

Modes of Non Individuation for Determiners

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1. Introduction

1.1 Recent work on Free Choice Items (FCIs) in different languages has lent support to the intuitive idea that free choiceness is incompatible with episodic assertions and in general prefers modal settings (see Tovenà & Jayez 1999a,b, Jayez & Tovenà 2003 for French and English, Giannakidou 1997a,b, 1998, 1999, 2001 for Greek, Lee 1997 for Korean, Sæbø 1999, 2001 for Scandinavian). The analysis of FCIs is complicated by the fact that certain items exhibit the typical distribution of this class *and* of Negative Polarity Items (NPIs). This is well-known for *any* (see Dayal 1998, Horn 2000, 2001 and Tovenà 1996, 1998 for recent surveys and proposals). The existence of a parallel ‘double’ distribution for the morphologically unrelated French item *le moindre* (Tovenà & Jayez 1999a) makes it difficult to believe that the bridge between polarity sensitivity (PS) and free choiceness (FC) is an isolated curiosity.

2. PS and FC *any* and *le moindre*

2.1 *Any* and *le moindre* are fine in typical NegPol environments: negative sentences (1), polar questions (2), restriction of universal quantifiers (3), *too* sentences (4), *without* phrases (5), negative implicatures (6) and conditionals (7).

- (1) a. John did not read any book on the list
b. John n’a pas lu le moindre livre de la liste
- (2) a. Did John read any book on the list?
b. Est-ce que John a lu le moindre livre de la liste?
- (3) a. Every student who has any knowledge of the problem found the exam stupid
b. Tous les étudiants qui avaient la moindre connaissance du problème

ont trouvé l’examen stupide

- (4) a. John is too stupid to solve any problem
b. John est trop idiot pour résoudre le moindre problème
- (5) a. John answered without any hesitation
b. John a répondu sans la moindre hésitation
- (6) a. I doubt that John read any book on the list
b. Je doute que John ait lu le moindre livre de la liste
- (7) a. If you have any problem with the computer, just tell me
b. Si tu as le moindre problème avec l’ordinateur, tu n’as qu’à me le dire

2.2 As for typical FC environments, the situation is more complex.

a. Ability, possibility and permission sentences accept both items (8).

- (8) a. John can get interested in any topic
b. John est capable de s’intéresser au moindre sujet
c. It is possible to monitor any event of the system
d. Il est possible de surveiller le moindre événement du système
e. As root, you may monitor the trace of any process
f. En tant que root, tu peux surveiller la trace du moindre processus

b. Assertive episodic sentences are incompatible with both items, unless there is some *subtriggering* (LeGrand 1975) effect (9).

- (9) a. *John read any reference on the list
b. John read any reference that was relevant to his research topic
c. ??John a lu la moindre référence de la liste
d. John a lu la moindre référence qui était pertinente pour son thème de recherche

c. However, *le moindre* is ok with certain nouns in assertive episodic sentences.

- (10) a. Le policier a vérifié le moindre détail de ma déclaration
The policeman checked the slightest detail in my declaration
b. La police a exploré le moindre recoin de la maison
The police searched every nook and cranny in the house
(lit. The police explored the slightest nook of the house)

Presumably, an idiomatic/constructional phenomenon since *le moindre* \rightleftharpoons *le plus petit*, *le plus insignifiant*, *le plus mince*, etc., in these cases.

d. Generic and habitual environments license both items (11).

- (11) a. Any cat can learn to catch mice

- b. Le moindre chat peut apprendre à attraper des souris
- c. Any mistake was usually pointed out
- d. La moindre erreur était habituellement relevée

e. Imperatives are not uniform licensers (12).

- (12) a. Pick any card
- b. Prends ??la moindre carte
- c. Punish any misdemeanor
- d. Punis le moindre délit

f. The same is true for phrasal comparatives (13).

- (13) a. John did better than any other boy in his class
- b. John a mieux réussi que *le moindre autre élève de sa classe

2.3 *Le moindre* patterns with ‘low’ superlatives (*the smallest, the least, the slightest, le plus petit* ‘the smallest’, *le plus mince* ‘the thinnest’, *le plus élémentaire* ‘the most basic’, *le plus insignifiant* ‘the less significant’, ‘the lightest’, *le plus quelconque* ‘the most ordinary’).

a. This behaviour is expected in PS environments, which are known to license such superlatives. This extends to FC environments.

