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## Free–Choiceness as Non–Locality Specification

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A sentence  $S$  of form  $\phi(\text{Det}_{\text{fc}} N')$ , where  $\text{Det}_{\text{fc}}$  is a free–choice determiner, signals that the property  $\phi$  is satisfied by any member of the class corresponding to  $N'$ .

*You may pick any card*  $\rightsquigarrow$  the addressee may pick any member of a (contextually salient) set of cards.

The intuition that free–choice items (henceforth FCI) are really choice insensitive has led to proposals that rely on the idea of *variation* to account for their main properties (see Giannakidou 1997, 1998 and Tovena & Jayez 1997, 1999). Two important aspects

- subtriggering

- (1)
  - a. Mary read ??any book
  - b. Mary read any book which was on the reading list
  - c. Mary read ??any book on her desk

Connection (?) between FCIs and NPIs •

- (2) Mary did not read any book on her desk

In this talk we propose to consider free–choiceness as a constraint which can be satisfied in several different ways.

### 1 Free–choiceness and variation

*Inter alia* cf. Eisner 1995, Dayal 1998, Giannakidou 1997, 1998, 1999a,b, Tovena & Jayez 1997, 1999

#### 1.1 The central idea

The central idea behind all these proposals can be summarized as the necessary but not (always) sufficient condition in (3).

- (3) A  $\phi(\text{Det}_{\text{fc}} N')$  predication, where  $\text{Det}_{\text{fc}}$  is a FCI, is licensed only in contexts where the  $N'$  objects which satisfy  $\phi$  exist in different worlds or situations.

## 1.2 Variation as modal force. Eisner’s and Dayal’s proposals

• Eisner proposes that *any*, in both its NP and FC uses, is a universal quantifier whose domain of quantification is the set of possible individuals across the different possible worlds. Problematic cases arise when we try to ‘hybridize’ worlds.

(4) The tarts were stolen by ??anyone

• Rephrasing Eisner’s proposal in a modal framework, let  $(W, R)$  be a modal frame where  $W$  is a set of points (so-called ‘possible worlds’) and  $R$  a binary accessibility relation on  $W$ . A tripartite structure ANY  $P$   $Q$  has the following satisfaction conditions, where  $w \models \phi$  denotes the fact that  $\phi$  is true at point  $w$  (in the world  $w$ )

(5)  $w \models \text{ANY } P \text{ } Q$  in  $(W, R)$  iff  $\forall x, w' (w' \models P(x) \Rightarrow w \models Q(x))$ .

(4) is strange because it says that any person in any possible world stole tarts in the actual world.

• Two further aspects of Eisner’s condition are:

- *any* is predicted to fit nicely into downward entailing contexts because they do not entail the existence of any event leading to a hybrid quantification.  
*Every child who stole any tart was punished*
- *any* gets wide scope immediately over its licenser. This particular scopal behaviour of *any* is argued to be necessarily assumed anyway for getting the correct scope in non-downward entailing contexts.

(6) There could be anything at the bottom of this rabbit hole

(6') : it is possible that  $\forall x$   $x$  is at the bottom of the hole (NO)

(6'') :  $\forall x$   $x$  could be at the bottom of the hole (OK)

• Dayal shares with Eisner the idea that *any* quantifies over abstract entities, not just over individuals. But her work differs in at least three respects.

- focus on FC *any*
- *any* quantifies over situations, not worlds

(7) In a sentence of form  $\phi(\text{any } N)$ , *any* is a universal quantifier which creates a tripartite structure:

$\forall s, x [x \text{ is a } N \text{ in } s] [\phi(x) \text{ in } s]$

– the notion of *contextual vagueness* is introduced to account for the anaphoric behavior of *any*

(7) has two main consequences. First episodic affirmative sentences without modification of the N are correctly predicted to be anomalous. A sentence like (4) has the underlying logical form (4'):

(4') :  $\forall s, x [x \text{ is a person in } s] [x \text{ stole (some of) the tarts in } s]$

Second, the approach is intended to explain the subtrigging phenomenon. In essence, *any* phrases are redeemed by postnominal modifiers whenever those modifiers restrict the class of relevant situations by confining them to some temporal interval. For instance, (1b) has the following logical form.

