### **5.1. The necessity puzzle**

The analysis put forward in Chapter 3 correctly rules out necessity sentences like the ones in (7) and (8).

(7) \* Juan tiene que coger cualquier carta del mazo.

Juan must take any card in the discard pile.

(8) \*Tienes que contestar cualquiera de estas cuatro preguntas.

You must answer any of these four questions.

But, as mentioned above, modals of necessity do not always disallow universal FC items. For instance, the following necessity sentences, from Dayal 1998, are perfectly fine.

(9) Any student must work hard.



(10) Any soldier should be prepared to die for her country.

(Dayal 1998: 435)

The same judgment obtains for the corresponding Spanish sentences:

(11) Cualquier estudiante tiene que trabajar duro.

Any student must work hard.

(12) Cualquier soldado debería estar preparado para morir por su país.

Any soldier should be prepared to die for her country.

As it stands now, my analysis rules out the good sentences in (9) through (12) in the same way as the bad sentences in (7) and (8). Consider (11), for instance. For the sake of illustration, suppose that the domain of quantification consists of just two students, Charles and Sally. On the account in Chapter 3, (11) will denote the (singleton set containing) the proposition that is true in a world  $w$  iff all the propositions in (13) are true in  $w$ .

(13) {that in all accessible worlds Charles works hard but Sally doesn't, that in all accessible worlds Sally works hard but Charles doesn't, that in all accessible worlds Charles and Sally work hard}

But this is a contradiction: there is no world in which all these propositions are true. Hence, we predict (11) to be ungrammatical, contrary to fact.

The first step towards solving this problem will be to figure out under which conditions universal FC items are licensed in necessity sentences. The following section is devoted to this task.

### **5.1.1. The connection with genericity**

#### **5.1.1.1. The generalization**

As mentioned in Chapter 2, Dayal (1998) observes that there are modal statements where FC **any** is licensed but a plain indefinite cannot obtain a generic interpretation. For instance, while **any** is licensed in (14)a), the indefinite in (14)b) is not interpreted generically.

(14) (a) You may pick any flower

(b) You may pick a flower

However, she also notes that in some cases there is a correlation between the availability of a generic interpretation for indefinites and the acceptability of FC **any**. The examples in (15) and (16) below are a case in point.<sup>1</sup>

- (15) (a) A student must work hard.
- (b) A soldier should be prepared to die for her country.
- (c) Any student must work hard.
- (d) Any soldier should be prepared to die for her country.

(Dayal 1998: 435-438)

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<sup>1</sup> Dayal also mentions examples like (i) and (ii) below, which feature future morphology. I will not discuss these cases here.

- (i) Any doctor will tell you that.
- (ii) A doctor will tell you that.

(Dayal 1998: 435-438)

- (16) (a) You must pick a flower.
- (b) A pilot must be flying this place.
- (c) \*You must pick any flower.
- (d) \*Any pilot must be flying this plane.

(Dayal 1998: 435-438)

The indefinites in (15)a and (15)b) can be given a generic interpretation: (15)a) may be understood as a generalization over students (roughly: if x is a student, then x must work hard); (15)b), as a generalization over soldiers (roughly: if x is a soldier, then x should be prepared to die for her country). In those contexts, FC **any** is perfectly acceptable, as illustrated by (15)c) and (15)d).

In contrast, the indefinites in (16) can only be interpreted existentially: (16)a) cannot be interpreted as a generalization over flowers, nor can (16)b) be interpreted as a generalization over pilots. Replacing the indefinites with FC **any**, as in (16)c) and (16)d), results in ungrammaticality.

The same judgments obtain for the corresponding Spanish sentences, (17) and (18).

- (17) (a) Un estudiante tiene que trabajar duro.  
A student must work hard (generic interpretation available)
- (b) Cualquier estudiante tiene que trabajar duro.  
Any student must work hard.
- (c) Un soldado tiene que estar preparado para morir por su país.  
A soldier should be prepared to die for her country.  
(generic interpretation available)
- (d) Cualquier soldado tiene que estar preparado para morir por su país.  
Any soldier should be prepared to die for her country.

(18) (a) Tienes que coger una flor

You must pick a flower

(only existential interpretation)

(b) \* Tienes que coger cualquier flor.

You must pick any flower

(c) Este avión lo debe estar pilotando un piloto.

A pilot must be flying this plane.

(only existential interpretation).

(d) Este avión lo debe estar pilotando cualquier piloto.

\*Any pilot must be flying this plane.

Based on the discussion in Dayal (1998), we can tentatively formulate the following generalization:

(19) In necessity sentences, universal FC items are licensed only if a plain indefinite in the same position can get a generic interpretation.

#### 5.1.1.2. Testing the generalization

The (a) sentences below are naturally occurring cases of necessity sentences that contain FC **any**. The (b) sentences are the result of replacing **any** with a plain indefinite.

According to my consultants, all the indefinites in the (b) versions can be interpreted generically, as predicted by (19).

- (20) (a) Any Agreement must command the support of both Nationalists and Unionists. ([uk.news.yahoo.com/promo/election05\\_dup.html](http://uk.news.yahoo.com/promo/election05_dup.html))
- (b) An agreement must command the support of both Nationalists and Unionists.

(expresses a generalization about agreements)

- (21) (a) Any Assembly must be democratic, fair and accountable. ([uk.news.yahoo.com/promo/election05\\_dup.html](http://uk.news.yahoo.com/promo/election05_dup.html))
- (b) An assembly must be democratic, fair and accountable.

(expresses a generalization about assemblies).

- (22) (a) These are two vital abilities that any leader must possess. The ability to make the call and the ability to make sure it gets done. ([www.businessandlaw.com/articles/small\\_business](http://www.businessandlaw.com/articles/small_business).)
- (b) These are two vital abilities that a leader must possess. The ability to make the call and the ability to make sure it gets done.

(expresses a generalization about leaders).

The Spanish counterparts of the sentences in (20) through (22) above, (23) through (25) below, also behave as predicted by (19): **cualquiera** is acceptable and the indefinite **un** can get a generic interpretation

- (23) (a) Cualquier acuerdo tiene que conseguir el apoyo de los nacionalistas y de los unionistas.