- (14) a. John est capable de s’intéresser au sujet le plus insignifiant
- b. John can get interested in the most trivial topic
- c. Il est possible de surveiller le plus petit événement du système
- d. It is possible to monitor the slightest event of the system
- e. En tant que root, tu peux surveiller la trace du processus le plus élémentaire
- f. As root, you may monitor the trace of the most basic process
- (15) a. *John read the slightest reference on the list
- b. John read the slightest reference that was relevant to his research topic
- c. *John a lu la plus petite référence de la liste
- d. John a lu la plus petite référence qui était pertinente pour son thème de recherche
- (16) a. The most ordinary cat can learn to catch mice
- b. Le chat le plus quelconque peut apprendre à attraper des souris
- c. The smallest mistake was usually pointed out
- d. La plus petite erreur était habituellement relevée
- (17) a. ??Pick the slightest card
- b. #Prends la plus petite carte¹

- c. Punish the smallest misdemeanor
- d. Punis le plus petit délit

- (18) a. John did better than ??the most ordinary boy
- b. John a mieux réussi que ??le garçon le plus quelconque

2.4 *pace* Horn (2000,2001) *any* is not an e.o.s. indefinite (\neq *le moindre*, which is presumably an e.o.s. definite), for three reasons.

a. The emphatic value of *any* is not salient with a rigid restriction, in contrast to *le moindre*. *Le moindre* and low superlatives have an emphatic effect in negative episodic sentences and questions (see Guerzoni 2001, van Rooy 2003 for recent analyses of this type of phenomenon). (19a,b,c,d,e,f) are generally interpreted as stronger than (19g,h), which are not very different from (19i,j).

- (19) a. Est-ce que John a lu le moindre livre?
- b. Est-ce que John a eu la plus mince hésitation?
- c. Did John read the slightest book?
- d. Did John have the slightest hesitation?
- e. John n’a pas lu le moindre livre de la liste
- f. John did not read a single book on the list
- g. Did John read any book on the list?
- h. John did not read any book on the list
- i. Did John read a book on the list?
- j. John did not read a book on the list

b. The same contrast obtains with standard indefinites + *even*.²

- (20) a. Did John read a book on the list, even a small one?
- b. Est-ce que John a lu un livre de la liste, même un petit?
- c. Did John read any book on the list?
- d. Did John read a book on the list?

c. Imperatives

Horn assigns the e.o.s. value to PS *and* FC *any*. Where does it surface in imperatives like *Pick any card!?* ‘Pick a card, even a ?? one’.

d. Rullman (1996) notes that, in contrast to *even*, *any* does not associate with focus. *Le moindre* patterns with *any*, which suggests that this test does not discriminate e.o.s. but rather concessive NPIs.

e. Conclusion

¹In French, *la plus petite carte* may mean ‘the card that has the lowest power’, in which case the sentence is ok.

²See (Lee & Horn 1994) for the view that *any* is an indefinite plus *even*.

Whether *any* was formerly an e.o.s. and no longer is, or it has been something different from the beginning, this cannot be decided unless new evidence is adduced \Rightarrow any hypothesis about the PS/FC articulation should be neutral in the argument.

3. From PS to FC

3.1 *Any* as primarily an NPI

- a.** Analogy with *le moindre* whose lexical origin suggests an NPI function.
b. Diachrony: *any* as an indefinite (*one*) + first uses in questions, negative and conditional sentences (OED 2003).

3.2 The PS/FC articulation for *any* and *le moindre*

- a.** Intuitively, *any* and *le moindre* entail a universal quantification but cannot be reduced to it.
- Standard universal quantifiers (*every, tous les* in French): assert that every member of the restriction satisfies the scope.
 - NPIs like *any* and *le moindre* communicate (either through scalar or an indiscrimination mechanism) that the members of the restriction cannot be distinguished w.r.t. the scope.

Horn, Fauconnier and their followers (Israel) on scales: minimizers signal that a certain proposition expressed by the sentence applies to every element, including the X–est (hence the concessive value mentioned by Lee and Horn (1994) and Lee (1997)).

Indiscrimination manifests itself in FC–tags such as *que ce soit*.³

- (21) a. *John n’a pas lu quelque livre
 [intended: ‘John did not read any book’]
 b. John n’a pas lu quelque livre que ce soit
 \approx ‘John did not read a book, no matter which one you consider’

b. Non–PS FCIs are driven by *Non Individuation* (NI, Jayez & Tovena 2003), i.e. the fact that the information conveyed by the sentence does not reduce to individuating information.