(1b') :  $\forall s, x [x \text{ is a book in } s \ \& \ \exists s'(s < s' \ \& \ x \text{ is a book on the reading list in } s') \ \exists s'' [s < s'' \ \& \ \text{Mary reads } x \text{ in } s'']]$

Subtrigging does not obtain if there is a merely accidental connection between the properties of the modifier and the main predication (see (1c)). Dayal sees non-accidentality as a direct result of the modal quantification introduced by *any*.

Summing up, in these two proposals the distribution of FC *any* is explained by its modal force. It is because *any* alludes to an unlimited set of objects (counterparts across worlds or situations) that it is sometimes not felicitous in sentences which purport to describe real situation, where the set of objects is (normally) limited, at least temporally.

### 1.3 Variation as possible substitution

#### 1.3.1 Tovena & Jayez's approach

Tovena and Jayez (1997) propose a unified criterion for *any*, articulated in two parts. Part A requires that the interpretation of a sentence of form *Any* N VP or NP VP *any* N be conducive to a universal interpretation of form  $\forall x N(x) \Rightarrow \phi(x)$  for some  $\phi$ . Part B was devised to account for the subtrigging effect.

- (8) A. The logical form  $\phi$  of a sentence of form *Any* N VP or NP VP *any* N must entail some  $\psi$  of form  $\forall x N(x) \Rightarrow \chi(x)$ .  
 B. The *any* phrase must have variable reference.

Two cases of variable reference are identified. First, the reference of the *any* phrase may vary across possible worlds. This is what happens in *Pick any card*, where the invitation/permission interpretation allows the addressee to pick any card she likes. This creates a virtual set of worlds differing only on the identity of the card which is picked by the addressee. Second, postnominal modifiers like adjectives or relative clauses do not necessarily denote a fixed set of individuals in the world where the sentence is evaluated. So, in (1b), the set of books which are on the reading list may be undetermined. In contrast, unmodified N's or N's modified by prenominal modifiers refer to a fixed set of entities. Variation is then implemented as the possibility of having different subworlds, which differ on the identity of the books of the reading list.

Tovena and Jayez do not assume that *any* quantifies over a set of possible individuals (individual  $\times$  situation pairs). Therefore, they do not assign to *any* a modally 'strong' reading.

### 1.3.2 Giannakidou’s approach

Giannakidou (1997, 1998, 1999a, 1999b) aims at providing an exhaustive account of NPIs and FCIs.

With respect to NPIs, Giannakidou replaces the notions of negative contexts and downward entailing contexts by the notion of *non veridicality*, adapted from (Zwarts 1995).

#### (9) Veridicality

ATT<sub>a</sub> is veridical with respect to an information state  $s$  iff, for every  $p$  ATT<sub>a</sub>  $p$  entails that  $p$  holds in every world of  $s$ .

As for FCIs, Giannakidou imposes two constraints on them. First they are not licensed in veridical contexts. In this respect, they resemble NPIs. Second, FCIs involve variation across worlds. This constraint covers the fact that in Greek FCIs are not natural in questions and negative sentences. An FCI is an existential quantifier that must be evaluated with respect to a set of alternatives.<sup>1</sup>

- (10) Let  $w$  and  $w'$  be two worlds. We say that  $w$  is a  $\phi$ -variant of  $w'$  for some  $\phi(x_1 \dots x_n)$ , in symbols,  $w \approx_\phi w'$ , iff the following condition obtains:
- $G_{w,\phi}$  and  $G_{w',\phi}$  possibly differ,
  - For any predicate  $P$  or function  $f$  not occurring in  $\phi$ ,  $I_w(P) = I_{w'}(P)$  and  $I_w(f) = I_{w'}(f)$ .