Any agreement must command the support of both Nationalists and Unionists.

- (b) Un acuerdo tiene que conseguir el apoyo de los nacionalistas y de los unionistas.

An agreement must command the support of both Nationalists and Unionists.

(expresses a generalization about agreements)

- (24) (a) Cualquier asamblea debe ser democrática, justa y responsable.

Any assembly must be democratic, fair and accountable.

- (b) Una asamblea debe ser democrática, justa y responsable.

An assembly must be democratic, fair and accountable.

(expresses a generalization about assemblies).



(25) (a) Estas son dos habilidades fundamentales que cualquier líder tiene que tener. La habilidad de dar la orden y la habilidad de asegurarse de que se cumple.

These are two vital abilities that any leader must possess. The ability to make the call and the ability to make sure it gets done.

(b) Estas son dos habilidades fundamentales que un líder tiene que tener. La habilidad de dar la orden y la habilidad de asegurarse de que se cumple.

These are two vital abilities that a leader must possess. The ability to make the call and the ability to make sure it gets done.

(expresses a generalization about leaders).

In order to test the generalization in (19) further, it will be useful to look at epistemic modals of necessity: According to Kratzer (1989b/1995), epistemic modals block the generic reading of indefinite phrases. Consider, for instance, the sentence in (26). Kratzer notes that when the modal in (26) is interpreted deontically, the indefinite can have both an existential and a generic interpretation. On the generic reading of the indefinite, (26) means (roughly) that whenever there is a car in an accessible world  $w'$ , this car is located in the garage in  $w'$ . This interpretation is not available if the modal is given an epistemic

interpretation. In this case, the sentence can only mean that in all the accessible worlds  $w'$ , there is a car in the garage<sup>2</sup>.

(26) A car must be in the garage. (Kratzer 1989b/1995: 131)

This generalization applies to Spanish as well. Take, for instance, the sentence in (27), which can only be given an epistemic interpretation. As predicted by Kratzer's generalization, the indefinite **un estudiante** can only be interpreted existentially in (27). In contrast, in (28), which has only a deontic reading, **un estudiante** can get a generic interpretation.

(27) Aquí debe haber estado un estudiante.

A student must have been here.

(28) Un estudiante debe estar en clase.

A student must be in class.

---

<sup>2</sup> The following sentence, from von Stechow and Iatridou (2003), may be a counterexample to Kratzer's generalization. According to von Stechow and Iatridou, **a student** can have a generic reading in the example below when the modal is given an epistemic interpretation.

(iii) A student whose light is on must be awake

However, they also claim that **any student** is acceptable on (iv) below. Thus, their judgments would be consistent with the generalization in (19).

(iv) Any student whose light is on must be awake.

Given this, according to the generalization in (19), we would expect **cualquiera** to be bad with epistemic modals of necessity. This seems to be indeed the case: **cualquiera** is bad in (29), which can only get an epistemic reading, but good in (30), with a deontic modal.

(29) \*Aquí debe haber estado cualquier estudiante.

A student must have been here.

(30) Cualquier estudiante debe estar en clase.

A student must be in class.

The examples in (32) and (33) illustrate the same point: In the (b) version, the indefinite is interpreted existentially; in the (a) version, **cualquiera** is ruled out, as expected.

(31) (a) \*Cualquier pasajero debe haber visitado el compartimento de la víctima.

Any passenger must have visited the victim's compartment

(b) Un pasajero debe haber visitado el compartimento de la víctima.

A passenger must have visited the victim's compartment.

(only existential reading)

(32) (a) \*Cualquier amigo de Juan debe habernos llamado por teléfono.

Any friend of Juan must have called us on the phone.

(b) Un amigo de Juan debe habernos llamado por teléfono.

A friend of Juan must have called us on the phone.

(only existential reading)

So far, the generalization in (19) stands. However, one of the sentences in Dayal (1998), namely the one in (33) below, constitutes a potential counterexample to this generalization. This example is reported to be "completely acceptable" in Dayal's paper (Dayal 1998: 457). But (19) predicts (33) to be bad, since the indefinite in (34) cannot get a generic interpretation.

(33) Any pilot must be out flying planes today.

(34) A pilot must be out flying planes today.

However, according to my consultants, the sentence in (33) is only marginally acceptable to the extent that it can get a deontic reading. Consider first a scenario that would force the deontic reading of (33).

Scenario 1—Deontic reading

According to the rules of the military base, pilots have to be out flying planes on Friday. Today it's Friday. Colonel Smith sees a solitary pilot lolling about in the base. The following dialogue takes place:

(35) Colonel: What are you doing here?

Pilot: I was not feeling well, my Colonel.

Colonel: That's no excuse. Any pilot must be out flying planes today.

My consultants consider the last sentence of the discourse above (that is, example (33)) either marginal or bad in this scenario. I take this to be due to the fact that it is very difficult to get a deontic reading for this example.

Now, consider a scenario that would bring out the epistemic reading of the sentence at issue:

Scenario 2—Epistemic reading.

The pilots from the military base like to hang out in town. Today, however, they are nowhere to be seen. Not a single one. We are wondering where they could be. We know that there are no specific rules that state that pilots have to be out flying today. But since they are in none of the usual places, we conclude that they must be flying.

All my consultants reject the sentence in (33) in this scenario.

According to my intuitions, the Spanish counterpart of (33), (36) below, behaves exactly as its English counterpart, (33). This sentence is only marginally acceptable to the extent to which it can get a deontic reading – that is, to the extent that the indefinite in (37) can get a generic interpretation.

(36) Cualquier piloto tiene que estar volando hoy.

Any pilot must be out flying out today.

(37) Un piloto tiene que estar volando hoy.

A pilot must be out flying today.

Up till now, we have looked only at sentences where the universal FC item is in subject position. When we turn to object cases, judgments become murkier. Consider, for instance, the examples in (38) and (39).

(38) (a) Tienes que contestar cualquier pregunta.

You must answer any question.

(b) You must answer any question

(39) (a) El portero tiene que saludar a cualquier visitante.

The doorman must greet any visitor.