In the present approach, given a tripartite structure [FCI] [*P*] [*Q*], no individuation is obtained through the particular way in which *P* applies to different members of [*Q*] or *situated* situations where $x \in [Q]$ satisfies *P*.

So–called *Austinian* propositions (Barwise & Etchemendy 1987, after Austin, 1950) = propositions that hold at particular situations \neq *Russellian* propositions = non–situated propositions (mathematical truths).

Borderline cases: physical laws/constraints.

³Literally, ‘which/what it be [SUBJ]’

c. PS *any/le moindre* \rightsquigarrow FC *any/le moindre* = all members of [*P*] are members of [$\neg Q$] or are not known to be members of [*Q*] (they cannot be distinguished on the basis of $\neg Q$ in the current situation) \rightsquigarrow no member of [*P*] can be distinguished as a member of [*Q*] or [$\neg Q$] in the current or a (modally) accessible situation.

d. The PS case

- The general idea: the impossibility of distinguishing between individuals in [*P*] w.r.t. $\neg Q$ is brought to the fore. Individuation occurs through eventualities, since individuals satisfy particular properties at particular spatio–temporal locations (situation semantics). Thus, individuals in [*P*] cannot be distinguished *via* events or states.
- Events and negation. (1a,b): inside the current situation *s*, there is no particular spatio–temporal location at which John did not read a book on the list. It is true that John did not read a book on the list everywhere in *s*.
- States and negation. *John is not familiar with any of these problems*: there is no particular spatio–temporal location at which John is not familiar with a problem. This is true everywhere in *s*.
- Questions. (2a,b): there is no particular spatio–temporal location at which it is not true that John read a book. This is true everywhere in *s*.

So, ‘unifying’ question and negation cases,

A **There is no particular event or state at which John is known to satisfy the property on which the (negation or question) operator bears**

But,

B **We do not say that A is a licensing condition for NPIs or for PS items with a FC profile.**

In fact,

C **We only claim that**
(i) A is a consequence of the application of the licensing conditions for the item (e.g. the scalar implicature(s)) and
(ii) that this consequence is sufficiently salient and stable to provide the ground for an extension to the FC profile.

e. The nature of the extension to FC

PS: no particular event or state inside any situation relevant for the interpretation.
 FC: no particular *determined* event or state in any situation relevant for the interpretation.

- (22) The PS \rightsquigarrow FC bridge is a link between the non–existence of events/states and the indetermination of events/states.

f. Indetermination is not epistemic. E.g., the content of an event can be unknown but determined: (9a) is anomalous even if the speaker does not know which reference(s) John read (**I have not seen the list but John read any reference on it*).

g. Two main scenarios of indetermination

- Modal operators (imperatives, possibility/necessity, habitual and generic readings).

- *Russellian* propositions (subtriggering and comparatives).

(i) A trivial example: mathematical global propositions. (23b) is judged strange by some speakers because an integer is odd or even in virtue of being an integer, see (23a), not in virtue of being used in a particular (spatio-temporally situated) calculation.

- (23) a. Any integer is odd or even
b. #Any integer appearing in this calculation is odd or even

(ii) Mixed cases: spatio-temporally situated eventualities + *Russellian* propositions. (24a) (i) asserts that there are spatio-temporally situated eventualities of cheating and suspending, and (ii) implies that students were suspended in virtue of the fact they had cheated. Thus, the proposition that every student who had cheated was suspended is not relativized to a particular situation. It happens to be true in a certain situation s because some students cheated in this situation but also because there is an implication of the form $\forall x((\text{student}(x, s) \& \text{cheater}(x, s)) \Rightarrow \text{suspended}(x, s))$, which is true ‘everywhere’ (= in every situation) since it is grounded in logical relations.

- (24) a. Any student who had cheated was suspended
b. Mary performed better than any other girl in her class

h. This intuition takes into account and generalizes various approaches based on indiscriminability (Horn 2000, 2001), widening (Kadmon & Landman 1993) or emphasis (Israel 1996, 1998, 2001). However, it sets apart the special properties of the items from the general tendency to avoid individuation. E.g., it is likely that *le moindre* is an emphatic e.o.s., but there is no comparable evidence for PS *any*. Admittedly, there might be an implicature of widening/emphasis, originating in the mere fact that PS *any* focusses on the parity of individuals with respect to some property.