Definition (10) says that  $w'$  differs from  $w$  only on  $\phi$ .

#### (11) Giannakidou’s notion of free-choiceness

Let  $\mathcal{U}$  be a FC quantifier. The denotation of  $\mathcal{U}x$  at  $w$ , in symbols  $\llbracket \mathcal{U}x \rrbracket_w$  is:  $\lambda P, Q. \forall w' \approx_{P \& Q} w (w' \models \exists x(P(x) \& Q(x)))$

If we assume that the representation of *Pick any card* is something like  $!(\mathcal{U}x(x \text{ is a card} \& \text{ the addressee picks } x))$ , where ‘!’ corresponds to the imperative modality, we first have a set of !-accessible worlds  $\{w : w_0 R_! w\}$ , where  $w_0$  is the current world and  $R_!$  the !-accessibility relation. The most natural interpretation is that the set of cards is invariant in the different worlds !-accessible from  $w_0$ . So, for each  $w_i$  such that  $w_0 R_! w_i$ ,  $I_{w_i}(\text{card}) = I_{w_0}(\text{card})$ . Let  $c$  be the card which is picked in  $w_0$ . The role of  $\phi$  in the definition (10) is played by the formula  $x \text{ is a card} \& \text{ the addressee picks } x$ . Therefore, an !-accessible  $\phi$ -variant is any world  $w'$  such that  $w_0 R_! w'$  and  $G_{w',x \text{ is a card} \& \text{ the addressee picks } x} \neq G_{w,x \text{ is a card} \& \text{ the addressee picks } x}$ . Finally, in virtue of (11),  $!(\mathcal{U}x(x \text{ is a card} \& \text{ the addressee picks } x))$  will be true at  $w_0$  iff, at every such  $w'$ , the addressee picks at least one card.

The modal structure of  $\phi$ -variants creates a space of choices among different individuals. The choice of a given individual has no effect on the truth of the sentence, which translates the main intuition associated with FCIs.

<sup>1</sup>We modify Giannakidou’s definitions, which are not as precise as one may wish.

According to Giannakidou, the variation-based constraint attached to FCIs entails an *anti-episodicity* principle. FCIs are banned from sentences whose logical representation involves existential closure of an event variable. This is essential to explain why Greek FCIs are not to be found in negative and interrogative sentences.

- (12) a. *Dhen idha \*opjondhipote ston kipo*  
 Not saw<sub>1sg</sub> anybody in the garden  
 ‘I did not see anybody in the garden’  
 b. *Idhes \*opjondhipote ston kipo?*  
 Saw<sub>2sg</sub> anybody in the garden?  
 ‘Did you see anybody in the garden?’

(13) **Anti-episodicity**

A FCI is infelicitous in a sentence whose logical form involves existential closure of an event variable (e.g.  $\neg\exists e\phi$ ,  $?\exists e\phi$ ).

Concerning the status of *any* with respect to free-choiceness, this item is grammatical only in non-veridical contexts or in contexts where some negative implicature surfaces (as in *I am surprised Mary read any book*).

- (14) *Any* is infelicitous in veridical contexts in general, with the exception of certain contexts which trigger a negative implicating (e.g. *to be surprised that*).

In conclusion, these approaches differ on at least three dimensions:

- a. the explanatory import of non-veridicality,
- b. the modal force of *any*,
- c. the detailed mechanism of variation.

However, they all seem to agree on the existence of an intrinsic link between FCI and a variation pattern, which supports a choice among alternatives.

## 2 Problems with variation

We can distinguish two main sources of problems. One concerns the notions of non-veridicality and anti-episodicity. The other concerns the modal force of *any* and affects in particular the account of subtriggering.

### 2.1 Non-veridicality and anti-episodicity

Some contexts appear to be genuinely non-veridical, in the sense that they suspend the truth of some proposition, e.g. negative sentences, questions, various modal verbs, etc. However, for certain configurations, the situation is less clear.