(b) The doorman must greet any visitor

Both **any** and **cualquiera** are acceptable in the necessity sentences above. Thus, the generalization in (19) predicts that the corresponding indefinite objects (that is, the indefinites in (40) and (41)) will be able to get a generic interpretation. But while this interpretation seems to be possible, it is definitely harder to obtain than in subject position, and the extent to which it is available varies across speakers. I will come back to the difference between object and subject position below.

(40) (a) Tienes que contestar una pregunta.

You must answer a question.

(b) You must answer a question.

(41) (a) El portero tiene que saludar a un visitante.

The doorman must greet a visitor.

(b) The doorman must greet a visitor.

### 5.1.2. The hypothesis

According to the analysis presented in Chapter 3, universal FC items must agree with the universal propositional quantifier in (42).

(42) Let A be a set of propositions,

$[\forall](A) = \{ \text{the proposition that is true in all worlds in which every proposition in } A \text{ is true} \}$

(Kratzer and Shimoyama 2002: 6)

In this section, I will propose that universal FC items can also agree with the quantifier that is responsible for the generic reading of plain indefinite.

As we have seen above (see Chapters 2 and 4), according to one widespread view, generic indefinites like **a student** in (43) get their quantificational force from a covert operator, close in meaning to **typically**, which is usually represented as **GEN**.

(43) (a) A student works hard

(b) **GEN<sub>x</sub> (x is a student; x works hard)**

Roughly: typically, if x is a student, x works hard.



In the Hamblin semantics I am assuming here, the generic operator can be construed as a quantifier that ranges over sets of individual alternatives. Let us assume that **GEN** is assigned the denotation in (44), i.e., a function that applies to a set of individuals  $\alpha$  and yields the property of properties that is true of any property if every individual in  $\alpha$  has it<sup>3</sup>

(44) For  $[[\alpha]]^{w,g} \in D_c$ :

$$[[\mathbf{GEN} \alpha]]^{w,g} = \{\lambda P \lambda w'. \forall a (a \in [[\alpha]]^{w,g} \rightarrow P(a)(w') = 1)\}$$

Of course, this cannot be the whole story. We know that generic quantification is not just universal quantification: the sentence in (43) does not mean the same as (45) below (see Krifka et al. 1995 for discussion.) However, for the purposes of this chapter, I will assume that the generic operator is interpreted as in (44), and hope that what I am saying here will hold once we assume a more sophisticated analysis of **GEN**.<sup>4</sup>

(45) Every student works hard.

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<sup>3</sup> That is, **GEN** would be the universal generalized quantifier in Kratzer and Shimoyama (Kratzer and Shimoyama 2002: 8). When giving the denotation for universal and propositional quantifiers, Kratzer and Shimoyama note that there should be a choice for the world index with respect to which  $\alpha$  (the argument set) is to be evaluated. For sets operated on by **GEN**, I will assume the indexing above.

<sup>4</sup> An additional issue that we would need to address is the fact that sentences like (v), with a generic indefinite, do not mean exactly the same as sentences like (vi) (for a comparison between FC **any** and generic indefinites, see, for instance, Kadmon and Landman 1993, Krifka et al. 1995 and Dayal 1998). Kadmon and Landman (1993) propose that the differences in interpretation between FC **any** and 'regular' generic indefinites are due to the widening induced by **any** (see Chapter 2). It may be possible to import this proposal into my analysis: In Kratzer and Shimoyama's system, a plain indefinite phrase denotes a set of contextually relevant individuals (see also Kratzer 2005). As noted in Chapter 3, I am assuming that universal FC items perform "intensional widening" (Kratzer 2005), that is, that they denote sets of possible individuals. Thus, we may be able to derive the contrast between (v) and (vi) in a way similar to the one proposed in Kadmon and Landman (1993).

(v) A student must work hard.

(vi) Any student must work hard.

Let us assume that universal FC items have two interpretational possibilities:

- (i) Agreeing with the universal propositional quantifier, as proposed in Chapter 3.
- (ii) Agreeing with the generic operator (i.e., the universal generalized quantifier above).

If we take the route in (i), the semantic composition will proceed as described in Chapter 3: The FC item will stay *in situ*, and the alternatives it introduces will expand and give rise to propositional alternatives, which will then be 'exclusified'.

If we take the route in (ii) instead, the FC item will have to move to a position where it can combine with **GEN**, which operates over individual alternatives. As shown in (46), the result of combining **GEN** with **cualquier estudiante** is a singleton set containing the function that takes a property of individuals P and maps it to the proposition that is true in a world *w'* iff all the students that exist in some world accessible from *w'* have property P in *w'*.

$$\begin{aligned}
 (46) \quad & [[\mathbf{GEN}]]^{w,g} ([[ \mathbf{cualquier estudiante} ]])^{w,g} = \\
 & \{ \lambda P \lambda w'. \forall a (a \in [[\alpha]]^{w',g} \rightarrow P(a)(w') = 1) \} \{ \{ x: \exists w'' (C(w)(w'') \ \& \ \text{student}(x)(w'')) \} \} \\
 & \{ \lambda P \lambda w' \forall x (\exists w'' (C(w')(w'') \ \& \ \text{student}(x)(w'')) \rightarrow P(x)(w') = 1) \}
 \end{aligned}$$

In the computation above, the individual alternatives contributed by the FC item are 'absorbed' by the generic operator. As a consequence, no propositional alternatives are generated, and, hence, exclusiveness does not come into play.

The hypothesis above predicts that the only way for a universal FC item to survive in a necessity sentence is to agree with the generic operator. As shown in Chapter 3, in necessity sentences, the universal propositional quantifier gives rise to a contradiction. In contrast, if the FC item agrees with the generic operator, no contradiction will arise. For instance, the sentence in (47) will be assigned, roughly, the denotation in (48). (That is, given the assumptions above, we would get a Dayal-style denotation for sentences like (47)).

(47) Cualquier estudiante tiene que trabajar duro.

Any student must work hard.

(48) {that every possible student works hard in every accessible world}

Since we are taking universal FC items to be indefinites, we will expect them to be able to combine with the generic operator in the same conditions in which plain indefinites can do so. Thus, we predict the generalization in (19)—repeated below as (49).