Similarly, the relevance of nonveridicality (Zwarts 1995), noted and expounded by Giannakidou (1997a, 1998, 1999, 2001) is to be expected: in nonveridical contexts, no positive event/state (= situated inside the current situation) is assumed.

4. Implementing the bridge between PS and FC items

4.1 Eventualities and situations

We exploit *situation theory* (Barwise & Perry 1984, Barwise & Etchemendy 1987, Devlin 1991, Seligman & Moss 1997).

a. Spatio-temporal standpoints are pairs of the form $\langle \ell, t \rangle$, where ℓ is a spatial region (not necessarily connected) and t a temporal interval. We write $\langle \ell, t \rangle \subseteq \langle \ell', t' \rangle$ whenever $\ell \subseteq \ell'$ and $t \subseteq t'$.

b. *Infons*: propositional objects which are spatio-temporally situated. Infons = minimal units of information (for some given grain of analysis/perception/representation).

(25) An *infon* is a pair $\langle \phi, \langle \ell, t \rangle \rangle$ where ϕ is a formula and $\langle \ell, t \rangle$ a spatio-temporal region.

(26) A *situation* s is a set of infons. We write $\ell \in s$ or $t \in s$ whenever there is an infon $\langle \phi, \langle \ell, t \rangle \rangle$ in s .

(27) If s is a situation, the spatio-temporal region defined by s , $r(s)$ is the pair $\langle \bigcup \{ \ell : \ell \in s \}, \bigcup \{ t : t \in s \} \rangle$.

c. Individuation

Intuitively, individuation is the fact that individuals satisfy a property at some given spatio-temporal location. We define different modes of individuation, corresponding to the cases discussed in section 3.

(28) If σ is an infon, $s \models \exists x \sigma(x)$ iff, for some a , $s \models \sigma(a)$.

(29) Non-modal individuation

a. Let s be a situation and O be a propositional operator such as negation or question. s is *individuating* w.r.t. ϕ iff:

$s \models \exists x, \ell, t (\langle \phi(x), \langle \ell, t \rangle \rangle)$.

b. s is *locally individuating* iff

$s \models \exists x, \ell, t, \ell', t' (\langle \ell, t \rangle \subset r(s) \ \& \ \langle \ell', t' \rangle \subset r(s) \ \& \ \langle \phi(x), \langle \ell, t \rangle \rangle \ \& \ \langle O[\phi(x)], \langle \ell', t' \rangle \rangle)$.

Remark: local individuation w.r.t. ϕ means that ϕ is satisfied at some location and not satisfied or not known to be satisfied at some other location. ‘Pieces’ of the situation are contrasted with respect to satisfaction or non-satisfaction. Which semantics is to be provided for question operators is a big issue that we do not consider here. We simply assume that $s \models ?(\phi(x))$ is true only if $s \models \phi(x)$ and $s \not\models \neg\phi(x)$ (partiality).

(30) **Modal operators**

$s \models \langle \diamond[\phi], \langle \ell, t \rangle \rangle$ iff there exists at least one s' \diamond -accessible from s such that $s' \models \exists \ell', t' \langle \phi, \langle \ell', t' \rangle \rangle$. \square is defined analogously.

(31) **Modal individuation**

s is a modally individuating situation w.r.t. ϕ iff

$s \models \exists x, \ell, t (\langle \square[\phi(x)], \langle \ell, t \rangle \rangle)$.

4.2 Austinian applications

a. in PS environments, PSIs such as *any* and *le moindre* trigger interpretations which entail

(i) $s \models \neg \exists x, \ell, t, \ell', t' (\langle \ell, t \rangle \subset r(s) \ \& \ \langle \ell', t' \rangle \subset r(s) \ \& \ \langle P(x) \ \& \ Q(x), \langle \ell, t \rangle \rangle \ \& \ \langle \neg[P(x) \ \& \ Q(x)], \langle \ell', t' \rangle \rangle)$,

for negation, and

(ii) $s \models \neg \exists x, \ell, t, \ell', t' (\langle \ell, t \rangle \subset r(s) \ \& \ \langle \ell', t' \rangle \subset r(s) \ \& \ \langle P(x) \ \& \ Q(x), \langle \ell, t \rangle \rangle \ \& \ \langle ?[P(x) \ \& \ Q(x)], \langle \ell', t' \rangle \rangle)$,

for questions.