- genericity

(15) Any cat hunts mice

Competing models of genericity give different results.

- In a rendition of genericity in terms of modal base (Kratzer 1981), where the set of epistemic alternatives of an agent is equated with the modal base, non-veridicality obtains. (15) is true in  $w$  iff for every  $w'$  which is sufficiently near to  $w$ , if  $x$  is a cat in  $w'$ ,  $x$  hunts mice in  $w'$ . But if  $x$  is a cat in a world  $w''$  far from  $w$ ,  $x$  does not necessarily hunt mice in  $w''$ .
- Consider instead Asher and Morreau's (1995) function  $*$ , of type Worlds  $\times$  Propositions  $\rightarrow$  Sets of worlds.  $*(w, \phi)$  returns the set of worlds where  $\phi$  holds with everything which, at  $w$ , is normally the case when  $\phi$  holds. In this case, it not clear that genericity entails non-veridicality, rather the intuitive answer tends to be negative. If  $a$  firmly believes that cat generally hunt mice, there is no reason to make the proposition that cats hunt mice vary across epistemic alternatives, as an epistemic alternative must retain everything which is firmly believed by  $a$ .

- Alethic necessity

Giannakidou observes that alethic necessity forces veridicality since the modalized proposition must be true in every epistemic alternative. Yet, there are perfectly acceptable sentences containing NPIs or FCIs which convey alethic necessity.

- (16)
- a. Any triangle has necessarily three angles
  - b. *Tout triangle a nécessairement trois angles*  
Any triangle has necessarily three angles
  - c. *N'importe quel triangle a nécessairement trois angles*  
not-matters which triangle has necessarily three angles  
'Any triangle has necessarily three angles'
  - d. Any cat necessarily hunts mice

- Imperatives

The non-veridicality of imperatives seems indisputable, since one does not normally issue a command or an invitation about a state of affairs which already obtains in the real world. However, this does not explain the contrast analyzed in (Dayal 1995) nor its French counterpart.

- (17)
- a. Pick any card ( $\approx$  any card you like)
  - b. Pick <sup>??</sup>any card ( $\approx$  every card)
  - c. Pick any card which has a black mark
  - d. *Prends n'importe quelle carte*  
Pick not-matters which card  
'Pick any card'
  - e. *Prends <sup>??</sup>toute carte*  
Pick any- $\forall$  card  
'Pick any ( $\approx$  every) card'

From the point of view of veridicality the different sentences in (17) are on a par. Variation is a good candidate to explain the contrasts.

- It is difficult to see in what respect imperatives differ from questions and negative sentences as far as anti-episodicity is concerned, i.e. the criterion which bans FCIs from negative or interrogative sentence.

- distributional problems

there are FCIs such as the French indefinite determiner *n'importe quel* (no matter who) or the Italian counterpart *qualsiasi* that are strange in negative and interrogative sentences, like Greek FCIs. However, some of the environments appropriate for the latter do not suite the former, namely *without* and *before* clauses, and negative verbs for French.

- (18) a. *Il est arrivé sans regarder <sup>??</sup> n'importe qui*  
 He arrived without look at (INF) anybody  
 'He arrived without giving a look at anybody'
- b. *Il a plongé avant que <sup>??</sup> n'importe qui puisse l'avertir*  
 He dived before anyone can warn him
- c. *I a refusé <sup>??</sup> n'importe quelle discussion*  
 He refused any discussion
- (19) a. *E' arrivato senza guardare <sup>??</sup> qualsiasi astante*  
 He arrived without look at (INF) any people present  
 'He arrived without giving a look at anybody there'
- b. *Si è tuffato prima che <sup>??</sup> qualsiasi persona potesse avvertirlo*  
 He dived before any people can warn him

The distributional differences are even stronger with French *tout*. Without subtrigging, *tout* is, for instance, not always felicitous in imperatives, protasis of conditionals, epistemic possibility sentences (*Anyone may have come in*), habitual sentences, *without* and *before* clauses. Tovena and Jayez (1999) show that the distribution of *tout* is governed by factors such as scopal properties which cannot be reduced to free-choiceness in the sense of variation. So free-choiceness, conceived as a semantic value based on variation, is not sufficient to predict the detailed behaviors of FCIs in some languages. In particular, when satisfied, non-veridicality and anti-episodicity do not warrant that every FCI is acceptable.