(49) In necessity sentences, universal FC items are good only if a plain indefinite in the same position can get a generic interpretation.

As noted above, (49) holds for subject position, but the object data are less clear: FC items are fine in (50) and (51) but the generic interpretation of the indefinites in (52) and (53) seems to be difficult, at least for some speakers.

(50) (a) Tienes que contestar cualquier pregunta.

You must answer any question.

(b) You must answer any question.

(51) (a) El portero tiene que saludar a cualquier visitante.

The doorman must greet any visitor.

(b) The doorman must greet any visitor

(52) (a) Tienes que contestar una pregunta.

You must answer a question.

(b) You must answer a question

(53) (a) El portero tiene que saludar a un visitante.

The doorman must greet a visitor.

(b) The doorman must greet a visitor

Here is a possible way of looking at the object/subject asymmetry:

Kratzer (1989b/1995) argues that, in English, indefinite objects can only get a generic interpretation if they are able to move covertly to the restriction of the generic operator<sup>5</sup>. Suppose that, in the absence of a context that bias them towards the generic interpretation, speakers prefer to leave the object *in situ*. If this is the case, the existential interpretation of the object would be preferred out-of-the-blue. A similar argument might be made for Spanish objects.

With plain indefinites, leaving the object in its base position is always a possibility. In contrast, given what I have said so far, in sentences like (50) and (51), the FC item must move to a position where it can combine with the generic operator so as to avoid a fatal contradiction. Since the only possible way of interpreting the FC items in these sentences is to give them a generic reading, we might expect speakers to get this reading effortlessly.

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<sup>5</sup> Kratzer (1989/1995) found that the objects that can get a generic interpretation in English are exactly the ones that are able to scramble overtly in German.

A problem with this line of explanation is that, at least in Spanish, some speakers find it hard to get a generic interpretation even when given a suitable context. More research needs to be done in order to establish exactly what factors affect speakers' judgments in these cases.

### **5.1.3. Further predictions**

In this section, I will discuss some of the predictions that the hypothesis above makes with respect to episodic and possibility sentences.

#### **5.1.3.1. Episodic sentences**

The analysis I have put forward predicts that universal FC items should never be good in episodic sentences: As shown in Chapter 3, association with the universal propositional quantifier results in a fatal contradiction. And association with the generic operator is not an option, since episodic aspect is incompatible with genericity. The examples below bear that prediction out.

- (54) \* Cualquier estudiante trabajó duro.  
Yesterday, any student worked-pfv. hard.
- (55) \* Juan habló con cualquier mujer.  
Juan talked-pfv. with any woman.

However, as noted above, English FC **any** can be rescued in simple past sentences like (56) by adding a relative clause, as in (57) ("subtriggering"). In Spanish, the result of adding a relative clause to sentences like (55) is still marginal, witness (59)<sup>6</sup>.

(56) \* Juan talked to any woman.

(57) Juan talked to any woman that came up to him.

(58) \* Juan habló con cualquier mujer

Juan talked to any woman

(59) ?? Juan habló con cualquier mujer que se le acercara.

\* Juan talked to any woman that came up to him.

I will return to this issue in section 2 below.

### 5.1.3.2. Possibility sentences

Given what I have said so far, we expect universal FC items to be licensed in all possibility sentences, regardless of whether a plain indefinite in the same position can get a generic interpretation or not. This prediction is met: Both **cualquiera** and FC **any** are perfectly fine in the sentences in (60) and (61), even though a plain indefinite in the same position cannot get a generic interpretation, witness (62) and (63).

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<sup>6</sup> This is at odds with Quer's judgment for the corresponding Catalan sentences (Quer 1998, 2000).

(60) Aquí puede haber estado cualquier estudiante.

Any student could have been here.

(61) Any student could have been here.

(62) Aquí puede haber estado un estudiante.

A student could have been here.

(63) A student could have been here.

The proposal above makes a further prediction with respect to possibility sentences.

Consider the sentences in (64) below. In both the Spanish and the English versions, the indefinite subject can get a generic interpretation (that is, these sentences can be roughly interpreted as 'typically, if x is a cat, x can hunt mice').

(64) (a) Un gato puede cazar ratones

A cat can hunt mice

(b) A cat can hunt mice.

Our current hypothesis predicts that a FC item in the same context – as in (65) – should be able to associate with the generic operator. Thus, we expect (66) to be a possible reading for (65).



(65) (a) Cualquier gato puede cazar ratones  
Any cat can hunt mice

(b) Any cat can hunt mice.

(66) {that for every possible cat x, there is an accessible world in which x hunts mice}

The upshot of this is that sentences like (65) are predicted to be true in situations where there is no complete Freedom of Choice. As noted above, if the alternatives introduced by the FC item combine with the generic operator, no propositional alternatives will be generated and, hence, exclusiveness will not come into play. In other words, genericity would dilute the freedom of choice component.

There is some initial evidence that this prediction is on the right track. Consider the following scenario (inspired by the documentary *The March of the Penguins*).

Scenario 3—The Penguins

Every year, during the mating season, Emperor Penguins march for 70 miles until they get to the place where they were born, and where they now mate and lay eggs. Crucially, all the penguins march together. This is what they are programmed to do. If a penguin gets lost, the poor thing will not be able to make it on its own.

Suppose that I have just seen the documentary *The March of the Penguins*. You have heard something about the film on the radio, but you are missing crucial information. We have the following conversation:

(67) You: ¿Sólo los pingüinos jóvenes pueden caminar 70 millas?

Only the young penguins can walk for 70 miles?

Me: No, no, cualquier pingüino emperador puede caminar 70 millas.

No, no, any emperor penguin can walk for 70 miles.

Given the scenario above, my reply is true. (I believe the same judgments obtain for the English version of this dialogue.)

If **cualquiera** could only agree with the propositional quantifier, my reply would be predicted to be false. The sentence in (68) would denote (roughly) the proposition in (69).

(68) Cualquier pingüino puede caminar 70 millas.

Any penguin can walk for 70 miles.