As such, they are not locally individuating w.r.t. $\lambda x.P(x) \ \& \ Q(x)$.

b. FCIs

We assign to them the constraint in (32).

(32) **NI for FCIs**

A FCI is appropriate w.r.t. a tripartite structure ([FCI] [P] [Q]) and an interpretation I only if:

I does not require that there be a situation s and an individual x in $\llbracket P \rrbracket$ s.t.

$s \models \exists \ell, t (\langle P(x) \ \& \ Q(x), \langle \ell, t \rangle \rangle)$ or

$s \models \exists \ell, t (\langle P(x) \ \& \ \neg[Q(x)], \langle \ell, t \rangle \rangle)$.

• For episodic sentences or questions, (32) corresponds to the fact that, whenever the interpretation is based on the current (real) situation, the FCI is out because that situation certainly makes $P(x) \ \& \ Q(x)$ or $P(x) \ \& \ \neg Q(x)$ true. E.g., the \forall -Fci *tout* is anomalous in questions like (33), which point towards the real situation, because, in that situation, any given book has been read or not read at some spatio-temporal location.

(33) *Est-ce que John a lu tout livre de la liste?

Did John read \forall -FC book on the list?

• For modal sentences, the bad configurations for FCIs are those that require that, for a given P -object x , there be an accessible situation in which x is Q (or $\neg Q$). This is typically the case when we have a \square modality. For instance, (34a) entails that every card will be picked in every continuation (accessible situation). So, there are P -objects (the cards) that are Q -objects in every continuation. (34b)

entails that the same card will be picked in every continuation.⁴

- (34) a. *Prends toute carte
Pick \forall -FCI card
b. *Prends n'importe quelle carte
[in a context where there is only one card]

4.3 FCIs in subtriggered sentences and comparatives

Being episodic (Jayez & Tovena 2003), these sentences raise a serious problem for (32). Comparatives license FCIs that have no PS profile at all, e.g. *tout*. So one cannot reduce them to PS environments.

a. Subtriggering involves a form of dependency discussed at length in (Jayez & Tovena 2003).

- (35) a. ??Any student who was in the room started at the noise
b. ??Tout étudiant qui était dans la pièce a sursauté à cause du bruit
c. Any student who has cheated was suspended
d. Tout étudiant qui avait triché a été renvoyé

b. Even if the dependency is circumstantial, it involves some form of logical deduction which is not spatio-temporally situated (= Russellian).

c. The same holds for comparatives. In (13), there may be particular events. E.g., John may have beaten every other boy in a chess tournament, but, crucially, FCIs are out in sentences that refer directly to such events (36). What FCIs 'see' in comparatives is the comparison of performance measures. Although the performances may be circumstantial, the result of the comparison is not: that John was better than Terry is perhaps accidental, but that he forced him into checkmate is defined by the rules of chess (see Searle on constitutive rules) and, accordingly, is Russellian w.r.t. the rules of the game.

- $\mu(\text{John's performance}) = j, \mu(\text{Terry's performance}) = t$: a (complex) event/state.
- $j > t$ is true everywhere (a typical Quinean configuration).
- Importance of *perspective*: the same fact can be seen as an event or not, as in opacity phenomena (see (Aloni 2001) for a recent survey and reanalysis)

- (36) a. *John beat any other boy in the tournament
b. *John a battu tout autre garçon lors du tournoi

⁴As explained in (Jayez & Tovena 2003), (32) brings about *exhaustive variation* (Giannakidou 1998, 2001) or *domain shift* (Jayez & Tovena 2003), depending upon the \exists or \forall logical status of the FCI under consideration.

d. We extend (32) to take such cases into account.

(37) **NI for FCIs**

A FCI is appropriate w.r.t. a tripartite structure ([FCI] [P] [Q]) and an interpretation *I* only if *I* does not entail an Austinian proposition (as in (32)) or implies that any such proposition can also be analyzed as Russellian.

5. Conclusion

- Importance of the mode of individuation
- Importance of the Austinian vs Russellian distinction
- Main conclusion: PS and FC are not ‘unified’ in virtue of a core meaning of the (PS/FC) items but through a common behavior, namely banning situated infons (events/states).

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