- Some French items have a very strong FC flavor and yet are perfectly possible in negative and interrogative sentences.

- (20) a. *Marie n'a pas parlé à qui que ce soit*  
 Mary has not spoken to  $\approx$  anybody  
 (*quelque personne que ce soit, une personne quelconque, une personne quelle qu'elle soit*)  
 $\approx$  anybody



*cet après-midi*

this afternoon

‘Mary did not speak to anybody this afternoon’

- b. *Marie a-t-elle parlé à qui que ce soit*

Mary has she spoken to  $\approx$  anybody

(*quelque personne que ce soit, une personne quelconque, une personne quelle qu'elle soit*)

$\approx$  anybody

*cet après-midi?*

this afternoon?

‘Did Mary speak to anybody this afternoon?’

Again, if free-choiceness is semantic and corresponds to possible variation, it is highly implausible for *qui que ce soit*, *quelque N que ce soit*, *un N quelconque* not to be FCIs in French. The *que ce soit* tag is roughly similar to *ever* in *whoever* or *whatever* and means literally ‘what it be’. *Quelconque* is the French survivor of the Latin *qualiscumque*, with its characteristic FC tag *-cumque*.

- *Tout* is not an indefinite. So the entailment FCI  $\Rightarrow$  indefiniteness proposed in Giannakidou (1999b) is not cross-linguistically supported.

## 2.2 The modal force of *any*

- Problems Eisner and Dayal’s approach 1. What are we going to do when the restriction is not time-sensitive (*Mary checked any proof which depended on Craig’s theorem*)?

2. The link between possible individuals and non-accidentality is unclear.

3. *You may pick any card* does not mean ‘You may pick any card in the world’. The alleged modal strength is too strong.

- Problems with Tovena and Jayez’s approach.

1. The restriction on the non-referentiality of the modifier sounds *ad hoc*.

2. The relation between accidentality and contextual vagueness (Dayal style) remains obscure.

## 3 Non-Locality (NL)

### 3.1 The general idea

- To retain the idea of a unified semantic profile for FCIs (there is a coherent intuition of free-choiceness).

- Conceive it in a more abstract way which allows for different implementations (specifications) in different languages and for the interaction with other factors (scope).

- NL = the speaker does not refer to a particular set of eventualities but rather to a global situation or set of situations (generalizes Non-Individuation proposed in (Tovena 1996/1998)).

- NL is based on Dekker’s notion of *information aggregate*.

(21) **Dekker’s information aggregates**

Ingredients:  $W$  (non-empty set of possible worlds),  $D$  (a non-empty set of individuals),  $V$  (a set of variables). Let  $X$  be a finite set  $\subseteq V$  and  $v \notin X$ , an info. aggregate *about*  $X$  is the empty set or any set of form:  
 $\{f_i \cup g_i \mid i \in I \ \& \ f_i \in W^{\{v\}} \ \& \ g_i \in D^X\}$

In words, an info. aggregate is a set of world–variables assignment (note that the members of the set finite and partial on variables). In line with dynamic semantics and situation semantics (Portner-von Fintel’s style): denotations are not truth–values but sets of assignments or sets of situations.

- NL extends (21) by introducing spatio–temporal variables  $\ell_i$

(22) **Aggregates**

Ingredients :  $W, V, X$  and  $Y$  two finite sets  $\subseteq V, D, L$  (a set of spatio–temporal locations). An aggregate about  $X$  and  $Y$  is the empty set or any set of form:  
 $\{f_i \cup g_i \cup loc_i \mid i \in I \ \& \ f_i \in W^{\{v\}} \ \& \ g_i \in D^X \ \& \ loc_i \in L^Y\}$

- An aggregate is *local* whenever its functions always return the same set of entities.