(69) {that for any combination of penguins  $x$ , there is an accessible world in which only  $x$  marches}

And the proposition in (69) is false in the scenario above. The only accessible worlds are those in which Emperor Penguins are biologically programmed the way they are in the actual world. And there is no such world in which a lone penguin marches 70 miles on its own.

In contrast, the paraphrase in (70), which corresponds roughly to the generic reading, comes out as true in the given scenario.

(70) {that for any combination of penguins  $x$ , there is an accessible world in which  $x$  marches}

Thus, the prediction is borne out for the scenario above.

#### **5.1.4. Concluding remarks**

I have hypothesized that universal FC items can associate with the generic quantifier responsible for the generic reading of plain indefinites. That is, in some instances,

universal FC items are generic indefinites, as proposed by Kadmon and Landman (1993). However, the analysis presented here crucially differs from Kadmon and Landman's in that I am claiming that FC items have another interpretational possibility, not linked to genericity (i.e., agreeing with the universal propositional operator.)

This hypothesis predicts that:

- (i) Universal FC items will always be acceptable in possibility sentences.
- (ii) Universal FC items will be acceptable in necessity sentences only when a generic interpretation is available for a plain indefinite.
- (iii) Some possibility sentences—the ones that deliver a generic operator— can come out true in sentences where there is no complete Freedom of Choice.
- (iv) Universal FC items will be always ruled in out in episodic sentences.

While some of these predictions are clearly met, some more research needs to be done in order to determine the status of others. In particular, we need to probe into the behavior of indefinite objects in Spanish, and to investigate the subtriggering facts. The first task will have to be left for future research. The second will be taken up in section 2 below.

## 5.2. Subtriggering

Haspelmath (1997) notes that there seems to be very little cross-linguistic variation in the conditions under which universal FC items are possible. The facts I have investigated so far support that claim: English FC **any** and Spanish **cualquiera** behave alike in all the contexts I have looked at in this dissertation. However, as noted above, Spanish and English differ with respect to "subtriggering". Building on work by Josep Quer (Quer 1998, 2000), I hypothesize that the contrast between English and Spanish follows from the differences between the English and Spanish verbal systems. I would like to suggest that adding a relative clause to a simple past sentence facilitates a generic reading of the main verb, hence rescuing **any**. In Spanish, where episodicity is obligatorily marked by aspectual morphology, this strategy is blocked<sup>7</sup>.

### 5.2.1. English

In Chapter 4 we have seen that that universal FC items are licensed in generic sentences such as (71) below.

(71) This printer prints any document.

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<sup>7</sup> Quer argues that "most of the instances of FCIs in affirmative episodic statements which are discussed in the literature" (Quer 2000: 3) are really past generic sentences. However, he claims that there is one type of subtriggered statements that are truly episodic sentences. In contrast, I will propose that subtriggering in English always involves genericity.

English simple past tense can have both episodic and generic interpretations. For instance, the example in (72) can be used to describe a particular event (episodic interpretation), or to attribute to the printer the ability of printing documents with graphics (generic dispositional interpretation).

(72) This printer printed documents with graphics

In the absence of contextual clues, however, the episodic interpretation of simple past sentences seems to be much more salient. Thus, sentences like (73) are judged as bad when presented out of the blue. I hypothesize that adding a relative clause to (73) facilitates a dispositional reading of the main verb (by providing a more plausible disposition), thereby rescuing **any**. This fits with an observation by David Dowty and Dick Oehrle reported in Dayal 1998. According to Dowty and Oehrle, the sentence in (74) seems more like a “statement about John’s disposition than about his actual behavior” (Dayal 1998: 454).

(73) \* Yesterday John talked to any woman.

(74) Yesterday John talked to any woman he saw.

This hypothesis predicts that any factor that suggests a dispositional interpretation should help **any** in simple past sentences. The prediction seems to be met, at least according to initial intuitions. The sentence in (75) suggests a dispositional interpretation more than

(76) does: while we might expect the police to have a disposition towards arresting people, we have in principle no reason to expect Juan to have a disposition towards talking to women. According to my consultants, (75) sounds indeed better than (76) when these sentences are uttered out-of-the-blue.

(75) The police arrested any demonstrators.

(76) John talked to any woman

### 5.2.2. Spanish

I have hypothesized that the effect of adding a relative clause to **any** in simple past sentences is to facilitate a generic interpretation of the main verb. This strategy would not be available in Spanish, where the episodic/generic distinction in the past is marked by aspectual morphology<sup>8</sup>: in episodic sentences, the verb bears perfective morphology; in generic sentences, imperfective morphology.

For instance, while the imperfective sentence in (77) can mean that (at some contextually relevant past time), this printer had the capacity of printing documents with graphics (dispositional interpretation), the perfective sentence in (78) means that there was at least an episode in which the printer printed documents with graphics.

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<sup>8</sup> Quer makes the same point about Catalan. However, he argues that there is an alternative way in which relative clauses are able to rescue FC items in truly episodic sentences (see Quer 1998, 2000 for discussion).

(77) Esta impresora imprimía documentos con gráficos  
This printer printed-**impf.** documents with graphics.

(78) Esta impresora imprimió documentos con gráficos  
This printer printed-**pfv.** documents with graphics.

Thus, according to what I have said so far, we expect sentences like (79) to be bad. And, according to my intuitions, (79) is indeed marginal at best.

(79) ?? Esta impresora imprimió cualquier documento que tuviera gráficos  
This printer printed-**pfv.** documents that had graphics.

But the facts are more complicated than this: First, judgments regarding examples like (79) are quite elusive, and there seems to be some speaker variability. Second, initial intuitions indicate that episodic sentences with **cualquiera** improve if the content of the sentence evokes a policy. To my ear, (81) is better than (80), although worse than the imperfective (generic) sentence in (82).

(80) \* El año pasado, Juan coqueteó con cualquier mujer que le sonriera  
Last year, Juan flirted-**pfv.** with any woman that smiled at him.



(81) ?? Después del golpe de estado, la policía detuvo a cualquiera que hubiera apoyado al antiguo gobierno públicamente.

After the coup d'état, the police arrested-**pfv**. anyone who had publicly supported the previous government.

(82) Después del golpe de estado, la policía detenía a cualquiera que hubiera apoyado al antiguo gobierno públicamente.