(23) **An aggregate**

$A = \{f_i \cup g_i \cup loc_i \mid i \in I \ \& \ f_i \in W^{\{v\}} \ \& \ g_i \in D^X \ \& \ loc_i \in L^Y\}$   
 is *local* iff, for every  $A_i, A_j \in A, g_i = g_j$  and  $loc_i = loc_j$ .

So, an aggregate  $A$  is local iff any two members of  $A$  agree on  $X$  and  $Y$  : the set of individuals and s.t. locations is frozen.

- A sentence  $S$  is local when it denotes a local aggregate. Examples

A descriptive episodic sentence is often (not always) local.

$\llbracket \text{Mary read a book} \rrbracket_{\{x,\ell\}} = \{f \cup g \cup loc \mid f(v) = w_0 \text{ and } g(x) \text{ is a particular book } b \text{ in } f(v) \text{ and Mary read } g(x) \text{ at a particular s.t. location } loc(\ell) \text{ in } f(v)\}$ .

Any two members of  $\llbracket \text{Mary read a book} \rrbracket_{\{x,\ell\}}$  agree on  $x$  and  $l$ .

A descriptive generic sentence is non–local.  $\forall_{\text{GEN}} x(\phi(x) \Rightarrow \psi(x))$  means that, under ‘normal’ circumstances, every  $x$  which satisfies  $\phi$  satisfies  $\psi$ .

Hence a variation on the set of circumstances or s.t. locations.  $\llbracket \text{Every freshman knows that} \rrbracket_{\{x_1 \dots x_n, \ell, \ell'\}} = \{f \cup g \cup loc \mid g(x_1) \dots g(x_n) \text{ is a freshman in } f(v) \text{ at } loc(\ell) \text{ and for every } g(x_i)_{i=1 \dots n} \ x_i \text{ knows that at } loc(\ell') \text{ if } loc(\ell') \text{ is ‘normal’ and included in } loc(\ell)\}$ .

Assume that  $v, \ell$  and the  $x_i$  are frozen. The aggregate runs through possible s.t. locations.

- Local aggregates and FCIs are not compatible.

(24) **FCIs are not appropriate in local sentences.**

- But are they appropriate in non–local sentences? It turns out that FCIs are sensitive to various possible specifications of the non–locality of aggregates.

There are several ways in which an aggregate may be non-local. So, mode of variation varies. There is no One True Criterion for variation but a family of variation scripts specifying non-locality.

## 4 Variations

### 4.1 Simple scripts

- Negation

Take a descriptive episodic negative sentence. It declare that a certain type of event is not exemplified in a certain s.t. region. We freeze the event roles but allow variation on  $\ell$  in the s.t. region under consideration.

Example

$\llbracket \text{Mary did not read any book} \rrbracket_{\{x_1 \dots x_n \ell\}} = \{f \cup g \cup loc \mid f(v) \text{ the s.t. region under consideration and } g(x_1) \dots g(x_n) \text{ are the relevant books in } f(v) \text{ and Mary did not read } g(x_i) \text{ at a } loc(\ell) \text{ in } f(v)\}$ .

*Mary did not read any book* = there was no event of Mary reading a book at any s.t. location.

Sensitive: French negative polarity FCIs (*un quelconque, un quel qu'il soit*), French *any*-like items (*qui/quoi que ce soit, le moindre*), *any*.

Non-sensitive: French *tout* and *n'importe quel*, Greek FCIs.

- Subtriggering

Subtriggering introduces an essential dependency; e.g.  $\phi(\text{any N which } \psi) =$  in the situation under consideration, the  $\psi$  & N property entails essentially the  $\phi$  property.

Essential dependency  $\neq$  material implication (connection between truth-values). It is implemented in logics without weakening such as relevance logics, linear logic or analytic implication (Tzouvaras 1996).

Weakening : if  $\Sigma \vdash \Gamma$ , then  $\Sigma, A \vdash \Gamma$  for an arbitrary  $A$ .

Forbidding weakening imposes a restriction on  $\Sigma$  and  $\Gamma$ : they must be content-related.

$\phi \rightarrow \psi =$  the content of  $\phi$  entails the content of  $\psi$ .

Essential dependencies are intrinsically modal; they are valid ‘everywhere’ (at every possible s.t. location) in contrast with material implication. So, they are non-local by construction.

Example

$\llbracket \text{Mary read any book which was on the reading list} \rrbracket_{\{x_1 \dots x_n, \ell_1 \dots \ell_n, \ell'\}} = \{f \cup g \mid f(v) = w_0 \text{ and } g(x_1) \dots g(x_n) \text{ are the books on the reading list in } w_0 \text{ and Mary read } g(x_1) \dots g(x_n) \text{ at } g(\ell_1) \dots g(\ell_n) \text{ in } w_0 \text{ and } \langle \forall x(x \text{ is a book on the reading list in } w_0 \rightarrow \exists \ell(g(\ell) \text{ is in } w_0 \text{ and } x \text{ is read by Mary at } g(\ell)) \rangle \text{ at } g(\ell') \text{ in } w_0\}$ .

We freeze  $v$  (the actual world),  $x_1 \dots x_n$  (the books),  $\ell_1 \dots \ell_n$  (the s.t. locations of the reading events). We let  $\ell'$  vary (modal force of subtriggering).

Sensitive : French *qui/quoi que ce soit, tout*, and *le moindre, any*, ? Greek FCIs.

Non sensitive : French NP FCIs, *n'importe quel*.

## 4.2 Modal scripts

- General principle

A world  $w$  and an accessibility relation relative to some intensional attitude  $ATT$ ,  $R_{att}$ , a set of entities  $A$  in  $w$  and a property  $\phi$ . The entities in  $A$  exist in each  $ATT$  accessible world, but the entities of  $A$  which satisfy  $\phi$  vary across  $ATT$ -accessible worlds.

Slightly more complex than the two cases above because, for  $n$  entities in  $A$ , we have to consider variation on, 1, 2,  $\dots$   $n - 1$  entities. The definition of aggregates is modified accordingly.

(25) A modal aggregate is a set of aggregates about different  $X$  and  $Y$ , that is a set  $\{A_{\{v\} \cup X_i} \mid i \in I\}$ .

(26) A modal aggregate is local iff the set of individual variables  $X$  is fixed and all the aggregates agree on  $X$ .

In words, a modal aggregate is local iff all the assignments agree on a fixed set  $X$  of variables for individuals.

- Imperatives

$\llbracket \text{Pick any card} \rrbracket = \{\llbracket \text{Pick any card} \rrbracket_{\{x_1 \dots x_n, y_1 \dots y_k, \ell_1 \dots \ell_k\}} \mid \{y_1 \dots y_k\} \neq \emptyset$  and  $\{y_1 \dots y_n\} \subseteq \{x_1 \dots x_n\}$  and  $f(v)$  is any world accessible from  $w_0$  with respect to imperative speech acts and  $g(x_1) \dots g(x_n)$  are the cards in  $w_0$  and  $g(y_1) \dots g(y_m)$  are the cards picked in  $f(v)$  at  $g(\ell_1) \dots g(\ell_k)\}$

- Interrogative sentences

$\llbracket \text{Did Mary read any book?} \rrbracket = \{\llbracket \text{Did Mary read any book?} \rrbracket_{\{x_1 \dots x_n, y_1 \dots y_k, \ell_1 \dots \ell_k\}} \mid \{y_1 \dots y_k\} \neq \emptyset$  and  $\{y_1 \dots y_n\} \subseteq \{x_1 \dots x_n\}$  and  $f(v)$  is any world accessible from  $w_0$  with respect to interrogative speech acts and  $g(x_1) \dots g(x_n)$  are the books in  $w_0$  and  $g(y_1) \dots g(y_m)$  are the books read in  $f(v)$  at  $g(\ell_1) \dots g(\ell_k)\}$   
Presumably the  $?$ -accessible worlds are epistemic alternatives to  $w_0$ .<sup>2</sup>

- Similar analysis for *may* and *must* sentences.