After the coup d'état, the police arrested-**impf**. anyone who had publicly supported the previous government.

How can we account for the pattern in (80) through (82)?

Here is a speculation: If the pattern above really obtains, this would suggest that perceivers are trying to overcome the effect of morphology by resorting to world-knowledge. Sentences like (80) and (81) will never be completely rescuable – since perfective morphology fixes an episodic interpretation – but evoking a policy/pattern would help by ‘mimicking’ the effect of generic morphology.

In order to verify the intuitions above and to test for the influence of additional semantic factors on the acceptability of perfective sentences with **cualquiera**, I designed and ran an acceptability rating questionnaire. The next section describes the experiment and presents the results.

### 5.2.2.1. Experiment

#### *Participants*

This experiment was run on three different groups of subjects: (i) twenty-four high school students from Spain<sup>9</sup>; (ii) twenty graduate students and professors in the Spanish and Portuguese department of the University of Massachusetts at Amherst and (iii) sixteen doctoral students from Spain. All three studies displayed basically the same pattern, although the contrasts were less sharp in the first group. Here, I report the results from the third study pointing to differences with the second study when relevant.

#### *Materials and design*

The experiment was an acceptability rating questionnaire. Subjects were instructed to assign to each sentence a number in a scale from 1 (normal/natural) to 5 (very odd). They were given the examples in (83) and (84) to fix the ends of the scale. The example in (83) is a perfectly natural sentence; the example in (84) is ruled out because of the sequence of tenses.

- (83) Juan está disgustado porque sacó una mala nota en el examen      1  
      ‘Juan is upset because he got a bad grade on the exam’

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<sup>9</sup> Of these twenty-four subjects, six had to be eliminated because they skipped some items, they considered every sentence - including fillers - to be equally acceptable, or their handwriting was not legible.

(84) Pedro quiso que hubiéramos estado contentos

5

‘Pedro wanted for us to have been happy’

The questionnaire comprised two sub-experiments, experiment 1 and experiment 2.

### Experiment 1

Twelve experiment sentences were used. Each of the sentences had four conditions, which resulted from crossing (i) presence/absence of a modal phrase like ‘according to the rules’, and (ii) imperfective vs. perfective morphology. A sample item is given in (85). (For a complete list of the experimental materials, see the Appendix.)

(85)

C1: imperfective; no modal phrase

La policía detenía a cualquier persona que apoyara al antiguo gobierno públicamente.

The police arrested-impf. any person that publicly supported the previous government

C2: perfective; no modal phrase

La policía detuvo a cualquier persona que apoyara al antiguo gobierno públicamente.

The police arrested-pfv. any person that publicly supported the previous government

C3: imperfective; modal phrase

De acuerdo con las órdenes del ministerio de defensa, la policía detenía a cualquier persona que apoyara al antiguo gobierno públicamente.

In accordance with the defense department's orders, the police arrested-impf. any person that publicly supported the previous government

C4: perfective; modal phrase

De acuerdo con las órdenes del ministerio de defensa, la policía detuvo a cualquier persona que apoyara al antiguo gobierno públicamente.

In accordance with the defense department's orders, the police arrested-pfv.. any person that publicly supported the previous government

All of the sentences in experiment 1 were “intrinsic policy” sentences: They concerned individuals or groups performing actions related to their jobs, e.g., *Mata Hari seduced*

*any diplomat that had confidential information; the commander in chief punished any soldier whose gun was not clean.*

## Experiment 2

Twelve experimental sentences were used. Imperfective vs. perfective morphology and agentivity vs. non-agentivity were crossed as separated manipulations, which resulted in the four conditions in (86). None of the agentive sentences in this experiment was an “intrinsic policy-like” sentence.

(86)

C1: imperfective; non-agentive

Mi primo Juan se enamoraba de cualquier mujer que le sonriera con amabilidad.

My cousin Juan fell in love-impf. with any woman that smiled to him kindly

C2: perfective; non-agentive

Mi primo Juan se enamoró de cualquier mujer que le sonriera con amabilidad.

My cousin Juan fell in love-pfv. with any woman that smiled to him kindly

C3: imperfective; agentive

Mi primo Juan coqueteaba con cualquier mujer que le sonriera con amabilidad.

My cousin Juan flirted-impf. with any woman that smiled to him kindly

C4: perfective; agentive

Mi primo Juan coqueteó con cualquier mujer que le sonriera con amabilidad. My

cousin Juan flirted-pfv. with any woman that smiled to him kindly

After having run the experiment, one of the items in experiment 2 was found to be defective<sup>10</sup> and had to be eliminated from the calculations, which resulted in a slight imbalance.

The twenty-four experimental sentences were interspersed with a set of thirty fillers. Four lists were constructed and the materials were fully counterbalanced, so that each subject saw each experimental item in only one condition.

### *Predictions*

The first experiment was designed to test the effect of an explicit modal phrase in perfective sentences. Initial intuitions seemed to suggest that modal phrases that explicitly introduce the policy component improve even “intrinsic policy” sentences. If this is the case, perfective sentences with a modal phrase should be judged better than perfective sentences without a modal phrase, relative to the imperfective conditions.

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<sup>10</sup> A non-agentive verb was used by mistake in the agentive condition.

The second experiment focused on the non-agentive/agentive contrast. Initial intuitions suggested that non-agentive perfective sentences were worse than agentive perfective sentences (maybe because the former cannot be possibly be understood as instantiating a policy?).

Finally, we expect the difference between perfective and imperfective sentences to be smaller in the first experiment, where all the sentences were policy-like, than in the second experiment, which did not contain any policy-like sentences.

### *Results*

#### Experiment 1

Table (87) shows the average ratings for conditions C1 through C4. Separate two-way analyses (Modal Phrase  $\times$  Aspect) of variance were conducted for these results, with both subjects (F1) and items (F2) as random effects.

(87)

<b>Condition</b>	<b>Average ratings (by subjects)</b>
C1 (imperfective; no modal phrase)	1.17
C2 (perfective; no modal phrase)	1.83
C3 (imperfective; modal phrase)	1.27
C4 (perfective, modal phrase)	1.59

The factor Aspect was significant both in the subject and the item analyses ( $F(1, 15) = 22.93$ ;  $p = .00$ ;  $F(2, 11) = 18.93$ ;  $p = .$ ). The factor Modal Phrase was not significant ( $F(1, 15) = 0.30$  ;  $p = 0.59$  ;  $F(2, 11) = 0.50$  ;  $p = 0.49$ ). The interaction between Modal phrase and Aspect was marginally significant by subjects ( $F(1, 15) = 3.35$   $p = 0.09$ ), and not significant by items ( $F(2, 11) = 1.78$ ;  $p = 0.21$ ).

Planned comparisons showed that perfective sentences were judged significantly worse than imperfective sentences in the non-modal phrase conditions (1.17 vs. 1.83 ,  $t_1(15) = -4.38$ ,  $p = .00$  ;  $t_2(11) = -3.7$ ;  $p = 0.00$  ). In the modal phrase conditions, the difference between imperfective and perfective sentences (1.27 vs. 1.59) was significant in the subject analysis ( $t_2(15) = -2.56$ ,  $p = .02$ ) and marginally significant in the item analysis ( $t_2(11) = -1.98$ ;  $p = .07$ ).



Experiment 2

Table (88) shows the average ratings for conditions C5 through C8. Separate two-way analyses (Agentivity × Aspect) of variance were conducted for these results, with both subjects (F1) and items (F2) as random effects.

(88)

Condition	Average ratings (by subjects)
C5 (imperfective; non-agentive)	1.51
C6 (perfective; non-agentive)	3.19
C7 (imperfective; agentive)	1.23
C8 (perfective, agentive)	2.71

The factor Aspect was significant both by items and subjects ( $F(1, 15) = 71.31$ ;  $p = 0.00$ ;  $F(1, 10) = 48.08$ ;  $p = 0.00$ ). The factor Agentivity was also significant: ( $F(1, 15) = 5.92$ ;  $p = .03$ ;  $F(1, 10) = 6.52$ ;  $p = .03$ ). There was no interaction between Agentivity and Aspect ( $F(1, 15) = 0.40$ ;  $p = 0.54$ ;  $F(1, 10) = 0.25$ ;  $p = 0.63$ ).

Perfective sentences were judged significantly worse than imperfective sentences both in the agentive and the non-agentive conditions (non-agentive: 1.51 vs. 3.19,  $t(15) = -7.28$ ,  $p = .00$ ;  $t(10) = -4.74$ ,  $p = .00$ ; agentive: 1.23 vs. 2.71,  $t(15) = -5.75$ ,  $p = .00$ ;  $t(10) = -$

7.58 ,  $p = .00$  ). Additionally, agentive sentences were judged significantly better than non-agentive sentences. This difference was significant in the imperfective conditions (1.51 vs. 1.23,  $t(15) = 2.28$ ,  $p = .04$ ;  $t(10) = 2.59$ ,  $p = .03$ ), but not in the perfective conditions (3.19 vs. 2.71,  $t(15) = 1.66$ ,  $p = 0.12$  ;  $t(10) = 1.59$  ,  $p = 0.14$ )

### *Discussion*

#### a) Cross-experiment comparison

The hypothesis (perfective sentences with **cualquiera** are better when they are intrinsically policy-like than when they are not) was confirmed: the difference between perfective and imperfective sentences is smaller in the first experiment (where all the sentences were policy-like) than in the second. (intrinsic policy, no modal phrase: 0.67; intrinsic policy, modal phrase: 0.32; no intrinsic policy, agentive: 1.68; no intrinsic policy, non-agentive: 1.48). However, a note of caution is in order: Cross-experiment comparisons are not completely reliable, statistically speaking. In order to reach a definite conclusion, we would need to test the policy/non-policy contrast within the same experiment.

#### b) Experiment 1

The difference between perfective and imperfective sentences is numerically reduced in the modal-phrase conditions (0.67 in the non-modal phrase conditions vs. 0.32 in the

modal phrase conditions). However, the interaction between modal phrase and aspect is completely non-significant by items and only marginally significant by subjects ( $p = 0.09$ ). These results can be taken as a suggestion that the hypothesis (modal phrase helps perfective sentences with **cualquiera**) is on the right track, but the differences are not reliable.<sup>11</sup>

c) Experiment 2

The results of experiment 2 show a significant main effect of agentivity both for perfective and imperfective sentences: Agentive sentences are judged better than non-agentive sentences across the board. The difference between agentive and non-agentive sentences is bigger in the perfective conditions than in the imperfective conditions (0.48 vs. 0.28). While the prediction regarding perfective sentences is met (non-agentive sentences worse than agentive sentence, relative to their imperfective counterparts), the effect of agentivity in imperfective sentences is unexpected. This needs to be investigated further.

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<sup>11</sup> The Spanish department study provides stronger support for the hypothesis that modal phrases help perfective sentences: As in the second study, between perfective and imperfective conditions was reduced by the addition a modal phrase– see table in (i) below. But in this case the interaction between Modal phrase and Aspect was significant by subjects ( $F(1, 19) = 6.68; p = 0.02$ ), and marginally significant by items ( $F(2, 11) = 3.42; p = 0.09$ ).

(i)

Condition	Average ratings (by subjects)
C1 (imperfective; no modal phrase)	1.15
C2 (perfective; no modal phrase)	2.55
C3 (imperfective; modal phrase)	1.36
C4 (perfective, modal phrase)	2.12

## *Outlook*

This experiment provides some indication that suggesting a pattern/policy might help **cualquiera** in episodic sentences. These data might be taken to suggest that perceivers can to some extent ‘mimic’ the effect of generic morphology by non-grammatical means and thereby partially rescue **cualquiera** in episodic (i.e. perfective) contexts. The availability of this type of pragmatic repair raises questions such as: Where else in the grammar do we find this type of repair at work? What are the constraints on this type of strategy? What are the differences and similarities between this type of strategy and other well-known pragmatic repairs, such as presupposition accommodation? I hope to be able to address these questions in future research.