- flip-flop behaviour of FCIs in those contexts.

Existential FCIs are possible,

universal FCIs are odd (unless they are redeemed by subtriggering),

existential/universal FCIs are interpreted existentially in the absence of subtriggering. This behaviour was observed by Dayal (1995) on *any*. It extends to French FCIs; +s notes the sensitivity to subtriggering.

	neg. S	int. S	imp. S	<i>may</i> S	<i>must</i> S
<i>un quelconque</i>	$\exists$	$\exists$	$\exists$	$\exists$	$\exists$
<i>un N quel qu'il soit</i>	(?) $\exists$	$\exists$	(?) $\exists$	$\exists$	$\exists$
<i>quelque N que ce soit</i>	$\exists$	$\exists$	??	??	??
<i>qui/quoi que ce soit</i>	$\exists$	$\exists$	$\forall$ , +s	$\forall$ , +s	$\forall$ , +s
<i>n'importe quel N</i>	??	??	$\exists$	$\exists$	??
<i>le moindre N</i>	$\exists$	$\exists$	$\forall$ , +s	$\forall$	$\forall$ , +s
<i>tout N</i>	??	??	$\forall$ , +s	$\forall$ , +s	$\forall$ , +s

<sup>2</sup>See (van Rooy 1999) for a recent analysis.

Caveats: the distribution is partial, many semantic properties are ignored (concerning in particular *le moindre* and *tout*), *quelque N que ce soit* might be a pure NPI.

Why does the  $\forall$  reading create an anomaly? Because it conflicts with NL.

$\llbracket \text{ATT}(\phi(\forall N)) \rrbracket = \{ \llbracket \text{ATT}(\phi(\forall N)) \rrbracket_{\{x_1 \dots x_n, \ell_1 \dots \ell_k\}} \mid f(v)$  is any world ATT-accessible from  $w_0$  and  $g(x_1) \dots g(x_n)$  are N-objects in  $w_0$  and  $g(x_1) \dots g(x_n)$  are the N-objects which satisfy  $\phi$  in  $f(v)$  at  $g(\ell_1) \dots g(\ell_k)$  }

For instance, with *Pick ?? any (= every) car*, the identity of the cards in  $w_0$  and of the cards picked in the different ATT-accessible worlds creates an invariant subdomain w.r.t. the aggregate.

## 5 Conclusion

- Three features of the present proposal
  - A certain intuitive unity is preserved through a more abstract conception of variation.
  - It does not commit us to any theoretical choice about other parameters (scope, existential/universal alternation, scalar value, etc.).
  - It does not predict a uniformity of behaviour which does not exist (Haspelmath 1997), but, more modestly, sees semantic profiles as the differential exploitation of analogous ( $\neq$  identical) strategies.

- Open problem. FCIs as NPIs?

Traditional attempts to distinguish/unify NP and FC *any*  $\rightsquigarrow$  are FCIs NPIs with an additional FC flavor?

Different answers exist.

Giannakidou: FCIs are anti-licensed by veridical contexts and episodic contexts. Main prediction: they are not to be found in veridical contexts nor in negative or interrogative sentences (which are episodic, in her sense). Makes sense for Greek, but does not seem so convincing for French or English *any* (subtriggering + table above).

However (some) Existential FCIs might be analyzed as NPIs. The FC flavor is still palatable but does not constrain the behaviour of the item. We would have to adopt a more conservative option and get rid of the first strategy on negative contexts.

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