## APPENDIX

### EXPERIMENTAL ITEMS

#### *Experiment 1*

1. (De acuerdo con las órdenes del ministerio de defensa,) la policía detenía/detuvo a cualquier persona que apoyara al antiguo gobierno públicamente.  
(In accordance with the defense department's orders,) the police arrested-pfv./impf any person that publicly supported the old government.
2. (Siguiendo instrucciones de la comisión de investigación,) las autoridades interrogaban/interrogaron a cualquier persona que estuviera relacionada con el partido comunista.  
(Following instructions from the investigation commission), the authorities questioned-pfv./impf any person that was related to the communist party.
3. (Siguiendo la política de la comisión bancaria,) los banqueros boicoteaban/boicotearon cualquier propuesta que les supusiera la más mínima pérdida.  
(Following the policy of the banking commission,) the bankers boycotted-pfv./impf any proposal that implied the slightest loss for them.
4. (Siguiendo las instrucciones del ministerio de Educación,) los profesores del instituto aprobaban/aprobaron a cualquiera que demostrara unos mínimos conocimientos de matemáticas.  
(Following instructions from the Education department,) the high school teachers passed-pfv./impf anyone that showed a minimal knowledge of Mathematics.
5. (De acuerdo con el plan que se había trazado,) Mata Hari seducía/sedujo a cualquier diplomático que tuviera información confidencial.  
(Following the plan that she had devised,) Mata Hari seduced-pfv./impf any diplomat that had confidential information.
6. (Siguiendo las normas del código de circulación,) la guardia de tráfico multaba/multó a cualquiera que se hubiera pasado del límite de velocidad.  
(Following the circulation code's norms), the traffic police fined-pfv./impf anyone that had speeded over the limit.
7. (Siguiendo órdenes de sus superiores,) el comandante en jefe castigaba/castigó a cualquier soldado que no tuviera el fusil limpio.  
(Following orders from his superiors,) the commander in chief punished-pfv./impf any soldier whose gun was not clean.
8. (De acuerdo con la política de la revista,) la comisión de redacción aceptaba/aceptó cualquier artículo que tratara del mundo árabe. (Following the journal's policy,) the editorial board accepted-pfv./impf any article that dealt with the Arab world.
9. (De acuerdo con la política del ministerio,) el tribunal de oposiciones suspendía/suspendió a cualquier candidato que dejara alguna pregunta en blanco.  
(In accordance with the department's policy), the examining committee failed-pfv./impf any candidate that left some question blank.

10. (Siguiendo las órdenes del coronel,) los soldados disparaban/dispararon a cualquiera que se encontrara a menos de cien metros del campamento.  
(Following the colonel's orders,) the soldiers shot-pfv./impf anyone that was closer than 100 from the headquarters
11. (Siguiendo las órdenes del ministerio de sanidad,) el médico del hospital local examinaba/examinó a cualquiera que presentara algún síntoma de la enfermedad.  
(Following orders from the Health department,) the local hospital doctor examined-pfv./impf anyone that show any symptoms of the illness.
12. (Siguiendo las instrucciones del responsable de planta,) los empleados del gran almacén registraban/registraron el bolso de cualquiera que hubiera pasado por el departamento de joyería.  
(Following the manager's instructions,) the department store's employees registered-pfv./impf the bag of anyone that had stopped by the jewelry department.

### *Experiment 2*

13. Mi primo Juan se enamoraba de /se enamoró de/coqueteaba con /coqueteó con cualquier mujer que le sonriera con amabilidad.  
My cousin Juan fell in love with-pfv./impf / flirted with-pfv./impf any woman that smiled to him kindly
14. El portero se acordaba de / se acordó de / trataba con deferencia a / trató con deferencia a cualquier visitante que le pareciera distinguido.  
The doorman remembered--pfv./impf any visitor that seemed distinguished to him/ treated-pfv./impf any visitor that was distinguished to him with respect.
15. Carlos oía/ oyó / grababa/ grabó cualquier conversación que tuvieran los vecinos del piso de abajo.  
Carlos heard-pfv./impf /recorded-pfv./impf any conversation that the downstairs neighbors had.
16. El veneno / El granjero mataba / mató a cualquier animal que bebiera el agua del pozo.  
The poison/The farmer killed-pfv./impf any animal that drank the water from the well.
17. Laura se quedaba impresionada con/ se quedó impresionada con / presumía de / presumió de cualquier regalo que le mandara el presidente de la compañía.  
Laura was impressed by-pfv./impf/boasted about-pfv./impf any present that was sent by the company's president.
18. Pedro soñaba con / soñó con / analizaba/ analizó cualquier acontecimiento de actualidad que le pareciera interesante.  
Pedro dreamt about-pfv./impf/ analyzed-pfv./impf any current event that seemed interesting to him.
19. Mi primo pequeño se asustaba de / se asustó de / se interesaba por / se interesó por cualquier personaje de dibujos animados que le pareciera malvado.  
My little cousin was afraid of-pfv./impf/ got interested in-pfv./impf any cartoon character that seemed evil to him.  
[note: defective item]
20. Los vientos / Los piratas destruían / destruyeron cualquier casa que estuviera cerca de la playa.  
The winds/ The pirates destroyed-pfv./impf any house that was near the beach.

21. Sara se entristecía con / se entristeció con / recortaba / recortó cualquier artículo que hablara de la guerra en Irak.  
Sara was saddened by-pfv./impf/ cut-pfv./impf any article that talked about the war in Irak.
22. Mi amigo Íñigo tropezaba con / tropezó con / ignoraba / ignoró cualquier obstáculo que apareciera en su camino.  
My friend Íñigo stumbled with-pfv./impf/ ignored-pfv./impf any obstacle that showed up in his path.
23. El abuelo de Jorge se emocionaba con / se emocionó con / alquilaba / alquiló cualquier película que tratara del exilio español.  
Jorge's grandfather got emotional about-pfv./impf / rented -pfv./impf any film that dealt with the Spanish exile.
24. Mi amiga Nerea se alegraba de ver / se alegró de ver / compraba / compró ver cualquier cosa que le recordara a su país.  
My friend Nerea was happy to see -pfv./impf/ bought-pfv./impf anything that reminded her of her country.

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